

MICHIGAN FARMER

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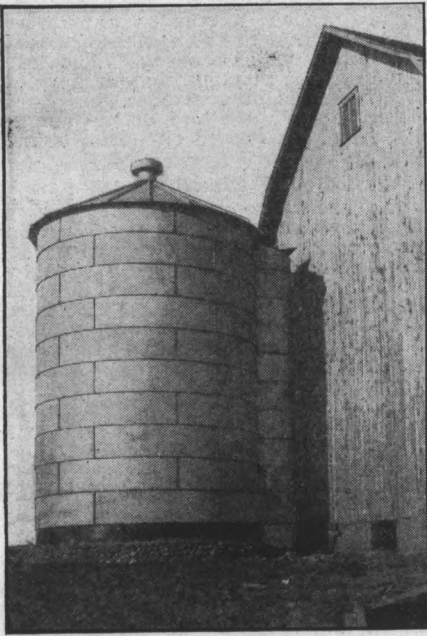
The Only Weekly Agricultural, Horticultural, and Live Stock Journal in the State.

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DETROIT, MICH., SATURDAY, JULY 31, 1915.

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Silos and Silage



to make it almost the exclusive roughage ration fed. This class of dairymen are, however, so small as to be almost a negligible quantity. Indeed, it is a question whether they may be properly classed as dairymen, since it will generally be found that where this opinion is held, the dairy business is abandoned for some other line of agriculture before the lapse of very many years.

Commercial feeders of both cattle and sheep are likewise conversant with the value of silage as a roughage ration for their fattening animals. In addition to the practical experience which nearly all points in one direction the farmer who has had no experience in the use of ensilage as a feed for live stock has but to study the reports of experiment stations where it has been used in carefully conducted trials, to learn that in every case where used with a suitable combination of other feeds, it has reduced the cost of production and increased the profit resulting from the production of dairy products or meat animals of every kind. In more recent years it has also been used successfully in the feeding of flocks of breeding sheep, and to a more limited extent as a factor in the ration of horses during the winter season.

Economy of Silo Demonstrated.

Since the silo has proven such a profitable investment for dairy farmers and stock feeders generally, there can remain no manner of doubt that it will also prove a profitable investment for the general farmer who keeps live stock as a side line rather than as a specialty. So much data proving the economy of silage as a feed for all kinds of live stock has been published that it is unnecessary to dwell further upon this point. It may be accepted as a demonstrated fact that it is at once a most econom-

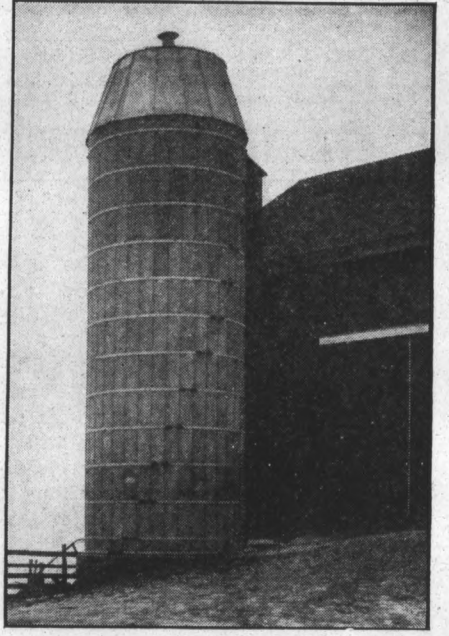
ical and beneficial feed, not alone because the silo affords the means of saving the corn crop with a minimum waste, but as well because the addition of a succulent feed to the ration insures added thrift of the live stock to which it is fed, provided it is judiciously compounded with other feeds to make a wholesome and well balanced ration.

A Silo will Save the Late Corn.

But, aside from this excellent reason for adding a silo to the equipment of the farm, there are on very many farms special reasons for such a course this present season. Owing to the backward spring and the excessively wet weather which has prevailed up to the present time, the Michigan corn crop has not attained anywhere near its usual stage of development for this season of the year, and unless exceptional conditions prevail during the balance of the season, very much of it will be cut by frost before it matures. In view of this impending danger, the erection of a silo will give the farmer with a backward corn crop an added feeling of security and a probable source of profitable saving out of all proportion to the amount of the investment required.

Economical Storage.

Another argument for the erection of a silo upon many farms is the fact that it affords more economical storage space than can be secured by a similar investment in other farm buildings. The removal of the corn crop from the field when it is ready to cut for silage facilitates the use of the land for other more profitable and satisfactory uses than the curing of the crop in the shock or husking out the corn in the field during the disagreeable fall weather. The ground may be utilized for fall sown grain, or better yet, a cover crop can be sown in the corn which will be available for

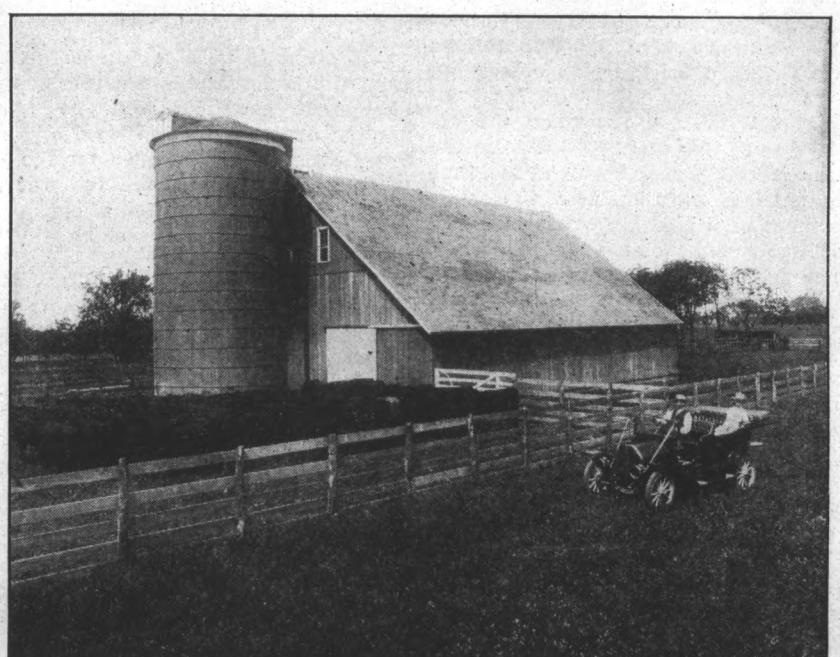


forage or to be plowed down as green manure the following season, a practice which will be much more general than is the case where the corn is handled in the ordinary way in the field. Too much emphasis can hardly be placed upon the importance of such utilization of the corn field, since it is one of the best means at hand for conserving and improving the fertility of worn soils which have been depleted of their humus content by unwise methods of management during past years.

A Summer Feed.

Another reason for the building and filling of silos has received very general demonstration within quite recent years. Dairymen have found that their herds produced better and that they have been able to increase their produce by increasing the number of cows kept through the use of silage as a summer feed. With the increase in land values which has been quite marked in Michigan during recent

(Continued on page 83).



Silos for Both Winter and Summer Feeding Found on Many Dairy Farms.

Commercial Cattle and Sheep Feeders Recognize Value of Silage as a Feed.

The Michigan Farmer

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DETROIT JULY 31, 1915.

CURRENT COMMENT.

Among the special topics announced for discussion in the columns of the Michigan Farmer during the current year, was "The Farmer's Banking Problem." Inasmuch as this is a very broad topic upon which there is bound to be a considerable diversity of opinion, it has been thought best to open the subject by an editorial comment and request general contributions from progressive farmers who are members of the Michigan Farmer family.

There are many phases of this question which could be discussed at some length with profit to the rank and file of Michigan Farmer readers. But if this discussion shall awaken in the rank and file of our readers an interest in their own personal banking problem which will lead to its careful consideration from a business point of view, its object will have been accomplished, even though it does not contribute to the solution of the large and general problem which will immediately come to the mind of the average reader as a result of contemplating this title.

The first phase of this problem which should properly claim the attention of every farmer is the maintenance of a small commercial banking account with his local bank to be checked against in the transaction of his daily business. The advantages of this plan are recognized by every business man, and are so obvious as to make superfluous any extended argument in its support. The farmer who abandons the practice of carrying considerable sums of money about with him and settling his transactions in cash and tries the plan of settling them instead by checks on his local bank, will quickly recognize the advantages of this plan. Aside from the element of safety which is thus brought into one's business, the establishment of a banking connection will be highly beneficial in other ways. Once he becomes a patron of his bank, the banker will familiarize himself with a farmer's business to an extent which will make him a valuable reference as to his credit, and if he is satisfied that the farm business is being conducted along safe lines, will be glad to supply his patron with capital to meet temporary emergencies at convenient seasons.

Savings accounts may also be advantageous in many cases while funds are accumulating for the making of larger investments or in sufficient amount so they can be placed advantageously at a better rate of interest on gilt-edged securities. This, how-

ever, is not so important as is the opening of a commercial account, although the maintenance of a savings account is an excellent business training for the farm boy or girl, and from this standpoint is to be strongly recommended.

Once the habit of doing business through the bank is established, the plan of financing the business transactions of the farm in advance may wisely be considered a factor in the farmer's banking problem. It is a recognized disadvantage both to the purchaser and the merchant who sells him goods to conduct daily transactions on a credit basis. The judicious buyer who always pays his bills in cash or at maturity can ever buy to better advantage, either in his local store or in the broader open market, than can the man who is always behind in the payment of his bills, and who depends to this extent upon the local tradesman to finance his business and solve what is properly his own banking problem. It would be far better to make small commercial loans at the local bank and conduct the small business transactions on a cash basis than to be always in debt to local tradesmen for goods which have been consumed. Nothing is worse for the general credit of any man than to overwork that credit in this manner. It is an accommodation for which one must, in the end, pay in some way, and it is far better to pay in advance in the form of interest on needed funds than in any other way.

Much more might be said with regard to the early solution of the individual farmer's banking problem through existing channels which are everywhere available for his use. There has been a general and growing feeling for some years, however, that adequate banking facilities do not exist for the proper accommodation of the farmers of this country who are entitled to credit on a basis commensurate with the safety of the security which they are able to offer.

Michigan Farmer readers are familiar with the investigations which have been conducted into co-operative banking, so-called, in Europe and other countries which has aided the farmers of those countries to pool their credit in the financing of their business on advantageous terms. While much progress has been made in the way of a far better general understanding of the situation which exists in many foreign countries with regard to the farmer's banking problem, the unfortunate condition of war in Europe is likely to delay the working out of feasible schemes along this line in our own country, on any basis which will give the farmers of the country early opportunity to use their combined credit in the securing of needed funds at interest rates which are comparable to those which have prevailed in European countries where this plan is followed. This at least would seem to be a logical deduction from the fact that the finances of the belligerent countries will be very greatly depleted by the war, and so many avenues will be open for the investment of capital, once the war is ended, that the realization of cheap interest rates on farm securities will be thereby delayed.

However, there is no question but that far better conditions could be brought about in the financing of farm projects if some universal plan is worked out in this country whereby farm securities may be placed upon the general rather than the local market, to which they are largely confined at the present time. The discussion of this phase of the farmer's banking problem should, however, follow rather than precede the discussion of the more personal and general problem of the commercial banking account.

In this connection may we not hope that there may be this present season

a very large increase in the number of farmers who get into the class of good business men by the establishment of a commercial banking connection for the transaction of the routine business of the farm, and as a means of providing funds for temporary needs in cases where such added capital may be made to earn large dividends, through the supplying of needed material or equipment for carrying on the farm business to the greatest economic advantage. In the very nature of the case the farmer's banking problem is an economic problem, and the universal practice of good business men in other vocations points to the first step in its correct solution.

STATE FAIRS.

Forest City, Cleveland, Ohio, Aug. 19-26.
Illinois State, Springfield, Ill., Sept. 17-25.
Indiana State, Indianapolis, Ind., Sept. 6-10.
Iowa State, Des Moines, Iowa, Aug. 25-Sept. 3.
New York State, Syracuse, N. Y., Sept. 13-18.
Ohio State, Columbus, O., Aug. 30-Sept. 3.
Michigan State, Detroit, Mich., Sept. 6-15.
Minnesota State, Hamline, Minn., Sept. 4-11.
Wisconsin State, Milwaukee, Wis., Sept. 13-17.

MICHIGAN FAIRS.

Alger Co., Munising, Sept. 15-17.
Allegan County Agricultural Society, Allegan, Sept. 28 to Oct. 1.
Arenac County Agricultural Society, Standish, Sept. 15-17.
Armada Agricultural Society, Armada, Oct. 6-8.
Calhoun County Fair, Marshall, Aug. 30 to Sept. 3.
Caro Fair, Caro, Aug. 23-27.
Charlevoix County Fair, East Jordan, Sept. 7-10.
Cheboygan County Fair, Wolverine, Oct. 5-7.
Chippewa County Agricultural Society, Sault Ste. Marie, Sept. 20-22.
Clare County Agricultural Society, Harrison, Sept. 14-17.
Clinton County Fair, St. Johns, Sept. 28 to Oct. 1.
Copper Country Fair, Houghton, Sept. 28 to Oct. 2.
Croswell Fair, Croswell, Sept. 22-25.
Deckerville Fair, Deckerville, Sept. 7-10.
Eaton County Fair, Charlotte, Sept. 28 to Oct. 1.
Emmet County Fair, Petoskey, Sept. 14-17.
Flint River Valley Fair, Burt, Sept. 28-30.
Fowlerville Agricultural Society, Fowlerville, Oct. 5-8.
Grand Traverse Region Fair Association, Traverse City, Sept. 20-24.
Grange Fair of St. Joseph County, Centreville, Sept. 28 to Oct. 1.
Grangers, Gleaners and Farmers' Fair, Big Rapids, Sept. 28-30.
Gratiot County Agricultural Society, Ithaca, Aug. 31 to Sept. 3.
Greenville Fair, Greenville, Sept. 7-10.
Hillsdale County Agricultural Society, Hillsdale, Sept. 27 to Oct. 2.
Huron County Fair, Bad Axe, Aug. 31 to Sept. 3.
Imlay City Fair, Imlay City, Sept. 28 to Oct. 1.
Jackson County Fair, Jackson, Sept. 13-18.
Lenawee County Fair, Adrian, Sept. 20-24.
Livingston County Fair Association, Howell, Sept. 21-24.
Luce County, Newberry, Sept. 23-25.
Manistee County Agricultural Society, Onkama, Sept. 21-24.
Marquette County Fair, Marquette, Sept. 7-11.
Menominee County Fair, Menominee, Sept. 28 to Oct. 1.
Michigan State Fair, Detroit, Sept. 6-15.
North Branch Fair, North Branch, Sept. 22-24.
Northern District Fair, Cadillac, Sept. 14-17.
Oceana County Agricultural Society, Hart, Sept. 21-25.
Ogemaw County Fair Association, West Branch, Sept. 5-7.
Otsego County Fair, Gaylord, Sept. 28-30.
Sanilac County Agricultural Society, Sandusky, Sept. 28 to Oct. 1.
Schoolcraft County Agricultural Society, Manistique, Sept. 28 to Oct. 1.
Shiawassee County Fair, Owosso, Sept. 7-10.
South Ottawa and West Allegan Fair, Holland, Sept. 14-17.
Three Rivers Elks' Fair, Three Rivers, Sept. 7-10.
Tuscola, Huron & Sanilac District Fair, Cass City, Aug. 17-20.

Van Buren County Agricultural and Horticultural Society, Hartford, Sept. 28 to Oct. 1.

West Michigan Fair, Grand Rapids, Sept. 21-24.

HAPPENINGS OF THE WEEK.

Foreign.

The European War.—The German Austro forces are making slow gains in their campaign against a Warsaw. While Warsaw is expected to fall the Germans have considerable stiff work before them before their object can be attained. The northern army has crossed the Narew river and is advancing toward the Bug river. The other armies in the pincers-like formation have made practically no gains during the week. After a period of inactivity the German submarines have resumed activities again, and on July 25 sunk four British trawlers and one British and one French steamship. In the western theater nothing of importance has developed, slight gains of no consequence having been made by both sides.

The British admiralty announces the appointment of an invention board established to encourage scientific men to assist in planning war devices to help in the present struggle. Lord Fisher, former sea lord of the admiralty, has been named chairman of the board.

National.

The excursion steamship Eastland, which was chartered by the Western Electric Company for a special excursion to Michigan City, Ind., listed toward the river while at her dock in Chicago, broke from her moorings, and capsized Saturday morning, July 24. She was about to start out with her limit capacity of 2,500 people when the accident happened. About 1,000 of the excursionists escaped, making the total of drowned about 1,500. Having the boat lightly ballasted in order that she might clear the tops of the tunnels crossing the Chicago river and with most of the crowd congregated on the farther side of the boat is supposed to be the cause of the boat tipping. The heavy death toll makes this the most serious boat accident on record.

President Wilson sent his final note of warning to Germany. The note was very firm and stated that repetition of the acts of the past in submarine warfare which affect American citizens would be considered deliberately unfriendly. The note was uncompromising in tone and indicated that this country could not accept excuses or pleas that other belligerent nations were violating our rights. The note does not require an answer and probably nothing of importance will result if Germany uses the precautions she has since the sinking of the Lusitania.

Charles Becker, who was condemned to die Wednesday, July 28, was given a bare chance for life by the court issuing an order upon the district attorney to have him show reason why a new trial should not be granted. The order is the result of new evidence being brought to light which implicates among several others, the late "Big Tim" Sullivan.

A clairvoyant trust in Chicago has been disclosed by the police there in which several police officers are involved on account of accepting money for giving the clairvoyants police protection. One of the chiefs of the "trust," James Ryan, confessed to getting \$10,000 a month from his dupes, who were mainly Chicago women.

Ernest Empey, a wealthy rancher of Idaho, who was kidnapped by a lone bandit and held for a \$6,000 ransom, escaped while his captor was asleep. The bandit was captured by the cowboys shortly after. He was a man who had formerly worked for Empey on his ranch.

The primary school apportionment of this state amounts to \$6,500,000 and the number of school children included in the apportionment is 820,137, the per capita for each child being \$7.85. Wayne county gets the largest allowance, \$1,250,858, while Oscoda gets the smallest, \$4,450.

The Panama Canal was used for battleships for the first time last Friday, when the naval academy practice squadron consisting of the Missouri, Ohio and Wisconsin passed through.

The union tailors of New York city numbering 21,000 have gone on strike. It is expected that a settlement will be agreed upon some time early this week.

Figures from the Department of Commerce show that the extent of sales of American agricultural implements abroad has been greatly restricted by the war. During the fiscal year ending June 30, 1915, the aggregate of sales dropped to \$10,000,000 from a ten-year average of \$29,000,000.

Federal statistics show that the value of exports and imports of farm products during the year closing June 30 aggregates \$5,000,000,000.

Cropping Versus Live Stock Farming

AGRICULTURISTS and political economists, have, for ages, been wrestling with the serious problems incident to garnering from the soil the necessities for the sustenance of the increasing human population. The multitudes pay but little, if any, attention to such weighty matters; they eat, drink and pass their time in a manner that suits their natural inclinations, leaving the burdens of the plans for the good of the whole to a few. A generation ago it was calculated that there was, on an average, one carefully thinking and planning man to a thousand, while the rest are but listeners and followers as they interpret the evidence adduced by the reasoners and voluntary teachers. The masses of mankind have won the declaration that they are but imitators, following the lead of the investigators.

The matter of the different kinds of farming has arrested the attention of the thinkers and experimenters. The conclusions reached by the advocates of certain lines or methods of farming have too often been reached by rules of reasoning that were in harmony with their natural constitution and selfish desires.

Soil Fertility.

In the primitive days the fertility of the soil was not given much consideration. The matter of plant or crop growth was looked upon as a "natural process," and the matter of exhausting soil fertility did not seem to enter the minds of the crop raisers. But after damaging the lands by the one-crop method until the returns did not repay the efforts bestowed, the deluded crop raisers migrated to places where they could again reap abundant crops from virgin soils.

The thinking ones have endeavored to devise means by which they could stay, for a time at least, the process of "soil exhaustion." The plan of letting the land rest, such as was adopted by the ancient Jews, has been tried again and again with some good results. But in such cases there was no plant food added to the soil except the small amount of nitrogen taken from the air. After a year's rest the process of cropping began again, which was necessarily followed by a farther shrinking in productiveness. If such a course is pursued for a considerable length of time, soil injury and its abandonment must necessarily follow. The history of Aryan races, those that plow, as the name signifies, proves the assertion.

Green Manuring.

Another class of men who have seemed to get a glimpse of the processes by which soils are made, and fertility added, have tried to stay the process of "soil exhaustion" by plowing under crops to add to productiveness of their cropping damaged fields. Some of the crops plowed under have benefited but little while others have helped considerably, for several good reasons. If the crop used as green manure happened to be one of the legumes, the nitrogen gathering bacteria that could live on the sweet substance that exudes from the roots, they would work faithfully in gathering the nitrogen from the air, and it would be left in the soil until by natural processes would be wasted to a considerable extent, and what remained would be available for subsequent crops.

There are several things to be considered in regard to the "green manuring" method of rejuvenating soils. With the exception of the nitrogen there is no plant food added except what was already in the ground—the surface soil and subsoil. The fermentation and decay of the crop plowed under returns the vegetable matter taken from the soil, and by that process of fermentation plant foods already in the soil are released, and the

increased yield of the subsequent crops deceives the tiller of the soil into thinking that the land had been enriched, when in fact, it had not; the supply previously in the soil was being exhausted. The time was nearer at hand when the same processes would not yield increased returns.

Another weakness of the green manuring plan is the fact that the rich portions of the field have a larger amount of vegetable matter returned to them and the poorer places are poorly supplied. Nature does not work by straight lines and true circles in all things, neither does her hand evenly distribute her most beneficial benedictions. Fertility is generously bestowed in some places, and thinly distributed in others. The fertile places are made more fertile, while the poorer spots are made poorer, because the green crops which are grown upon them are not sufficient to build up the vegetable matter in the soil, and subsequently make humus enough to make them satisfactorily productive.

There is another class of land croppers who are very frequently misled. They are the ones that crop the land year after year until the diminishing crops discourage them and they begin to cast about for a remedy that will restore the land to its former condition of fertility. Some nimble tongued commercial fertilizer agent may tell them that his particular brand of plant food mixtures will work wonders on wornout soils. The stuff is bought and applied. It works beneficially for a crop or two and then the soil balks and refuses to bring forth any more crops. The conclusion reached by the "poor farmer" is that he has been robbed and his soil has been destroyed by the commercial fertilizer. The fact may be that the humus in the soil has been exhausted and the commercial plant foods can not work without it.

Farm Stock Manure the Remedy.

If live stock is kept on the farm, a regular course of rotation of crops followed with clover as one, and the manure from the animals saved with jealous care, and intelligently and properly applied, the evils mentioned in the various cases can, and will be, averted. The manure from farm animals has been looked upon for ages past as the great fertility restorer and soil rejuvenator. We have the evidence of "Holy Writ" in the case of the barren fig tree when the man of Galilee advised that instead of cutting it down, said "dig about it and dung it."

At the present time we claim to know as much, if not more, about the beneficial effects produced by the application of farm-stock manures, than they did nineteen hundred years ago. Our experiences and observations have been vastly more extensive than that of the Orientals in New Testament times; and yet there are thousands of land croppers today who seem to have an inherent inclination which they do not control, to follow land cropping with but a little consideration of what the nearby results are sure to be.

We have found that by a proper course of crop rotation, including clover as one of the crops in the course, keeping stock on the farm to consume the forage and the grain, and making an application of manure once during each course, that the fertility of the soil can be maintained, and often increased. There are reasons why such results should be expected. The forage being consumed by the stock and the manure returned to the soil, there is a good supply of decaying vegetable matter kept in the soil, and much of both the non-metallic and mineral plant foods taken from the soil by the crops is returned and is utilized again and again.

Another reason for the benefits derived from the use of live stock manure is the fact that some of the plant

roots, or the roots of the crops raised leave in the soil substances which are poison to the same crop if it succeeds itself, and sometimes to other crops, is neutralized by the decaying processes of the manure in the soil, and the soil becomes free from those substances detrimental to plant growth, and crop production goes on as before. There is still another reason which is often overlooked, the urine of the animals contains the wastes of the body, which when mingled with the soil is plant food immediately available for the growing crops.

When the manure from the animals is returned and applied to the fields, one's common sense guides them to apply the manure more freely to the poor spots thereby evening up the fertility in all parts of the field and that plan increases the possibilities of production.

If one sees evidences of a lack of some of the essential plant foods, and considers it advisable to buy them in the form of commercial fertilizers, much better results will be obtained by applying them in connection with the live stock manures, than is possible if applied without them.

All of the clovers improve the physical condition of the soil, and also add fertility in several ways. They are among the best forage crops raised. By raising clovers on the farm and feeding to live stock, better animals can be raised than without them, and if the manures, both solids and liquids, are saved and returned to the fields, there will be an abundance of decaying vegetable matter in the soil, the plant foods will be present in liberal quantities, and soil fertility can be constantly maintained. Instead of the population being obliged to shift to secure more fertile fields, the lands can be held for generation after generation, and each and every one will be able to bequeath to the successors lands which need only to be tickled by the plow and crops planted in order that it may laugh with a golden harvest, and each generation can revel in wealth and luxury.

Wayne Co.

N. A. CLAPP.

Oakland Co.

A. R. F.

SILOS AND SILAGE.

(Continued from first page).

years, it has been found profitable to devote more land to crops and less to pasture, and very many dairymen now make a regular practice of limiting the amount of land devoted to pasture to an area which will furnish sufficient grass for their cattle during the period of flush pasture, after which silage is used as a succulent summer feed until the fall rains again revive the grass. This advantage will not appeal to the average farmer as forcibly in a year like the present as it would in a season when a severe mid-summer drouth brings him face to face with the problem of maintaining his live stock through the season of short pastures, but in the operation of nature's law of compensation one extreme is likely to follow another, and no one can insure that next season's rainfall may not be as scanty as this season's has been plentiful up to the present time, hence the wisdom of being prepared for such an emergency if live stock production is made a specialty on the farm.

Types Developed.

The development in silos during recent years has been fully as marked as has the development in the use of silage as a feed. Manufactured silos of many types are now available to suit the needs and tastes of every user, including stave silos of the more durable woods, glazed hollow tile silos of the so-called imperishable type, cement stave silos and all metal silos of non-corrosive material. There are also available specially constructed steel superstructures which are plastered

inside and out with cement, machines for the making of hollow blocks for silo construction, forms of various kinds adapted to the building of monolithic concrete silos, etc., affording the widest opportunity for the selection of a type of silo or material for same which may seem best adapted to the needs and resources of the prospective builder. Any and all of these are proving satisfactory in use when properly erected, the main feature in the serviceability of a silo being its ability to exclude the air, which in a large measure depends upon the character of workmanship displayed in its erection.

Location.

The location of the silo should be carefully considered with a view to convenience and economy of labor in feeding silage. The time and manner of filling is also important. If conditions permit, it is better to let the corn crop reach nearly, if not quite, the stage of maturity which is desirable for curing it in the shocks, since at this stage of development it contains the maximum amount of nutrients and will afford the greatest amount of feed. Likewise, it will make a more palatable and wholesome feed than if cut too green, since very green corn produces acid silage which is a less palatable and wholesome feed for live stock.

Proper filling is just as important, since if the silage is poorly or unevenly packed, it will keep indifferently, and moldy or spoiled silage is an unwholesome feed for any stock and may be even dangerous, particularly as a feed for horses. Ordinary care will, however, obviate the difficulty from this source, and ordinary judgment in compounding a feeding ration in which silage is made a prominent factor will convince even the most skeptical of its peculiar value as a winter feed.

In view of the peculiar seasonal conditions which exist this year, the increase in the number of silos erected upon Michigan farms should be far greater than it has been even during years of the recent past which have seen such a remarkable development along this line.

LILLIE FARMSTEAD NOTES.

I am more than obliged to Mr. W. C. Wilcox for his report on results in harrowing his alfalfa with a spring-tooth harrow. It is fortunate that he stopped harrowing so he could tell just the effect. This result makes a man cautious about advising in a general way. A given practice does not always work out the same under different conditions. Mr. Angevine advised me to disk my alfalfa, to have the disk good and sharp, and to set it to dig, put on my best team and best man and then to go away until the job was done. But I did not have the courage to do this. I had two narrow strips disked thoroughly and you can see these strips today in the field, not because the alfalfa is more vigorous there but because there is scarcely any alfalfa at all. I ruined the alfalfa by disking, but where I harrowed with a spring-tooth harrow it seemed to benefit the alfalfa, at least it did not seem to injure it and it did kill lots of the June grass that was working into the field. Now Mr. Wilcox says harrowing injured his alfalfa. This proves that a man should be careful what he advises. He had better say I did so and so and got such and such results. Then the other party should apply it to his own conditions as circumstances will permit.

I am inclined to think now that Mr. Joseph Wing is right when he says that if we will give the alfalfa all the phosphorus it needs it will fight its own battle with June grass and weeds and come out victorious. This is cheaper than harrowing or disking.

COLON C. LILLIE.



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In Business for Health

Occasionally one hears the expression, "I am not in business for my health." It is used by public speakers and lecturers sometimes at farmers' meetings. The intended meaning is that he is doing business, farming, dairying, stock raising, gardening, or whatever the kind, for no other purpose except business—commercialism. Whoever makes that statement is a poor leader; not a safe man to tie to. He may get business as the result of his labor, but he gets nothing else. He may have success in a financial way, but the whole bent and energy is upon that kind of success—a piece of work for the dollar only. The cow is kept merely for the dollar. The wheat is raised solely for the dollar. Can we look on the wheat, or the corn, or the meadow, or the herd of cows, or the flock of chickens and see nothing in them but the dollar? If you can see nothing more, then, do you ask, why the hired man is continually listening for the dinner bell? Can you expect him to take deeper interest in his labor than the dollar it brings? I am not saying that he does not, but, if he does, he is living on a higher plane of thought than the man who says I am not in business for my health—purely for business.

I am not preaching about securing health from your business. That is a separate matter entirely, but it is a figurative way of putting the idea that you do not intend to do anything except for the dollar it brings.

The fact is, the person who works on that theory will soon have neither health nor dollars, for his dollars will have to go to build up his health.

Business done purely for business soon becomes monotonous, stupid, irksome, and the man himself grows into habits of fretfulness, irritableness, faultfinding, unreasonableness; and

his business, instead of growing as he would have it, overpowers him, for the reason that he does not build himself with his business, therefore the business gets ahead of him, and he is incapable of caring for it.

Let there be a thrill, an inspiration, a real enjoyment in the business; let there be such a fascination in the labor of caring for the crops that the day's passing is all too rapid, and the evening finds the laborer in as strong vim and vigor as the morning; let there be such a charm in viewing those cows, or those pigs, or those sheep, or other stock that the dollar mark entirely disappears from view, and there remains nothing but the pleasure of having builded and wrought, the financial gains will take care of themselves, and the man himself will not deteriorate or grow feeble. The boys and girls of the farm will then remain at home instead of seeking labor elsewhere.

It may be possible that a person really means it when he says, "I am not in business for my health." But if he does, and he loves his work as he ought to love it, and as his accomplishments show that he loves it, his statement is not what he believes, and he misrepresents his work and his life.

Work for the satisfaction of the work; tend the corn for the satisfaction of the tending; feed the cows for the satisfaction of the feeding, and the enjoyment and pleasure on the farm will be more than can be taken care of. The crops will grow in spite of wind, or drought, or frost, and the city's lure for maid and youth will be clipped in the wing.

In business for my health? Yes; for my health is dependent on the attitude I hold towards my business.

Ionia Co. RAY SESSIONS.

CLIPPING THE STUBBLE FIELDS.

We are well pleased with the excellent crop of clean hay, both clover and timothy, we have just gathered. While in hay making, the time of cutting and manner of curing are very important points to consider, yet, if there are many weeds in the crop, it will not be of the best quality as a feed. We have observed that some of our neighbors failed to take the proper precaution in this respect, having failed or neglected to run the mowing machine over their stubble fields last year after harvest, and the result was that they obtained weedy hay. The most frequent weed growing in the wheat stubble in this section is ragweed. This weed when gathered with the hay, gives off a biting dust. It is very light and adhesive to the mucous membranes and throat, and even the lungs of stock, when taken through the nostrils. When there is much ragweed in the hay, it is totally unfit to be fed to horses.

Quite frequently other weeds are found in the hay, such as daisies, plantain, mullein and burdock. This waste material occupies storage room, and takes time to handle without returning any profit. It is the natural result in most cases, of shiftless farming.

After the harvest we mow the stubble fields intended for hay next year. The best time for this is usually about the latter part of August, or just before the weeds ripen their seed. We remove the swath board of the mower, and run the cutter-bar slightly higher than when cutting grass. The growth of weeds and young clover and timothy is cut off and allowed to lie on the ground, serving as a mulch for the young grass, unless the growth is very heavy. In such a case it is best to rake it off, as it would otherwise be raked up with the hay next year. Our first hay crop is always as clean, and quite often better than succeeding ones.

We have observed that the mowing has opposite effects upon the grass and weeds. The tendency seems to be to induce a more compact and thicker growth of grass, while the weeds are destroyed. This mowing is not so necessary if the fields are to be used for pasture, as the stock is likely to graze too close, especially in a dry season. This will leave the young plants unprotected during the winter, and much of the young clover will be heaved out. In combating weeds in pasture fields, it has been our practice to go over them once or twice in a season with a hand hoe and scythe, or both. There is no let-up in weed fighting, as "the weeds, like the poor, we always have with us."

Indiana.

A. B.

FARM NOTES.

Seeding Alfalfa.

Kindly advise as to the best time and method of sowing alfalfa on our soil here—a sandy loam.

Montcalm Co.

A. J. L.

While there is perhaps no best time to seed alfalfa on any soil where it has not been previously grown, the writer is fully satisfied that there is no better time than the present, provided proper preparation can be given the soil, since this great forage crop is too valuable an addition to the products of any farm to delay starting it longer than is necessary.

Alfalfa can be successfully sown without a nurse crop in midsummer any time up to August 1, when proper soil conditions are provided. This means a well prepared seed bed and soil which is reasonably well supplied with humus and contains a reasonable amount of available fertility. If there has been any difficulty in getting seedling of clover on this land, lime should be applied before any attempt is made to sow alfalfa. If the lime is applied a year or so previous to sowing, a good application of, say two tons per

acre of ground limestone will be satisfactory.

If, however, the seed is to be sown soon after the liming is done, the addition of 500 pounds of hydrated lime will be profitable, as it will act much more quickly than the ground limestone, and be a material aid in getting a good crop of alfalfa the succeeding year.

Given the conditions above suggested and inoculating the soil or seed with the bacteria peculiar to the plant, we have never failed to get a successful seeding of alfalfa on similar land. Under favorable conditions it can be sown in standing corn at the last cultivation, or in fact in any way which will give good results with clover.

Sowing Sweet Clover.

Do you think it is too late to sow sweet clover?

Mecosta Co.

R. B.

Sweet clover should become sufficiently well established to withstand the winter if sown not later than August 1, which seems to be about the latest date on which uniformly successful results are secured in sowing any of the clovers in this latitude. In favorable seasons later seeding might be entirely successful, but results would not be as dependable.

CEMENT FLOOR FOR GRANARY.

Is a cement floor alright to put in a granary, or will it be too damp? I am going to make a fill of 15 inches with small stone and no dirt and put the cement on the stone.

Tuscola Co.

M. J. K.

The way you intend to construct it, the cement floor will be all right. If, however, it was laid on the ground and the earth was inclined to hold moisture like clay, the cement floor would be apt to be damp and would mould the wheat, but with your fill of cobblestones, all capilarity with the earth will be broken and there will be no danger.

If one wishes a cement floor and there is no necessity for a fill like this, it is advisable to lay a thin coat of cement and then a layer of sand, say two inches and then put the cement floor on this. This would prevent moisture from coming up from below and make the floor safe for the storage of grain.

COLON C. LILLIE.

COWPEA HAY FOR HORSES.

Can cowpea hay be successfully fed to horses? What is its value compared to clover hay? At what stage of development should the blossoms or pods be at cutting time? Also what is the value of rye and vetch hay compared to clover?

Van Buren Co.

SUBSCRIBER.

Cowpeas are a leguminous plant, rich in protein, and make a hay analyzing about like clover or alfalfa. After stock get once accustomed to this hay they seem to relish it as well as any hay. It is good feed for horses, a much better ration for work horses than timothy hay. Hay made from any legume is not as good for a driving horse. In the first place it is apt to be a little loosening, and again it is somewhat bulky for a driver. Driving horses will eat too much if they have free access to it. But for the average farm horse there is no better food. A very little corn to balance the food constituents makes a model ration and as cheap a one as can be found.

It should be cut when the pods are nicely formed, and before the peas will harden when curing.

Vetch is also a plant rich in protein, and makes a good hay if cut at the proper time and properly cured. In food value it differs very little from the other legumes.

COLON C. LILLIE.

"Try-a-bag" of fertilizer. Our brands are soluble and active, and not only increase yield, but improve quality and hasten maturity. Agents wanted. Address American Agricultural Chemical Co., Cleveland, Cincinnati, Detroit or Baltimore.—Adv.

Dairy.

CONDUCTED BY COLON C. LILLIE.

LILLIE FARMSTEAD DAIRY NOTES.

I am very much interested in Mr. Edward Hutchins' article, entitled, "The Basis of Milk Values." As Mr. Hutchins well says, it will be a splendid thing if we only had a simple and convenient test for the casin in milk as well as the butter-fat. So it would be if we had a test for any other of the milk solids. But we haven't, and we must be thankful that we have this simple, convenient and inexpensive test for fat. The dairy world owes a great deal to Dr. Babcock. An ordinary man would have had his discovery patented. It would have made Dr. Babcock a fortune. But he chose to give his invention to mankind, for the benefit of the farmer.

However, we are not so bad off without a test for casein or other milk solids, as Mr. Hutchins seems to think. In fact, we can get along very well with what we have. It is true that fat is the chief factor in butter only, but it is also true that casein and other milk solids quite uniformly exist in a direct proportion with the fat in milk. That is, milk rich in fat is also rich in casein, and milk low in fat is also low in casein. So that the fat content is a correct gauge of the value of milk as a food. People used to think that while three per cent milk would not make as much butter as five per cent, yet it would make as much or more cheese. But this is not so; 100 pounds of five per cent milk will make more cheese than 100 pounds of three per cent milk. In fact, practically as much more cheese as the fat in one milk exceeds the fat in the others. This has been proven by taking 100 pounds of milk containing different amounts of fat and making it into separate cheese and the cheese produced varied in size in almost direct proportion to the fat in the original milk.

Practically the only difference between three and five per cent milk is that the three per cent milk contains more water than the five per cent milk. Take the five per cent milk, add water until it tests only three per cent butter-fat and then you have milk of the same quality.

A cow that gives milk rich in butter-fat gives milk also rich in other milk solids. In other words, the rich milk is in a sort of condensed form.

Therefore, milk rich in butter-fat is of greater food value than milk poor in fat. It is worth more for any food purpose, butter, cheese, market milk or for condensing purposes. This being true we can get along well with the Babcock test. It tells us all about milk as a food, and gives us its true value.

DAIRY SUGGESTIONS.

We like to have heifers drop their first calves when about two years old. Of course, they may make larger cows if not bred so young, but we do not consider this a serious objection. If an animal is wanted for beef, size would be considered, but for milk we do not need a "big" cow. Size alone does not govern production of milk, either in quantity or quality, and we have to consider the cost of feeding the extra weight. It is what we get from the cow daily, not what we get for her when we get done milking her, that makes the profit. We believe that a small or medium size cow with the right kind of producing machinery is capable of producing just as much profit out of a given amount of feed, as a big cow.

We are coming more and more to

the belief that the calf should not be allowed to suck, summer or winter, and never with a heifer with her first and second calves. We place the calf where the cow can see and mother it, and do the milking by hand. A calf that has never been allowed to suck will learn to drink milk out of a pail much easier and quicker than one that has been allowed to suck for a few days, as is the common practice. It seems that the cow in some way associates milk-drawing with heirship, and if the calf does not suck, her affections seem to go to the milker, which is to his advantage, as there is then no holding up of the milk.

Another point of which we are getting more and more convinced as our experience in dairying increases is, that eight weeks' rest before calving is a very beneficial thing for nine cows out of ten. We have just had to send one of our best cows to the shambles because she was practically "worn out" on account of being such a persistent milker. It was simply impossible to get her dry when on pasture, and she kept on giving nearly two gallons of milk every day until she dropped her calf. One year we were determined to dry her off, and shut her up in the stable, giving her but little feed. She became so weak and kept on secreting milk that we were obliged to begin milking her again and turn her on pasture. When she dropped her calf, it was so weak that it could not stand for two days. We then bred her so as to freshen in April, and found that it was not so difficult to dry her in February and March, while she was being fed dry feed. But the heavy strain she sustained because she so often did not get her period of rest, shortened her life of usefulness as a milker. We have raised several heifers from this cow, and one of them already has shown the same persistence to milk as did her mother, which would indicate that such characteristics are transmitted through the dam.

Indiana.

D. LEATHERMAN.

MILKING THREE TIMES A DAY.

We notice that Mr. Lillie thinks that the practice of milking three times a day is impracticable, and that leads us to wonder how much value these yearly tests are that are con-

that I haven't seen referred to in any other agricultural paper.

Wayne Co.

C. S.

This would require a careful experiment, containing so much detail that I am not prepared to make it. It is a subject for an experiment station.

I have satisfied myself, however, that the practice is impracticable. It will not pay the average dairyman to do it, and while the breeder can make larger records, they are not reliable.

POTATOES IN RATION FOR COWS.

Please advise me as to the value of raw potatoes as a feed for cows as part of their ration for the production of milk.

A. J. L.

I think potatoes are fully as valuable as a succulent food in a ration for dairy cows as any of the roots, like mangels, turnips, etc. In food value as shown by their chemical analysis, they are fully equal to any of them, being much richer in starch, equal in protein and also nearly equal in fat. This being the case, it is largely a question of palatability and digestibility. Cows may not at first like potatoes as well as they do beets, but it is largely because they have not been educated to eat them. I like raw potatoes as well as turnips or bagas, and much better than beets, and all kinds of live stock will soon learn to like raw potatoes. When potatoes are very cheap, as they were in some localities this spring, it will pay to feed them to cows, but usually they are worth too much for human food to be used as live stock food. Beets or carrots, etc., are not usually figured as being worth more than four to five dollars per ton for stock food, according to this, potatoes must be as cheap as 15 cents to pay to feed them.

FARM CHEESE.

How can I make and cure farm cheese such as we buy at the grocery?

Eaton Co.

B. N.

By "farm cheese" I take it is meant what is commonly known as "cottage cheese." This product is made from skim-milk. The milk is allowed to sour and is then heated slowly to a temperature of 80 degrees. The curd or casein will then separate from the whey, or, in common parlance, the milk "wheys off." The whey is re-



Young Friendships of this sort will Tend Toward Better Dairymen and Better Dairy Cows.

duced on the basis of three and four times milking daily, and how much guide that is to a farmer as to the value of a cow.

It would be interesting if someone could work out the comparative value of twice a day milk as against three times and four times a day, so that the comparative performance of cows could be more readily ascertained. I think that you have struck on to a subject that is well worth considerable discussion, and it is something

moved with a skimmer, or porous dipper, and placed in a cheesecloth sack and the whey allowed to drain off as much as desired. Then the cheese is salted to suit the taste and worked with the hands into balls or placed in any kind of packages. It improves the quality of the cheese to mix some cream in with it before it is moulded into the desired shape.

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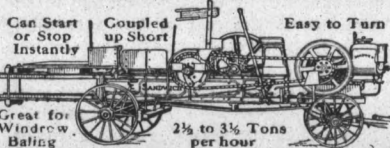
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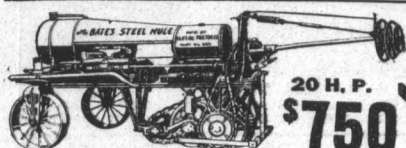
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Added 16 bu. of corn, 23 bu. of oats and one ton of hay per acre to my crop yields; and the continued use of Rock Phosphate at a cost of \$1.00 per acre per year has enabled me to produce 5 T. alfalfa, 20 T. silage, 115 bu. corn, 88½ bus. of oats, and 52 bu. of wheat per acre.

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THE CLOCHE CO., 127 Hudson St., New York.

Orchard Inspection

THE time for orchard inspection is near at hand. In districts where fruit is of any importance at all the three township inspectors will start on their campaign of marking trees, serving notices and making enemies. They will have all kinds of arguments with the fruit growers as to whether a certain tree has the yellows, whether the method of cutting blight is worth anything as a curative or preventative method, or on any number of other things which the grower thinks he knows more about than the inspector or the fruit authorities.

Inspector's Job Not Easy.

The inspector's job is not an easy one. For a small salary he either makes enemies of his neighbors or neglects doing his work of carrying out the requirements of the law in order to keep friendly with the people he comes in daily contact with. If he is an efficient inspector it depends upon which he values the most, the neighborhood's good will or the conscientious carrying out of the law, as to whether he makes a good inspector or not. Of course, there are many inspectors who are not efficient and therefore the fruit grower is just in such cases in doubting their judgment. But should this be the case, and in any case where the grower conscientiously doubts the decision of the inspector, the other two township inspectors can be called and then if their decision is not satisfactory the State Inspector of Orchards and Nurseries, or one of his deputies, can be called upon to give final judgment.

The law is not all it should be. It does not offer enough salary to attract efficient men and it also requires that the inspectors be freeholders in the township. The capable freeholders are usually fruit growers who cannot spare the time to do the work and therefore the board often selects men who have plenty of time and little ability. It is not intimated that all inspectors are inefficient. The fact is that a great many of them are very efficient and it is surprising that they can or will give their time for the small reward they get.

Stand Back of the Law.

Regardless of the fact that the law is not all it should be, it can be made quite efficient by public sentiment. Whether a law is a good one or a poor one it is an efficient one according to the amount of public backing it has. It is to the interest of all fruit growers to be back of this law. If the inspectors are poor, impress upon the township the necessity of appointing good ones, and when the inspectors are good stand back of them and encourage them. In fact, poor inspectors might even become very efficient if they were given some encouragement and backing.

In townships where there are no inspectors but where there ought to be, the farmers, whether they are fruit growers or not, should urge the board to appoint some. The large number of neglected orchards in farming districts indicate the necessity of some inspectors' work. From the advertising standpoint alone it would pay the township because there is no more noticeable blotch on a community or a farm than neglected orchards or a more prominent sign of aggressiveness and prosperity than well-kept orchards.

SHALL MICHIGAN CONTINUE TO GROW APPLES?

This is a question that is puzzling not a few farmers, or, semi-orchardists in Michigan at the present time. They are watching with alarming interest the advancing hosts of the San Jose scale and allied insect pests, together with the various fungus diseases that appear to be amalgamated in

to one huge organization, to throttle the weak, discourage the indifferent, move to greater effort the hopeful and fire the enthusiasm of those who can see in the future, the dawn of a new era in their business forecasts, and the larger success of the "survival of the fittest" in the warfare against the oncoming agents of orchard destruction.

Michigan Can Outdo Other Sections.

It may be a little optimistic to say that there is no reason why Michigan cannot march forward in the lines of progress to a stage of action whereby she can surpass the great reputation of the Hood River valley, in the production of, not only apples, but of all other fruits that our people already know so well how to produce. We have the climate, the soil, the transportation facilities and the most we do appear to lack, is the care in spraying, proper assorting and packing.

However, it is much easier, perhaps, for a small valley to become famous, than for a whole state like Michigan. But it certainly is within the range of possibility for the growers of Michigan to reach a much higher scale in their catalogue of opportunities, than exists in the present condition of things.

The Michigan Horticultural Society has, in years gone by, as well as the present, done a splendid educational work, by its widely distributed meetings and reports. Years ago it used to be one of my greatest pleasures to read in their reports of the achievements of such men as T. T. Lyon, C. W. Garfield, C. G. McClatchie and S. B. Peck. It is now a source of delight to me, when opportunity affords, to attend the sessions of the society and mingle with the horticultural brotherhood.

The Source of Horticultural Information.

The M. A. C. with its bulletins, institutes, etc., is doing a grand work in this direction, among the more enthusiastic class—those who will get out and avail themselves of the privileges here offered, but the great bulk of the producing people, the larger portion of which these agencies fail to reach, depend more largely, I find in my more or less extensive travels through the state, upon the Michigan Farmer, for their instruction and suggestions.

Conservation of the present fertility of the soil, together with added fertility at every turn, the elimination of the dependence upon buyers coming to your orchards to buy your crop or let it rot on the ground, grade and pack your apples in smaller packages and do it yourself, including shipping if need be, inaugurate a systematic warfare and inject a little more enthusiasm in your work against insect and fungus enemies, and victory is yours.

Isabella Co.

H. O. KELLY.

SUMMER MEETING OF FRUITMEN.

The Midsummer Meeting of the Michigan State Horticultural Society will be held Thursday, August 12, in conjunction with the South Haven and Casco Pomological Society, and the Ganges and Saugatuck Horticultural Society, at the farm of Mr. Amos Tucker, three miles west of Bravo on the Pere Marquette Railway. Mr. Tucker's farm is in the heart of the Michigan Original Fruit Belt, about midway between Fennville and South Haven. Mr. Tucker is one of the most advanced fruit growers in the state and his farm is an ideal place for this meeting.

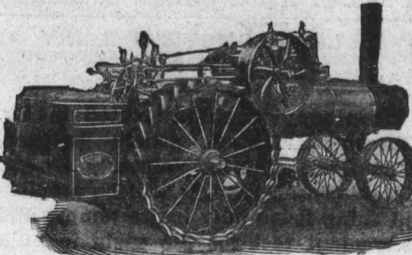
Automobiles will meet the trains at Bravo and convey members and their friends to the meeting. An auto trip will be made in the morning, followed by a big picnic dinner at Mr. Tucker's and an informal meeting in the afternoon.

Come and bring the ladies and families and enjoy a day's outing with your brother fruit growers.

For further information, address Robt. A. Smythe, Secretary, Benton Harbor, Mich.

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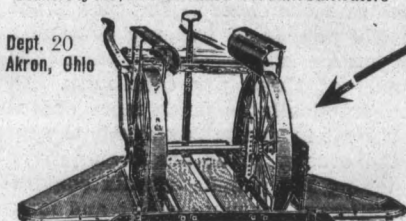
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Magazine Section

LITERATURE
POETRY
HISTORY and
INFORMATION

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

The FARM BOY
and GIRL
SCIENTIFIC and
MECHANICAL

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

SOME seeds make journeys with wings, and others travel from place to place by attaching themselves to the clothes of men or the hair of animals; still others make their journey in the stomachs of birds.

The seeds of the maple tree are particularly interesting. They are provided with wings, and when they become detached from the parent tree a gentle breeze will carry them a considerable distance from the branch to which they were attached. There are many forms and modifications of the winged seed, as the linden, the hornbeam, the elm, and the pine.

Some seeds are also provided with parachutes or umbrellas, not for protection from rain and storm, but for purposes of locomotion. The seeds of the thistle, the milkweed, and the dandelion—in fact, the seeds of all plants which have a cottony growth—are

How Little Seeds Travel

provided for these aerial journeys.

Besides these, some seeds are provided with hooked appendages by which they can attach themselves to the clothing of men or to the hair of animals, so that they become transported from place to place. Other seeds have hard seed coats, or shells, which are covered in many cases by edible fruit. The fruits are eaten by birds, but the seeds are not digested, and in this way become distributed from place to place. The rows of cedars which are characteristic of the landscape in many sections of the country, it will be noted are chiefly placed along the lines of fences or fence rows. The fruit of the cedar is an edible one, but the seed is not di-

gestible, and in this way the existence of these hedge rows of cedars is explained. Cherries, grapes, and other fruits are to a considerable extent disseminated in like manner.

The hard nuts of our nut-bearing trees are not used as food by birds or large animals, but are usually sought by squirrels and small rodents, which are in the habit of gathering and burying them in various places or storing them in large quantities for winter use. The result is that a considerable percentage of those which are buried in this manner are never rediscovered by those hiding them, and in time nature causes the hard shell to crack open, and the warmth and moisture of the soil brings the

germ contained in the kernel into active life and a tree soon springs into existence. However, the nuts buried by the squirrels did not germinate immediately after being buried, but waited until the warm weather of the spring came before they put forth their tender shoots. This is not because they willed it, but because the hard outer walls of the shell would not admit the air and water to the germ, so as to stimulate its growth.

It was necessary that the shell pass through the changes of winter and be broken by the action of the frosts before moisture could gain an entrance to cause the swelling of the germ. This peculiarity, when taken advantage of commercially, is called stratification. Seeds with hard shells, such as cherries, peaches, plums, and the like, have to be stratified—that is, they must be planted in the fall where

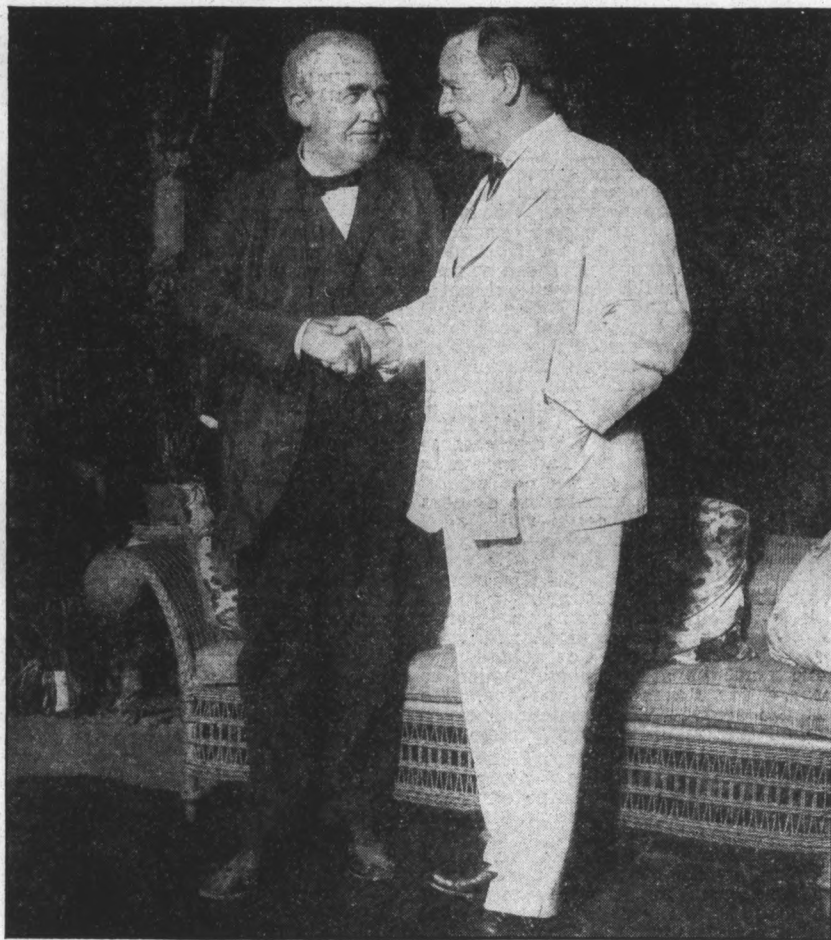
WORLD EVENTS IN PICTURES



Commander of Canadian Forces who are Fighting so Desperately.



Gen. Gonzales, the Leader who Recently Captured Mexico City.



Secretary of Navy Daniels and Thomas Edison Discuss the New Advisory Board which Mr. Edison has Consented to Head.



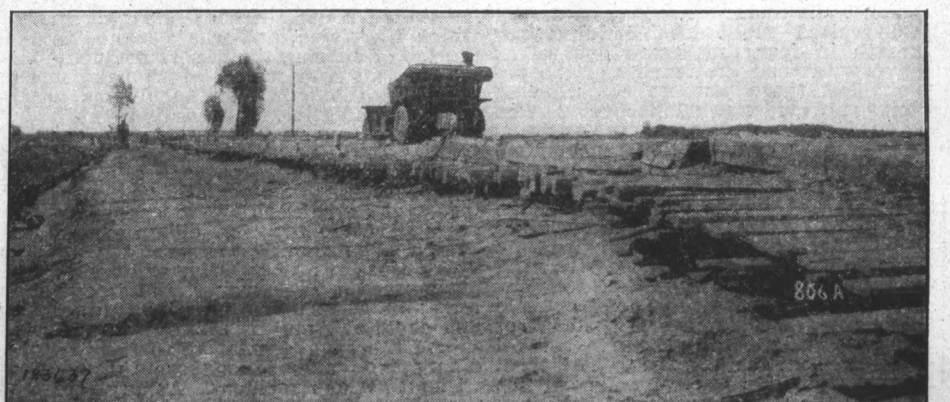
German Woman Pastor Popular in England Gets Naturalization Papers.



Prominent Society Women Packing Clothing for War Sufferers.



Horses are in Such Demand for War Purposes that Parisian Expressmen are Obligated to Use Oxen.



Germans are Forced to Build Roads for Transportation of Troops and Supplies as they Advance Across Poland.

the plants are to grow or they must be packed away in boxes of sand in a position where they will freeze and remain frozen during the winter, in order that they may germinate the following spring. If seeds of this character are stored and kept dry during the winter they will not germinate if planted in the spring. Seeds with thin seed coats, however, like peas, beans, etc., if treated in like manner, will be destroyed by the action of the cold, and no plants will result from planting them in the autumn. Such seeds must, from the nature of the case, be retained in a dry and comparatively warm place during the winter season.

CROWS LOST IN A FOG.

BY ORIN E. CROOKER.

John Cassin, an ornithologist of a generation ago, has recorded that in the spring of 1868 he witnessed an immense flock of crows "fog bound" in Independence square, Philadelphia.

Thousands upon thousands of these birds, evidently bewildered by the dense fog, had strangely taken refuge in this small park in the very heart of the city. They filled every available foothold upon the trees and swarmed over and covered the ground. Unlike most assemblages of these birds, they were singularly quiet, orderly and silent as though awed by the predicament in which they found themselves.

Mr. Cassin records that a few birds, evidently leaders, moved rapidly through the multitude as though giving signals. This was followed by the departure of a few scouts who apparently did not venture far away and who returned unsuccessful. The leaders then repeated their movements through the flock after which another and larger party of exploration was sent out. This returned after some time, evidently bearing encouraging reports, for very soon the immense congregation rose slowly and silently and flew away—preceded by their scouts.

THE RED MIST.

By RANDALL PARRISH.

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CHAPTER XIX.

The One Path of Escape.

I could see nothing, and was compelled to rely entirely upon the sense of touch. This, however, quickly convinced me that the opposite wall was solid, containing not even a flue hole. Then assuredly no furnace had ever been installed in the building, and either open fireplaces, or stoves, were used for heating purposes in those rooms above. Probably the former had been discarded and the latter substituted since the days of my boyhood, which would account for the darkness above. The oldtime openings had been closed, sealed up, and so the chances were that only the roof afforded opportunity for my escape. I felt grave doubt as to my ability to attain that elevation; it was not a pleasant prospect, but I had already gone too far to hesitate. This was my only chance, and I must either give it a trial or resign myself to the certain fate of the morrow.

Iron bars had been left on one side the chimney, forming an irregular ladder, whether for strengthening or some other purpose, I cannot say. My groping hands located these, and by their aid I began to climb slowly upward through the pitch darkness. The chimney walls were at the beginning so wide apart as to afford me no grip, but by the time the iron bands disappeared, which was just below the floor of the first story, the chimney had narrowed sufficiently to enable me to brace myself between its jagged sides. In this manner I not only managed to keep from falling, but even succeeded in advancing slowly, although the sharp edges of the stone lacerated hands and knees painfully. At the level of the first story I came upon a projection of rock, possibly six or eight inches wide, on which I found secure foothold, and was thus able to regain breath and strength for a renewal of the struggle. I was crouched opposite the oldtime fireplace, and the band, playing noisily, was within a very few feet of where I hid. However, not a gleam of light was visible, and it was some time before I located the opening which had been left for a stovepipe. Even then I could feel no pipe, but, as I extended my arm, a finger burst through the paper which had been pasted across the entrance, and a glow of radiance illumined the black walls about me.

I waited motionless, holding my breath in fear that some eye might have witnessed the tearing of the paper; but there was no cessation of noise, no evidence of discovery. The band ceased to play, and the murmur of voices in conversation reached me where I clung precariously to the ragged wall. It was a mere monotone, the mingled words indistinguishable, confused by feet moving across the floor. Then some voice announced the next dance, and the band began again.

Assailed by a temptation to view the scene, I found foothold a little higher up, and, clinging to the edge of the hole, brought my eyes to a level with the rent in the paper. The vista was not a wide one, and I dare not enlarge the space, yet I saw sufficient to yield me full knowledge of the party, and its occasion. The floor was crowded, the men almost without ex-

ception in Federal uniform. A few of these were dancing together, as though there was a scarcity of women partners, but the fairer sex were not altogether lacking, and I had little difficulty in distinguishing the officers' wives from the town belles by the cut and material of their gowns. The latter, however, predominated, proving either that the feminine inhabitants of Lewisburg were loyal in their sentiments, or that the Yankee invaders had made a complete capture of the town. Whichever theory was the true one, both sexes were enjoying themselves to the top of their bent, forgetful of everything except the pleasure of the moment.

The couples whirled past, circling the room. I could distinguish uniforms of every grade below that of colonel, and representatives of the three arms of the service. Occasionally a black coat appeared conspicuously amid the throng on the floor, but there were more of these visible along the side walls. It was evidently military night, and the ladies looked kindly on brass buttons and gold lace. The big room resounded to the tap of feet, and the ceaseless murmur of voices; laughter rang out, and over all the merry strain of music.

I watched the faces eagerly, but they were all strange. No doubt some of these young women I had known as girls, but they had grown out of my recollection. None among the officers present, so far as I could tell, had I ever come in contact with—ah! yes! there was Whitlock sitting disconsolately alone below the judge's bench. I clung to my perch determining to assure myself, but my eyes encountered no other familiar countenance. Of course Noreen would not attend, but there must be some special cause to account for Raymond's absence. He was the sort to whom such an occasion as this would naturally appeal.

Satisfied by my scrutiny, I explored the opposite wall in vain for any similar opening. As I remembered there were offices there, where in days of peace the county officers held sway, and the floor above was an unfurnished attic, extending the full length of the building, having a low, unceiled roof. In the old days it had been used for storage purposes, and there was a narrow stairway leading down into the sheriff's office. Ah! and there was a contrivance there once in which they used to burn waste papers. I remembered a certain house-cleaning in which I assisted, and was assigned to the job of stirring the papers frequently with an iron poker. I thought it fun, and the chimney funnel was a big one. Possibly it was there still, but could I succeed in getting up that far? The light shining through the broken paper permitted a faint glimpse of my immediate surroundings, yet revealed little to encourage such an attempt. The chimney was barely large enough to admit the upward passage of my body, and was a black mystery. However, the irregularity of the stones promised finger and foot-hold, and if the opening retained the same formation to the top, I might be able to squeeze through without serious accident. At any rate the effort must be made—to retreat, or even to remain where I was, involved consequences far more dangerous than those threatened by this tunnel.

It offered a chance, a hope—and I could ask no more.

These were but flashes of thought, for I was climbing before the music ceased, clinging desperately to every slight projection, and bracing myself against the walls. Progress was slow, and occasionally painful; the contracted space gave me a feeling of suffocation, and I dislodged enough soot so I was compelled to struggle constantly to refrain from coughing. My only relief was to bind a handkerchief across mouth and nostrils.

While the music remained silent I rested, fearful lest my struggles would be overheard, taking such meager comfort as I could. The first blare of the horns started me off once more, careless in the midst of so much noise as to whether I rattled the loosened plaster, or even dislodged an ill-secured stone. But at the best the passage was made by inches, and I took more than one desperate chance of slipping; twice I clung breathless as the music ceased, but the second time I felt convinced I had attained to the level of the upper floor. This was but a decision of judgment, as my only guidance came from the noise below, and the distance which it seemed to me I had clambered up. There was no change in my surroundings as revealed by my groping hands—the same solid four walls of rubble stone and plaster, but these thus far ran straight up, wide enough apart to permit the passage of my body.

With the next burst of melody from below, now somewhat mellowed by distance and the intervening walls, I made another attempt to ascend, but had scarcely attained more than a foot or two when my right hand plunged into a wide opening. Clinging as best I could to a precarious footing, I ran my arm deeper in until I came in contact with a tin covering, which yielded easily to the pressure of my fingers, and finally fell rather noisily to the floor. I paused, startled at the sound, but no gleam of light came through the opening, and I instantly realized that the attic was unoccupied. The rattle of the tin would, in all probability, create no alarm because of the din below.

I knew now exactly where I was, the only immediate problem being my ability to squeeze through that narrow space. The oldtime burner had evidently been removed, and a tin cap fitted over the chimney hole. I wiggled my way in head first, shoulders drawn together, hands gripping the outer edge, and feet pressed strong against the inside of the chimney. At first it seemed as if I hardly moved, and I was wedged so closely that every attempt to breathe gave me pain; yet to crush my way forward was easier than to attempt retreat, and I pushed with all my power, feeling my clothes tear, yet conscious of some slight advance. The encouragement of this success led to a redoubling of effort, my shoulders drawn close, and every muscle strained to its utmost. My knees were doubled up in the chimney, and my feet found solid purchase against the stones. I felt as though the very skin was being peeled off me, but I shot forward, my head and shoulders emerging into the open. Heavens! what a relief! I drew a long breath, dangling over the floor, unable to reach any support; then kicked and struggled until I fell out headlong, and lay too exhausted even to move.

It was so still I could plainly hear the swift beating of my heart, and so dark that not an object was discernible. The music below had ceased, and, as I was now on the opposite side of the building, the sound of conversation and movement did not reach me. For a long moment I lay there endeavoring to recall the surroundings, but I dare not waste much time in idleness. The night was slipping away, and every instant gained was to my advantage. There was no safety until I was out of this building. I ached from head to foot, my clothes must be in rags, and, no doubt, I was as black as a negro from chimney soot. Yet my heart beat high with hope, and the spirit of adventure gripped me.

The stairs were somewhere to the right, unprotected by even a handrail. I crept toward them across the rough board floor, fearing a fall, and finally located the opening. Nothing indicated that the room below was occupied, and I slipped down as silently as possible, although the steps creaked under my weight. Once in the sheriff's room, some recollection of its form and furnishing recurred to mind; my memory, served by the dim reflection of a campfire without, which rendered objects faintly visible. I could distinguish the desk, and a few rounded-back wooden chairs pushed against the wall. There was a door to the left, standing ajar, leading into a washroom, and I ventured within, feeling about to assure myself if there had been any water left. I found a bucket nearly full, and two bars of soap, and unable to resist the luxury,

I stripped off my ragged uniform coat, and began vigorous scrubbing. How thorough a job I made of it I cannot tell, but the soap lathered freely, and I certainly did my best, using up an entire roller towel in the final effort to attain cleanliness.

There was a coat and hat hanging on the hooks, neither article of the highest respectability I judged from feeling them, but more to my purpose than the rags I had cast aside, and I donned the two gladly, finding them no bad fit. The hat was looped up with a star. Feeling quite myself again in these new habiliments, and conscious of a clean face, I stole across the sheriff's deserted office, seeking the door into the corridor. I found it, but it was locked. Failing to force this I tried the windows, only to discover them securely barred. All these offices were connected together, that of the county clerk adjoining the sheriff's, and possibly I might find a door unlocked somewhere; at least none of the other windows would be ironed.

I listened at the door leading into the clerk's room, but heard no sound. There was no lock on the door, and it opened silently to the pressure of my hand. A flood of light swept into my eyes, and I stood blinking blindly, too surprised and startled to draw instantly back. There were two men in the room, one bending over a desk, the other sitting leaning back against the wall directly facing me. The latter was Lieutenant Raymond.

CHAPTER XX.

I Make Two Prisoners.

I SAW him stare, open mouthed, as though at a ghost. There was a startled look in his face, but no recognition. The same swift glimpse had revealed to me a discarded belt on the end of the desk, in which glittered the pearl handle of a revolver. With one step forward I had the weapon in my possession, and sprang between both men and the door.

"Not a single move, gentlemen!" I commanded crisply, yet not venturing to speak loud, for fear of a guard outside. "Lieutenant, place your gun on the desk!"

He had it half-drawn, but my weapon was aimed straight at his head.

"What the deuce!" he spluttered, "Never mind! Do as I say first, and then ask questions—take it by the barrel; now slide it across to me."

My eyes glanced aside at the face of the other, who was looking up, scarcely comprehending even yet what had occurred, and recognized Colonel Pickney. So I had blindly strayed into headquarters! Well, it was a ticklish position, but, for the moment at least, I had the upper hand. Now I must use my wit to retain it. The confused, startled look on the two faces amused me—Raymond gasped like a fish out of water, and the florid features of the colonel expressed a chagrin too deep for words. I thought he would explode, he spluttered so before he could give vocal utterance to his discovery.

"By God, it's that spy!"

"What!" and the Lieutenant took a step forward, only to shrink back as my revolver came to a level. "The Johnny we were going to hang?"

"Were going to—yes," and I smiled grimly, "but you are not quite so cocksure of it now. What have you here?"

I glanced sidelong at the paper on which the Colonel's hand still rested. My eyes caught a line or two, yet enough to convince me it was an order of court-martial.

"Intended for my case, sir?"

He nodded angrily, growling out an indistinct word.

"Tear it up; I have decided against being present, you heard me—tear it up!"

He was raging inwardly, but must have read the meaning of my eyes for his hands tore the sheet across, and flung the fragments to the floor.

"It's your turn now, Johnny," he said sneeringly, "but it won't last long. There is a sentinel outside."

"I supposed so; and any noise either one of you make will be the last sound you'll utter in this world. That is no idle threat, gentlemen; so don't take the chance. My life is at stake in this game I'm playing, and I shall shoot to kill."

"How the devil did you get here?"

"We will discuss that when we have more time. Lieutenant Raymond, I will trouble you to step around back of the desk—no, the other way; I advise you not to be tricky. Colonel Pickney, sit up in your chair, and put your hands behind you in through the openings in the chair back. Oh, yes you will! Don't be a fool, man! What is this—a hair trigger?"

I never saw anyone more thoroughly angry; he would have killed me with the utmost pleasure, and, indeed, for an instant I expected him to actually make the attempt. But my eyes glared into his, and the pearl-handled revolver was within six inches of his

head, and the man was not insane. Slowly, reluctantly, as though actually forced into the action, his arms were thrust backward into a posture of helplessness. His lips sputtered, but he could not even swear.

"Now, Raymond, take that belt and bind him," I commanded sternly. "Go to it, and be quick. Remember I have a gun in each hand. Pass it clear around his body and across the wrists. Now draw it tight—oh, tighter than that. I expect it to hurt him! Good Lord, man, this is war! I am the one you have cause to feel afraid of—he cannot court-martial you for obeying my orders with a gun at your head. That's it—now catch the buckle."

Pickney choked with rage to which he dare not give vent, and the hands of the Lieutenant shook as though from chill. His face was so white I began to think the fellow had a streak of cowardice in him, but his very fear might give him recklessness. I shoved the muzzle of a revolver against his coat.

"Now this other around his legs; strap them tight to the chair. Very good, indeed; you are learning your trade."

I tested the taut leather with one hand.

"That will hold you, Colonel, all but your mouth, and I hope you have enough sense left to guard that yourself. Raymond," and my glance swept the walls of the room hastily, "I regret troubling you so much; it is like adding insult to injury—but would you reach me those overalls hanging on the hook behind you. Thank you; now turn that chair, so the back will be this way, and—sit down."

He knew what I meant, and there was an ugly look in his eyes, but I gave him no time for action. The Colonel was safe enough, and I felt free to give my entire attention to the younger man. Nor did I feel any inclination to deal with him gently. It was his jealousy and malice which were largely responsible for my position of peril, and he had exhibited petty meanness in his treatment of me when he possessed the power. Now, for the moment, at least, that power was mine, and the recollection left me no inclination to be gentle. I gripped him by the collar, twisting my knuckles into his throat, and thrust him down into the chair seat with a violence which caused the fellow to gasp.

"You move when I speak!" I said threateningly. "This is no boy's play. Now put your hands back—oh, farther than that; cross them over each other. Come, do you feel the steel? I do not like you any too well, Raymond; I know your treachery."

"I did nothing against you," he protested wriggling about to gain glimpse of my face. "I had no authority here—"

"No, but you had influence, and used it against me. I got the story straight enough, and can guess the reason. You were going to call on me, but you failed to do so."

"Did Captain Fox tell you that?"

"Never mind who told me. We are not discussing the affair now. Sit back straighter; there, I reckon that will hold. Oh! it hurts, does it? I meant it should. Let me see, there ought to be some cord in one of these drawers. Ah, I thought so; now I will make a good job of it."

I stood off and looked at the two of them, surprised at the ease with which I had accomplished the result, but entirely at sea as to my next movement. All I had done since entering the room had been instinctive rather than thoughtful. I had accepted the only course open, but the work had been done without plan, without conception of what must follow. There was a guard on duty in the corridor without, and, no doubt, another at the door of the building. Apparently there was no other point of egress, and to remain where I was would result in certain discovery, and that soon. My success was but temporary, and my peril in no degree lessened by what had already been accomplished. No plan, no hopeful possibility, occurred to me; I could but stare vacantly at my two prisoners, and about at the walls of the room. Raymond was jammed back into one corner farthest from the door, his face white, every bit of nerve gone and a red welt showing where my grip had contracted the flesh. The fellow actually looked pitiful he was so completely cowed. But Pickney was of a different kidney. He sat glaring angrily at me across the table, with face red as the rising sun, straining at the tough leather, his lips muttering incoherent threats of vengeance.

"I'll get you yet, you damned rascal," I heard him growl, "and stretch your neck without any trial."

"And I'll gag that mouth of yours," I answered, "and keep it still for awhile. Oh, yes, you'll open up, my man! I know a trick that will make you bite the tighter I pull the cord. How about you, Lieutenant? Would you like a dose of the same medicine?"

I stepped across to him, a strip of cloth in my hand, but just at that in-

stant the latch of the door rattled as though a hand without gripped it. I had barely time in which to leap back against the wall, hidden from view, when the door opened inward. All I saw was the glimpse of a man's hand and sleeve. The fellow must have perceived nothing to alarm him, for he merely held the door ajar.

"A lady to see the Colonel," he announced briefly. "Just step in, miss."

I saw her advance two steps, and then stop motionless, with half-suppressed cry of surprise. The sentry could not have heard the slight exclamation, for he closed the door, the latch clicking sharply. Her eyes opened wide, staring first at the Colonel then at Raymond, so startled at the discovery of their predicament as to be dazed. I took a step forward, and for the first time, she became aware of another person in the room. She drew hastily back, one hand flung out, as though in defense, for the instant failing to recognize me in citizen's clothes. Then the swift light of recognition leaped into her eyes, as she leaned forward to scan me more closely in the dim light of the single lamp. I could not tell, I could not be sure, yet I thought the expression on her face was one of relief, of rejoicing.

"You!" she exclaimed, as though not yet half convinced of the truth. "You here—and free! What—what have you done to these men?"

I laughed lightly, so relieved by her reception as to feel a new man.

"Merely turned the tables; this time luck was on my side."

"You have not hurt them?"

"Oh, no; there was no necessity. They were quite easily persuaded. I was fortunate enough to gain possession of all the weapons, and neither gentleman seemed eager to prove a hero. As you perceive, they are like lambs."

They hardly looked it, for if ever murder glared unconcealed in the eyes of men, it did then; but they were helpless to move, or express themselves—at least the Colonel was, although he struggled fiercely. The younger officer made no attempt, his thin lips drawn back in a cruel snarl. I was certain there was a swift gleam of amusement in the girl's eyes, but it passed quickly as her glance again met mine.

"But you! Tell me; I must understand in order to know what to do. How did you come here?"

"The explanation is simple enough, and these gentlemen will be interested also in hearing about it. No doubt they think I dropped from the sky. When my father was the judge of this court, I was free to play about the building, and in that way I learned all its secrets. They chose the old record room as my cell, and I was aware that the big central chimney composed the greater part of its inner wall. My only problem was to break through and this I succeeded in doing. There was a dance in the court room, and the noise enabled me to work without discovery. I crept up through the chimney, and came out in the attic. There are stairs leading down into the sheriff's office, just beyond there. That was where I found these clothes, but the door into the corridor was locked, and so I came in here. I had no suspicion the room was occupied, until I came face to face with these men. But they were more surprised even than I. I got the guns first, and that ended it; but I cannot hold you up that way."

"No!" I could not keep the joyous note out of my voice. "You mean—"

"Merely, that I came here seeking your release, or rather to urge that you be given a trial at Charleston. It is scarcely likely under all conditions that I will prevent your escape, or attempt to do so. You saved me from a fate worse than death, and was captured while endeavoring to serve me. Surely you did not suppose I had forgotten? You received my message."

"Yes, and was most thankful for it. I confess I had doubted before."

"I read your thoughts in your face; that was one reason why I wished to reassure you. I could not be ungrateful." She glanced across the room, and began again as though anxious to get upon another topic. "I—I requested Lieutenant Raymond to intercede in your behalf, and he pledged me his word to do so. Less than an hour ago I learned he was exerting his influence with Colonel Pickney against my wishes. I determined to come here in person, and learn the truth. Have you any explanation, Lieutenant Raymond?"

"The fellow is a self-confessed spy," he asserted hoarsely. "There was nothing I could say to have him."

"Did you attempt to say anything?"

"Why, yes, I—"

"Lieutenant, I made no request that you would interpose to save this man from his just fate under military law. My father was a soldier, and I know a soldier's duty. All I asked was that he be sent to Charleston, to the headquarters of this department, where he could have an impartial trial. If you had so advised Colonel Pickney that

would have been done. He would have gladly shifted the responsibility elsewhere. Now the full burden of decision falls on me. I must choose between two duties."

"Two duties?"

"Yes—two; my loyalty to the Union, or to my husband."

Raymond certainly was no more startled than I at this avowal, perhaps less so, for although the words choked in his throat, he managed to give them utterance.

"Your husband! Good God! do you mean to say you are married to this fellow?"

"I not only mean to say it," she said calmly, "but I have the proof with me. I tell you the fact merely to justify my action, for I intend to save him if I can. I wish Colonel Pickney to know why I do this—what conditions justify me in so rebellious a course. This man does not deserve death; he was captured while defending me from insult, and he is my husband. I should be unworthy the name of woman if I did not aid his escape."

She turned to me, her eyes eager.

"Tom, you must do just as I say."

CHAPTER XXI.

The Lady Chooses.

THE came across toward me, her back to the others, and spoke swiftly, yet in a low voice which did not carry to their ears.

"There is only one way possible for you to pass out of this building and through the camp safely. There are guards everywhere, and the orders are very strict; but I think we can go together. I know the countersign—Captain Fox is officer of the day, and trusted me with it. If—if you only had a uniform! Where is the one you wore?"

"My trip through the chimney left that in rags," I answered, impressed by her earnestness, and getting my wits together.

She glanced about the walls of the room, a frown between her eyes.

"Then we must forage from the enemy," with a little nervous laugh. "You would never pass the sentry in the corridor wearing that suit. You will have to take the lieutenant's coat and cap. Be quick about it—and you need not be particularly gentle on my account."

"Nor on my own either—Fox informed me of what he told you."

I was not long about the job, nor did Raymond make any resistance to the exchange forced upon him. In fact he acted like a man too completely dazed even to realize the indignity of his treatment. Yet the way his eyes followed my every movement, and the smouldering hate in their depths, left me no doubt but what the fellow would prove dangerous enough, if ever he re-

gained the power. I took no chances, binding him with greater care than before, and fitting a gag into his mouth to silence any possible cry for help. Noreen stood close to the door, apparently listening for some noise without, yet occasionally directing her glance toward us anxiously. I slipped into the lieutenant's coat, which fitted me snugly, and pulled his cap well down over my eyes. I bore no resemblance to the man, yet in the dark the difference might not be noticed.

"Are you ready?" she asked in a low whisper.

"Yes; but tell me your plan. I need to know what character I am to enact—Raymond?"

"Not at first, not in the hall. That would be useless, as there is a light burning. Listen," and she grasped my sleeve in both hands in her eagerness to explain. "Do you remember the way the corridor runs?"

"I think so. This is the left branch of the main hallway. It is about four feet wide, and this is the third door from the turn. Am I right?"

"Yes, as nearly as I can recall. I did not notice closely. The light is at the intersection, a coal-oil lamp in a bracket against the wall. There is a sentry stationed outside this door—the Colonel's orderly, I presume, but fully armed, and two others at the front entrance. There are twenty or thirty feet away, and out of sight from this door. I am not particularly afraid of passing them."

"It's the fellow stationed here?"

"Yes, he will be suspicious of a stranger coming out with me, for he has seen everyone who came in."

"There is only one course to pursue them. We must trust to force, and a quick assault which will give the fellow no time to raise an alarm. You go out alone, leaving the door slightly ajar, and engage him in conversation. Did he appear to be genial when you met him before?"

"Yes, rather eager to talk—a young man."

"Good; then you can gain his attention for a moment. Stand so that his back will be to the door."

"You are not going to kill him?"

"There will be no necessity; once I get my grip the affair will be over—you understand?"

Her lips were firmly set, her eyes gravely earnest. The light fell full upon her face. I could not refrain from touching her hand.

"You will let me thank you!"

"There is no need. I could do no less."

"But few would show the bravery."

"Bravery! Why I have exhibited none. Please do not speak of that—every moment now means so much. Yes, I understand perfectly; shall I go now?"

(To be continued).

Just Keep Sweet

TWO men stood at the end of a lane. The face of one showed spite and anger as he told the other of certain troubles and annoyances he was having with a neighbor across the way. It was evident that his heart was surcharged with bitterness and that the opportunity of telling his troubles to another was relieving pent up forces within.

He who listened waited patiently until the other had finished. Then his homely face lighted up with genuine sympathy as he placed one hand on the other's shoulder and looked him squarely in the eye.

"John, it is kind of hard to have to live in the same township with Jim. You're right on this. He's not built on the square, and his heart's not in the right place. But until one or the other of you sells out and moves away you've got to mix in with each other more or less right along. A leopard don't change his spots and it isn't likely that you or he will either. But there's one thing you can do—whether he does it or not—and that's to just keep sweet. Whatever he does, you remember this! It's better than goin' to law—and cheaper—even if he does impose on you and acts ornery and mean. Just keep sweet yourself. It always takes two to make a quarrel."

What a wonderful old world this would be if human nature always and everywhere just kept sweet. The joy of living would be in every heart; the sunshine of cheer and gladness would

light up every life. And with so much of the spirit of optimism pulsating through the activities in which men indulge it would seem as though all cause for anger, strife and discord would be eliminated.

Yet, keeping sweet is far from being so easy a "cure-all" as it sounds. Human nature is far from being perfect and our own imperfections must be taken into account quite as much as our neighbor's. If we ourselves were perfect we would probably keep sweet—without trying so hard to do so. It is because we are easily provoked; because our tempers are not always under control; because the spirit of retaliation springs up full armed and ready for action whenever we feel others have imposed upon us or have attempted to thwart our interests that keeping sweet is as difficult for us as it is for others.

Still, like all ideals of whatsoever kind, the nearer we approach the goal the better for ourselves. Annoyances never possess quite the sting they otherwise have if we are able to treat them as matters of secondary importance. Let them gain the upper hand, however, and we have not a moment's peace. If we could even preserve some semblance of sweetness many of these little things would stop short of spoiling a whole day for us as they now have of doing every little while. Just keep sweet! Human nature, like milk, is always at its best before it has become soured!

O. E. CROOKER.



Woman and Her Needs

At Home and Elsewhere



Change Yourself to Suit Conditions

I MET a woman the other day whom I knew well 15 years ago, but whom I had not seen for at least 10 years. When I knew her she was 25 years old and looked 40. She was thin and sharp featured, a deep crease separated her eyebrows, her voice was sharp, her manner petulant, and she never laughed except at something that hurt someone else. Today, at 40, she looks 20, her cheeks are full and flushed with health, the crease is gone between her eyes, and tiny lines caused by laughter show at the corners instead. She is constantly laughing and making others laugh over the very things which once infuriated her. In 15 years she has changed from a picture of querulous middle age, to one of light-hearted youth.

Even a naturally polite nature could not keep me from remarking on the change and begging for the cure, to be used at home and passed on to others.

"It's all very simple," she said smiling, "I've become a philosopher. That is, I discovered all by myself one day, what every other philosopher who ever lived discovered for himself, that I can't alter circumstances to suit myself but I can alter myself to suit circumstances. Things didn't use to be smooth with me when you knew me, and I could never reconcile myself to my lot. I spent my time fretting over what couldn't be helped and wore myself out in an effort to change the unchangeable. I was always kicking, either orally or mentally, railing at my family and Providence because I had to do things which were distasteful to me and hadn't time, or opportunity, to do the things I thought I was meant to do.

"One day it came to me that the person worst hurt by my mental attitude was myself. Of course, it was unpleasant for the family, but they could get away from me at times. I never could get away from myself. I had to live with my wretched, unhappy, fault-finding self every minute of the day and night. And the worst of it all was that all my fretting didn't help things a bit. I had to live under certain conditions, that was inevitable. Why not, then, stop trying to alter them and pretend to be happy? I determined to begin at once and I did.

"Don't think it was easy, and that the miracle you see was worked over night. It took all sorts of determination and starting over again, but I persevered. In time I got so I didn't mind a bit the things I used to think unbearable. From pretending I liked my surroundings I began really to delight in overcoming the disagreeable. I got so I could laugh at what once would have thrown me into a nervous frenzy. After awhile things brightened up for us and life became really easy. But I am sure if I hadn't learned to laugh when things were hard I should still be the same bad-tempered, unhappy woman whom you used to know. The changed conditions would not have changed me.

"It is all simply a matter of adapting yourself to conditions. There was one thing in particular that used to bother me. I could not sleep nights. I would lie awake until midnight worrying over what couldn't be helped. Then when the clock struck twelve I'd thump my pillow and groan. I must be up at six and in the office at eight,

and now I had only six hours left for sleep. At one I'd only five hours left, and many a morning it was only four hours left before I would drop off. When I reformed I just said to myself, 'Well, I don't care whether I sleep or not. I can at least rest my body. Anyway, if I don't sleep I'll have plenty of time to think out how to get my work done tomorrow with the least expenditure of time and strength. This gives me a nice long time to plan things out wisely.'

"Instead of worrying because I couldn't sleep I kept my mind calm and happy, and before I knew it, I would drop off. In time I overcame the habit of sleeplessness altogether, by simply training my mind.

"Today I really am happy. But it is not because things changed for me. Happiness came when I changed myself for things."

DEBORAH.

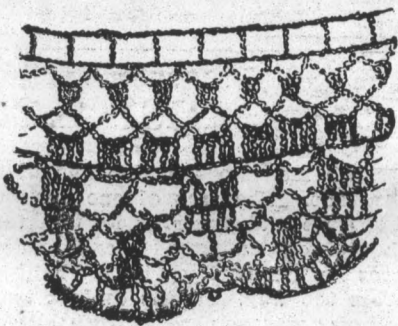
TWO CENTERPIECES WITH CROCHET EDGES.

BY LUCILE A. HOWELL.

Cut an oval piece of linen 20 inches long and ten inches wide. Baste a narrow roll hem around the entire edge and work a row of s c through the linen over the hem. Sl st in 1st s c to complete circle.

First Row.—Ch 6, (skip three stitches in previous row, 1 tr in 4th stitch. Ch 3). Repeat to end of row. Fasten in 3rd st of ch 6.

Second Row.—Sl st in 2nd st of ch 6. (Ch 6, s c under ch 3). Continue



to end of row and fasten in 1st st of ch 6.

Third Row.—Sl st to 3rd st of ch 6. Ch 3, 2 tr under ch 6, holding last stitch of each tr on needle and slipping both off together. (Ch 3, 3 tr under ch 6, slipping last st of each tr off together). Repeat to end of row. Ch 3 and fasten in 3rd st of 1st ch, sl st to 2nd st of ch 3.

Fourth Row.—Ch 6, 3d c under ch 3. Repeat to end of row and fasten in 1st st of ch 6.

Fifth Row.—Ch 2, 3 d c under ch 6, ch 1 (4 d c under ch 6, ch 1). Repeat to end of row. Fasten in last st of ch 2.

Sixth Row.—Ch 6, s c under ch 1. Repeat to end of row.

Seventh Row.—Ch 3, 4 tr under ch 6. Ch 6, 1 tr in top of s c, ch 6, (5 tr under ch 6, ch 6, 1 tr in top of s c, ch 6). Repeat to end of row. Fasten in 3rd st of ch 3.

Eighth Row.—Ch 3, 1 tr between 2nd and 3rd tr of previous row, 1 tr between 3rd and 4th tr, 1 tr between 4th and 5th, ch 6, s c under ch 6, ch 6, s c under ch 6. (1 tr between 1st and 2nd tr, 1 tr between 2nd and 3rd tr, 1 tr between 3rd and 4th tr, 1 tr between 4th and 5th tr, ch 6, s c un-

der ch 6, ch 6). Repeat to end of row and fasten in 3rd st of first ch and don't have a lot of things left over to finish up in the morning and

Ninth Row.—Sl st to top of 2nd tr of previous row. Ch 4, s c under ch 6. Ch 6, 4 tr under ch 6, ch 6, s c under ch 6, ch 2. (Tr between 2nd and 3rd tr of previous row, ch 2, s c under ch 6, ch 6, 4 tr under ch 6, ch 6, s c under ch 6, ch 2). Repeat to end of row and fasten in third st of ch 3. Sl st to 2nd st of ch 2.

Tenth Row.—(Ch 4, 1 tr between 1st and 2nd tr of previous row, 1 tr between 2nd and 3rd tr, between 3rd and 4th tr, ch 4, s c under ch 6, ch 3, s c under ch 2, s c under next ch 2, ch 3, s c under ch 6). Repeat to end of row. Sl st in 2nd st of ch 4.

Eleventh Row.—Ch 4, (1 tr under ch 4, ch 2, 1 d tr between 1st and 2nd tr of previous row, ch 1, 1 d tr between 2nd and 3rd tr, ch 2, 1 tr under ch 4 of previous row, ch 4, 1 sc under same ch 4, ch 3, 1 s c under ch 3, 1 s c between the two s c of last row, 1 s c under ch 3, ch 3, 1 s c under ch 4, ch 4). Repeat to end of row and fasten in top of 1st tr.

Twelfth Row.—2 d c under ch 2, ch 4, 1 s c in 1st stitch of ch to form a picot. 2 d c under ch 1, 2 d c under ch 2, ch 4 1 s c in 1st st to form a p, 3 d c under ch 3, ch 1, 1 d c under ch 3, 3 d c under ch 4. Repeat to end of row and fasten thread.

GETTING UP THE THRESHING DINNER.

BY W. C. SMITH.

It is the custom down in our neighborhood for the farmer who has grain to thresh to provide the meal for the threshing crew. We practice co-operative methods to a certain extent in changing work, although the machine is hired at so much per bushel and there are sometimes 20 jobs in the "ring" or company. This makes a good many mouths to feed, especially when the amount of help is based on acreage and sometimes there are three or four hands from one place. I think a farmer is supposed to furnish one hand for the first 20 acres of grain that he has to thresh and one man for each additional 20 acres or fraction thereof, as they say in law papers. Thus you see 20 jobs may mean 20 men, besides the machine crew proper. Or it may mean 40, depending upon the amount of grain each man has sown. There are many communities in the country where a similar method is followed and if you have ever lived in one of them and had to cook, cook, cook to provide for such a regiment of hungry harvest hands you are well aware that the system has its disadvantages.

We talked it over quite a lot at Lakeview Farm this season. In fact, the whole community talked it over. Many of the men, and some of the women, were in favor of each man carrying a dinner pail thus doing away with the practice of meal-getting for so many. Others favored an earlier hour for quitting and letting the men go home for supper, for formerly we had been furnishing two meals each day. This seemed the better plan and more were in favor of it. Henry Myers, who had done the threshing in the community for several years, approved the plan.

"We can get an earlier start," he said. "If we work till six o'clock or half-after and quit and go home we

have a chance to get our work done over to finish up in the morning and make us late at the machine. Then it gives us machine men a chance to keep our end in good working order." And that he was right was afterwards proven, for his machine ran steadier that season than ever before for the simple reason the separator and engine men went over it in the evening after the hands knocked off and had it in good shape for an early beginning.

But even one meal is a matter of importance. Old man Henry is strong for common food.

"We jist get 'dog,'" he said. "Don't like to see people put on so much dog for threshers. Cut out the knick-knacks and give us something plain that will stick to our ribs."

We had but 20 acres of very light oats. A meal for 20 or 30 men would make quite an inroad on the profit of the crop and lots of work for the women folks if we did as our neighbors did and made an event out of our threshing dinner. In fact there was a sort of rivalry in the community among the women to see who could get up the most elaborate dinner.

"I am going to be very plain this year," I told my husband. And with the help of two girls I served a dinner that was wholesome and an innovation, where elaborate meals had been the rule.

A large ham, boiled the day before, was the piece de—, whatever the rest of that word is, anyway it was the feature. A large kettle of beans, cooked over the oil stove, and new potatoes creamed, came next in importance, with corn boiled on the cob. We had baked bread the day before. This went well with the fresh butter. A large platter of sliced tomatoes, sliced cucumbers and onions, and cold slaw furnished the frills, and a fruit salad with good rich cream and hot coffee completed the dinner. Everything that we had served came right from the farm and was easily gotten up for the occasion. Instead of putting on my best linen and having the dinner in the dining-room, it was served over oil cloth laid over an extemporaneous table in the large summer kitchen. Instead of stewing around over a hot stove we simply took our time. We had some variety and plenty of everything that we cooked, so no man went away hungry, although several stated that they went away wishing they could eat more, but had to be governed by their respective capacities.

It was a cheap meal and a good one. We shall never again attempt an elaborate threshing meal, for as Old Man Henry says, "It's just a matter of wholesome stuff that will stick to your ribs."

SHORT CUTS TO HOUSEKEEPING.

To remove mildew from damp closets, put an earthen bowl full of quicklime into the closet. The lime will absorb all the moisture and sweeten and disinfect the closet. It will also keep out rats, mice and bugs. Renew the lime as often as it becomes slaked.—M. A. P.

If you are annoyed with flies in your bedroom, soak a sponge in oil of lavender and tie it to the top of the bed. Flies hate the smell of lavender, and will not approach it.—J. J. O'C.

Grange.

GETTING THE MOST FROM THE GRANGE RALLY.

The Grange Rally is as old as the Order under whose auspices it is held. Most of us think of it as an opportunity for a good time, a chance to meet our friends who live in adjoining neighborhoods. This it should be and we can hardly magnify the social privileges of such a meeting. It is a great misfortune to be so engrossed in business, so weighed down with care, or even so much in earnest about the welfare of a particular organization, that we forget our friends.

The Grange Rally should afford a chance to meet old friends, and to make new ones, and we should enjoy to the fullest extent its social privileges. But at the same time, it should be productive of other and possibly even greater results than these. It should strengthen the Grange where it is held. It should give new life to the nearby Granges whose members attend, and the program and the address at the meeting should be such as to enthuse all who listen or take part, with a greater interest in Grange work. Not because it is Grange work, but because it is work that needs to be done. The Grange Rally has not quite answered its purpose unless the people who attend go home with a larger vision of life.

The people should be able to go home from a Grange Rally rested, happy in memory of the old associations renewed, and the new friendships formed, but they should also be given something new to think about. Old truths should have been given a new setting, and some new truth should have been grasped.

Above all, there should have been something in the program of the day to touch their hearts. A song, a reading, or an address that simply impresses you as a great effort, that appeals to you only to make you think of the performer, and ask, "How could he do that?" counts for but little after all.

The things that get hold of people's hearts, and influence their lives are the truly great things.

In order to get the most out of the rally, preparation for it must not be neglected. It is not too soon to plan for it several weeks ahead. The rally may be held by a Pomona or by a subordinate Grange or through the union of several Granges. It does not matter so much how this is done, but if it is to be a success, two or three things must always be remembered. The rally management should resolve at the beginning, to make the meeting a success. A good local program should be arranged. The length of this program should depend on the time at the disposal of the people on the day of the meeting. If there is to be a ball game that will shorten the time. If the people can not get out in time for any exercises in the forenoon, that will make a difference also, and in that case the local program must needs be shortened. But in any event, I would have some program. I would endeavor to provide some good singing, and if it were possible, a band should be secured.

(Continued next week.)

GRANGES ORGANIZED.

The number of Granges organized from April 1, 1915, to June 30, 1915, both inclusive, is as follows:

Organized:—California 2; Colorado 10; Connecticut 1; Illinois 1; Indiana 5; Iowa 5; Kansas 19; Maryland 4; Massachusetts 1; Michigan 10; Minnesota 2; Missouri 1; Montana 1; Nebraska 10; North Dakota 2; New York 5; Ohio 18; Oregon 5; Pennsylvania 15; South Dakota 7; Washington 4; West Virginia 1; Wisconsin 4; Wyoming 2. Total 135.

Farmers' Clubs

OFFICERS OF THE STATE ASSOCIATION OF FARMERS' CLUBS.

President—R. J. Robb, Mason.
Vice-president—C. J. Reed, Spring Arbor.

Secretary and Treasurer—Mrs. J. S. Brown, Howell.

Directors—Alfred Allen, Mason; Joseph Harmon, Battle Creek; C. B. Scully, Almont; C. T. Hamline, Alma; W. K. Crafts, Grass Lake; Edward Burke, St. Johns.

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

Associational Motto:

"The skillful hand with cultured mind is the farmer's most valuable"

Associational Sentiment:

"The Farmer: He garners from the soil the primal wealth of nations."

PRIZE CLUB SONGS.

Prizes have been awarded in the competition for songs to be used by the Farmers' Clubs of Minnesota, held under the supervision of the Agricultural Extension Division of the University of Minnesota. The first prize of \$10 was given to Mrs. James M. Atcherson, of the Medo Farmers' Club, Mapleton, Minnesota, for "Minnesota Farmers' Club Song," and the second prize of \$5 to Bert Amidon, of the Six Oaks-Pleasant Valley Farmers' Club, Plainview, Minnesota, for "The Jolly Farmers' Club." The first prize song is sung to the tune of "Auld Lang Syne," and the second to the tune of "Yankee Doodle." The two songs follow:

Minnesota State Farmers' Club Song.
We're sons and daughters of the soil
Of this great North Star State,
Where agriculture reigns supreme
And men co-operate;
A people born with wondrous power
That bids us onward move;
Co-operation is our theme,
Our Slogan—"To improve."

CHORUS.

Oh, Minnesota, State so dear!
Let high our anthem soar,
The Farmers' Clubs unite to sing
Thy praises evermore.

We share whatever we have learned
With forward moving men,
Who give us of their ripened thought,
That we may learn of them.
Improvement grows from year to year
Along the farming line;
For better methods—higher aims,
Our forces we combine.

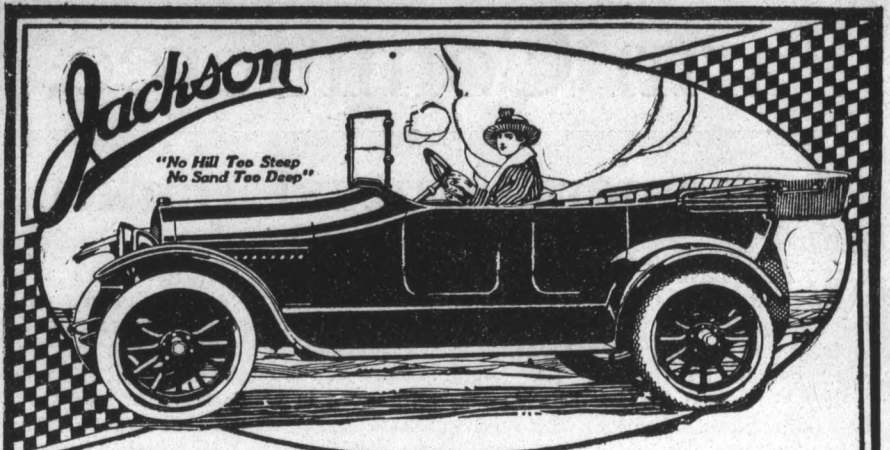
We love the country made by God,
Its homes made fair by man;
We claim with pride our sturdy sons
Who boast the cheek of tan;
We love our homes wherein we dwell,
Our farms on which we toil;
We'll raise the best crops in the land
From Minnesota soil.

(To be continued.)

CLUB DISCUSSIONS.

Will Hold August Picnic.—The Wells-Dayton Farmers' Club met in July at the home of Mr. and Mrs. Charles Hunt, in Dayton. The weather man seems to have a grudge against the Club and brings copious showers the first Wednesday of the month. However, the Club members are not frightened at a rain and there was a large attendance. An excellent program was furnished by Miss Della Hunt, the first number being a paper by Mrs. G. L. Spencer. Jas. Weeden gave a talk on rock phosphate, and quoted prices by the car. As the Club picnics next month there was a vote taken as to where it would be held and the majority wanted it in Mrs. George Banghart's grove, where they will be games and speaking. Mrs. Myrtle Chatterton furnished a fine supper which all enjoyed. It was voted at the Club previous to have warm suppers during the summer and all seemed to be much in favor of same. Picnic day will be August 4.—Mrs. S. G. Ross, Cor. Sec.

Another Picnic.—The South Avon Farmers' Club, of Oakland county, will hold their annual picnic, Saturday, August 7, at "The Oasis," the home of A. F. Ladd, two miles south and east of Rochester. Dinner at noon, followed by sports.—Committee.



Model 34 New Jackson Model "34"—112 inch wheelbase; 32 x 4" tires—fully equipped, including one-man top, electric lighting and starting system, and Stewart Vacuum Fuel System. **\$985**

New Model "34" Jackson a "Four" of Amazing Flexibility

Such smoothness and quietness and such power and flexibility as you never dreamed of getting in any "Four" are revealed in this new long-stroke, high-duty, balanced motor.

Vibrationless at 55 Miles!

Drive 55 miles an hour with this car and to your astonishment you will experience no motor vibration. You will discover also that there is less wear and tear on this new high duty motor, even at this tremendous speed, than on ordinary fours at twenty-five miles, because of the perfect balance and lightness of all reciprocating parts. "Balance" will have an entirely

new meaning for you when you have ridden in a Jackson "34".

Model "34" fairly eats its way through sandy roads and climbs up hills that would stall an ordinary four or six. It gives an entirely new value to four cylinder motor construction.

Wonderfully Easy Riding

because we use four full elliptic springs. You'll never know how easy riding the Jackson is till you've ridden in a Jackson. Of course, Model "34" is sturdy, powerful, dependable, reliable, and durable, because it is a Jackson—with fourteen years' success back of it.

Completely equipped \$985.00.

New Light-Weight "Eight"

\$1195 Our new model "348," eight cylinders, has the same long stroke, high-duty, type motor as the four. But it's an eight with all the advantages of the eight—continuous flow of power and lack of vibration. Seats five comfortably. Wheelbase 112 inches. Completely equipped \$1195.

The immediate and urgent demand for all Jackson models suggests the wisdom of getting in instant touch with the Jackson dealer to ensure early delivery.

JACKSON AUTOMOBILE Co., 1508 East Main St., Jackson, Mich.

Jackson Automobile Co., 978 Woodward Ave., Detroit, Mich.

Seven-Passenger "Eight"

\$1685 Model "68" eight cylinder, family touring car DeLuxe. In every respect equal to any eight at any price—and because of Jackson experience and efficiency comes to you completely equipped, 124 inch wheel base, 34 x 4½ tires, \$1685



"OUR DAINTY MAID"

NEW CENTURY FLOUR

More and Better Bread—
light, dainty and delicious—
is always easily baked with
NEW CENTURY FLOUR

Milled exclusively from best grade Hard Spring Wheat under most improved and sanitary conditions—it is impossible to produce a better flour at any cost. Yet "New Century" costs you no more than ordinary flours.

NOT BLEACHED.

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The Standard for men
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Of your Dealer or by
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BOSTON, U.S.A.



SILK 50c.
LISLE 25c.

DAISY FLY KILLER



placed anywhere, attracts and kills all flies. Neat, clean, ornamental, convenient, cheap. Lasts all season. Made of metal, can't spill or tip over; will not soil or injure anything. Guaranteed effective. Sold by Dealers or sent prepaid for \$1.

HAROLD SOMERS, 180 DeKalb Ave., Brooklyn, N. Y.

ALL COLORS High-Grade PAINT, \$1.25 GAL. Guaranteed. Sells elsewhere now for \$2.25. PAINT WAREHOUSE, 352 Beaubien, Detroit, Mich.

Always mention the Michigan Farmer when writing to advertisers.

WANTED—AN IDEA: Who can think of simple thing to patent? Protect your ideas, they may bring you wealth. Write for "Need Inventions" and "How to get your Patent and Your Money." RANDOLPH & CO., PATENT ATTORNEYS, DEPT. 67, WASHINGTON, D. C.

Farm Commerce.

A Farmers' Mutual Market

By ISAAC MOTES

WHAT farmers can do if dominated by the get-together spirit may be seen in St. Louis, where a great mutual market is being established by the St. Louis County Farm and Market Bureau and the Consumers' League. Two city lots containing eight acres have been purchased, with important streets on four sides, and street car lines on three sides. It is 781 feet long and 446 feet wide. The company owning the land and the market house is the St. Louis County Producers' Market Company, composed of farmers and market gardeners, and most of the stock is owned by farmers and gardeners.

The market will be in every sense a mutual market, where producers will sell direct to consumers, also to grocers, butchers, hucksters, peddlers, commission houses and canning and preserving companies which will take care of the perishable surplus products.

Plan is Comprehensive.

A private street is to be cut through the center of the block east and west. The plan is to locate the market house on the southwest corner of the block, and to have a row of probably 35 commission houses along the north side of the block. In the market house will be located stands for butchers, grocers, poultry dealers and for all kinds of supplies.

Space for 762 farmers is provided in the plans, each given a stand 8x23 feet for his team and wagon. Private streets and granitoid walks are laid out through the tract from north to south. Wagons can be driven into the center street and backed to the walk, so buyers may approach the rear of the wagons.

There will be a large entrance to the market house from the street south of the block. This will lead into a rotunda around a bunch of booths for refreshments, flowers and fruits. Two long corridors will lead out from the market house, one along the west street and another along the south street, connecting with the two corners of the market house and extending to the northwest and the southeast corners of the block. In these corridors will be grouped booths for all sorts of supplies.

Humanity Side Not Forgotten.

In the basement will be a monster restaurant serving food at a wide range of prices, to suit the tastes and pocket books of different patrons. In the basement will also be the refrigerating, lighting and heating plants, also incinerating boilers to consume the refuse of the entire market. On the second floor will be a large modern rest room for women and children, a smoking-room for men, and about five offices. A number of commission firms will be formed among the farmers interested in the market.

At this market the housewives of St. Louis will be able to buy and carry away in their baskets everything needed for the household without leaving the enclosure.

Farmers Crowded from Other Markets.

A location was chosen which is accessible from every part of the city for a five-cent carfare, with universal transfers. It is near the center of the West End residence section, on three car lines, and within easy distance of railroads entering the city from the west. It is also three or four miles from any other market in St. Louis, and much nearer the producers than any present market. The St. Louis

county farmers and gardeners thus have their own market house, with shipping facilities. There are already five markets in St. Louis, but they are mainly in the eastern part of the city, and there is no room at any of them for farmers' wagons, or where farmers can come and sell their own produce to consumers.

If St. Louis with its 800,000 people can support six markets, a city of 125,000 or 135,000 should support one. In fact, every city and large town should have its farmers' mutual market where farmers could come and sell their produce direct to consumers, rather than to commission men, retail grocers and hucksters. Farmers would then get more for their stuff, and at the same time enable consumers to get it while fresh, and at a lower price, which would benefit the farmer, for it would allow consumers to buy more and better food for a given amount of money.

Market Should Attract the Consumer.

Every small city could support a farmers' mutual market established on the plan of the one at St. Louis, where housewives could go or send their servants, husbands or sons with market baskets to buy provisions, vegetables and fruit. Such a market in a small city would probably pay better in proportion to size than one in a large city, for in the small city there is not as much foolish pride among men and women as in the large city with its near-rich people, who would rather 'phone their orders for groceries and have them delivered than take their baskets and go to market themselves. Such markets would tend to carry us back to the good old democratic days when our great men took their baskets and went to market before breakfast to purchase the family supplies, bringing the food back themselves.

And such a market need not be in the business center of the city. It should be in the thick of the residence

place under the market sheds or in the protected corridors for his wagon and team in the early morning where he could sell his fresh produce to actual consumers and hucksters as long as this trade lasted, disposing of the remainder, if any, to local grocers, markets, commission houses, canning and preserving factories.

SELLING APPLES BY AUCTION.

We note with a great deal of interest the action of the New York Department of Foods and Markets in the establishing of an auction to sell New York apples. The idea of the state undertaking a matter of this kind is unique. While it would require more than the ordinary prophet to tell whether the scheme is to be a success or not, it is certain that by reason of the state taking the initiative, the results are certain to be more successful than if attempted by private parties. Being under the control of a competent public official, growers will feel more safe in consigning their apples.

As would be expected, the arrangement is being severely criticized by those interests that have heretofore made capital of the ignorance of producers on the conditions surrounding the marketing of the crops they grow. These interests seem to feel that by reason of the state entering the field, there will be greatly increased possibilities of the plan succeeding, which success will mean the death knell to unscrupulous buyers who have fattened from unearned profits that should have gone back to the growers.

Even though a comparatively small amount of apples are sold by this public auction, the plan is certain to do great good, inasmuch as the returns upon being published will compel dealers handling consignments of others to return to these growers equally as large returns, since all growers will be comparing notes on the new plan as soon as it is put into operation.

Furthermore, the scheme will aid in enforcing the New York grading and packing law, as the consignments will go under the eye of inspectors before being sold and the shipments will be examined carefully to determine whether or not the law is being complied with. This will insure buyers and give them a confidence they would not have when purchasing apples from

some peaches and early and fall apples but not many winter apples. Taken as a whole, Mecosta county will, if nothing happens, have a very good crop to harvest. Butter-fat 25c; eggs 16c; hogs 7c; veal 8c.

Monroe Co., July 19.—Hay harvest is progressing slowly on account of the numerous rains that we have been having. Clover and timothy two-thirds of a crop. The two cuttings of alfalfa has yielded well, old meadows making more than ever before. Rainy weather is retarding rye and wheat harvest some; while the late frosts injured rye in the low places the yield will be good. The wheat crop is good; large heads and well filled; corn is backward and weedy, due to the continued wet weather. Wool 25@30c; butter-fat 23@25c; eggs 18c; new potatoes 60@80c per bushel. Some dealers are offering to contract wheat at \$1.

Eaton Co., July 20.—Haying is in full sway. Yield is fair in all kinds; wheat cutting has just begun. Prospects fair. Oats, corn and potatoes all doing fine. Plentiful rain to help them along. New seedling also looking good. Beans had a hard fight, with the insect, on the start, and have not made good as yet. The market prices are as follows: Wheat \$1.15; beans \$2.40; rye 90c; wool 31c; butter-fat 26½c; hay \$10@12 per ton.

Nebraska.

Scotts Bluff Co., July 19.—Crops are late but growing nicely. Very little small grain. First crop of alfalfa is poor. Wild hay good, pastures good. Sugar beets, though late, are growing fast. There is some blight on potatoes. Farmers' unions are shipping in corn, fruit and in fact about everything they want. Cream 24c; butter 20c; eggs 15c; corn shipped in \$1.35 per cwt.

Cass Co., July 19.—Rain almost every other day, which has been delaying work in the field. Wheat is harvested and oats are being cut. Second crop of alfalfa ready to cut. Corn is backward and small, doing well, but in need of cultivating. Pastures and hay fine. Potatoes above the average. Prospects for apples fair to good. Wheat 95c; corn 65c; oats 56c; hay \$5; hogs \$6.75; cattle \$4@6; new potatoes \$1 per bushel; butter 25c; eggs 14c; butter-fat 32c; poultry 10c per pound; broilers 20c per pound.

North Dakota.

Foster Co., July 19.—Just had a fine rain; grain crops are heading and all things are favorable for a good yield, though hail and red rust are doing some damage. Corn will not be much on account of late frosts. Hay short. Potatoes are coming on fairly well. Alfalfa doing fine. Cattle \$6.50@7; hogs \$6.10@6.50; butter 25c; eggs 18c; butter-fat 32c; wool 22@24c.

Kansas.

Franklin Co., July 19.—June was a month of floods here, having only seven fair days in the month. July also rainy. Most of the wheat was cut but will not yield very well. Oats looked fine, but rains and wind have blown them down so lots of fields will be a loss. Corn looks fine, but could not be cultivated much on account of rains and is weedy. Hay better than usual, but is hard to secure it dry. Eggs 13c; butter-fat 22c.

Lincoln Co., July 19.—This section has lots of rain, and harvesting is difficult on account of the ground being so soft. Wheat is good, but dead ripe and beginning to shell badly. Second crop of alfalfa very heavy. Corn is coming in tassel. Fruit good, especially apricots. Eggs 13c.

Barton Co., July 19.—Continued rains and wind storms have about ruined the wheat crop. Fields were so wet that horses could not pull the binder. Wheat about three-quarters cut, but some fields will not be cut. That threshed is yielding from four to 20 bushels per acre. Corn looks well where worked, but corn on bottom lands is a complete failure. Hay good but damaged by unsettled weather. Potatoes good, selling at 70c; wheat \$1; corn 70c; hay \$6@9.

Indiana.

Allen Co., July 21.—By the latter part of this week farmers will begin cutting oats, which are just about ripe and prospects are for a bumper crop. The wheat crop is exceedingly large. Some corn is looking good, while some is very poor, some fields having been sown three times. New hay \$8@10; corn 85c; oats 35c; eggs 16@17c; spring chickens 18c; dairy butter 22@24c.

Jay Co., July 19.—Recent heavy rains have done serious damage to all crops. Corn in bottom districts has been cooked by the hot sun, corn sanded, oats flattened and so rank that most of it will spoil unless the sunshine comes to stay. There is much wheat and rye yet to cut, the crop is dead ripe, but water standing on fields makes it impossible to use machinery. Hay crop light; some mixed hay still to cut. Some alfalfa spoiled in the making. Corn fields weedy, potatoes injured by the wet weather. There was an abundance of (Continued on page 94).



If Prices are Satisfactory it is Usually Best to Draw Crops Directly from the Field to Market.

section, and if the town or city has street cars the market should be at the intersection of two or more car lines. It should be convenient to a railroad or switching track, for commission houses would in time be established near the market, also canning and preserving plants, and the nearness of the side-track would facilitate shipping the product of these factories to out-of-town buyers.

It should be easy to establish and finance such a market among the farmers, gardeners, dairymen and fruit growers nearly every small city surrounded by good agricultural country. Each shareholder should have a

private dealers, all of which should work to the advantage of the auction plan. Michigan growers should watch the scheme carefully for suggestions on improving our own apple marketing system.

Crop and Market Notes.

Michigan.

Mecosta Co., July 19.—July has, for the most part, been very warm, with plenty of rain. Crops are now coming along fine. About the same acreage of corn and potatoes, but more beans than usual. Rye is an unusually good crop, as well as oats. Cherries were a good crop. Plums a fair prospect;

Poultry.

FATTENING POULTRY.

Can you inform me how to milk-fatten poultry?
Saginaw Co. F. W. S.

The first essential in fattening fowls of any kind is to keep them confined so that they can get as little exercise as possible. For this purpose crates or regular fattening pens are best. These pens should be so arranged that they can be easily cleaned. In many cases the bottom is left slatted so that the soft droppings caused by the fattening ration will drop through and thus not soil the feet and feathers. A very good crate for fattening purposes was advertised in our columns last week.

The following method of fattening in which milk is used will give satisfactory results: A mash consisting of four parts of corn meal, two parts wheat middlings and one part beef scraps, should be wetted with skim-milk until it is thin enough to run from a spoon, should be fed to the chickens in troughs. They should be allowed to eat as much of this mash as they will. In addition to this they should be given all the water they will drink, and a plentiful supply of green food. This method produces a very fine, soft sweet meat.

In commercial milk fattening plants buttermilk is used in combination with ground feed similar to the above method, but the farmer will generally find it more convenient to use skim-milk.

In following this method of fattening, on account of the soft mash food's liability to contamination, care should be taken to keep everything clean and sanitary. The troughs and dishes should be scalded after each feeding, and the pens should also be kept well cleaned.

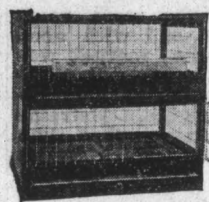
Many poultry raisers do not like the milk feeding method or the forced feeding system, as they believe just as good results can be had with less trouble and less danger of contamination. Some just confine their fowls and greatly increase the corn in the regular ration fed and almost entirely feed them corn during the last week. One prominent poultryman fattens his cockerels by separating them from the rest of the flock and feeding them a grain mixture in the morning of two parts cracked corn and one of wheat. They are given all of this mixture on a floor free of litter. At one o'clock they are given a bountiful supply of green food, and at 3:30 the mash boxes are filled with a mash made as follows: Wheat bran eight parts, ground oats four parts, wheat middlings one part, oil meal one part, gluten meal one part, corn meal six parts, and green cut bone 16 parts. The mash is what he feeds his laying pullets plus a lot of corn meal.

TO CONTROL MITES.

In spite of all vigilance, the lice increased and nearly carried away my chicken coop, until I was advised to try common crude oil, so I purchased a gallon of the vile smelling stuff from one of the big shops in our city, also purchased a two-quart pail and a cheap paint brush. I thoroughly smeared the perches and supports with the oil, taking pains to get it into all cracks and crevices, painted the nesting boxes, and any other place where the lice abounded. I repeated the operation in a week, again in a month, and after that only every month or so—a little oftener in summer than in cold weather. There has not been a mite in my chicken house since then. The crude oil costs only ten cents per gallon and can be used very freely, and I know of no harmful results from its use. SUBSCRIBER.

Farmers' Sanitary Two-Deck Feeding and Delivery Poultry Coop

For Delivering and Feeding; Two Coops in One; Will Last a Life Time; Strong and Durable.



(Patented)
The farmers are losing several millions annually in the United States alone, by not having their poultry properly fattened at selling time. By purchasing at a small cost and using the Sanitary Coop, you turn this loss into a big profit. Packing houses and feeders are taking advantage of your oversight, and with milk and grain feeding they are getting 20 or 25 per cent gain in 10 to 12 days' time. The United States experiments give even a greater gain than the above. You have the advantage of raising your own feed; why not take it? Endorsed by the Michigan Agricultural College, Swift & Co., and feeders generally. Formula for milk and grain feeding and other valuable information on general feeding and care of poultry, furnished free to users of the Sanitary Coops. Write for circulars and prices. THE DANLEY SANITARY MFG. CO., St. Johns, Mich.

LILLIE'S SPECIAL BRANDS BUFFALO FERTILIZER

Made from best material. Always reliable. Lime, Potash, Acid Phosphate, Nitrate of Soda. Agents wanted in unoccupied territory. Ship direct to farmers in carlots. Fertilizer questions answered and farm soil surveys made on request. Colon C. Lillie, Sales Agt., Coopersville, Mich.

BREEDERS' DIRECTORY.

POULTRY.

BARRED PLY. ROCKS

First prize winners at Chicago, Cincinnati, Indianapolis, etc.
Eggs from fine Utility Matings that are bred to lay, \$1.50 per 15, \$4 per 50, \$7 per 100. From best exhibition pens \$10 per 15, \$25 per 50. Prompt delivery and good hatch guaranteed. G. Earl Hoover, R. 7, Matthews, Ind.

Barred Rock Hens \$1.50 each, eggs with the kick in them 15 for \$1.25, 100 \$6, baby chicks 100 \$15. W. C. COFFMAN, R. No. 6, Benton Harbor, Mich.

Barred Rock Eggs—Start right with your Barred's. With eggs records to 271 eggs a year. \$1.50 per 15. Delivered by Parcel Post. Fred Astling, Constantine, Mich.

BARRED ROCKS: Parks 200-Egg strain. A strain with egg records to 271 eggs a year. \$1.50 per 15. Delivered by Parcel Post. Fred Astling, Constantine, Mich.

Buff Rocks. 3 out of 4 firsts Chicago, 1914. Eggs bal. of season \$1.50-15: \$6-100. S. C. Buff Leghorn eggs \$1-15; \$6-100. Pen of 12 Buff Leghorns \$10. 20 Buff Rock Hens, 75 cents to \$1.50, including Chicago and Indianapolis first prize winners. Bird Law Farm, Lawrence, Mich.

LATE SEASON PRICES on R. C. and S. C. Rhode Island Red eggs from fine stock, \$1 per 15, delivered at your door by insured parcel post. JENNIE BUELL, Ann Arbor, Michigan.

NOW is your opportunity to get eggs from my No. 1 pens of Barred Rocks, S. C. Hamburgs, R. C. White Leghorns at \$1 per setting for the next three weeks. RIVERVIEW FARM, R. 8, Vassar, Mich.

Pine Crest White Orpingtons—Splendid early hatched cockerels and pullets. Belgian hares and Collie puppies. MRS. WILLIS HOUGH, Pine Crest Farm, Royal Oak, Michigan.

RINGLET BARRED ROCKS—the winning and laying strain. Eggs \$1.50 per 15, from mated pens also M. B. Turkey eggs from choice birds, \$2.50 per 10. Charges prepaid by parcel post. PLAINVIEW STOCK FARM, Romeo, Michigan.

RHODE ISLAND REDS and PLYMOUTH ROCKS. R. Males 5 to 12 lbs. according to age \$2 to \$6; P. R. hens weight 5 to 9 1/2 lbs., eggs 15 for \$1.00; P. R. eggs \$5 per 100. Mammoth Bronze Tom Turkeys, 8 to 30 lbs., according to age \$3 to \$25, 10 eggs \$3. A. E. Cramp ton, Vassar, Mich.

ROSE COMB BROWN LEGHORN EGGS from Mad. Sq. winners, \$1.00 per setting, \$5.00 per 100. M. Pekin ducks \$1.00 per setting. CLAUDIA BETTS, Hillsdale, Michigan.

SALE OF PINGTON Cockerels—12 wks. \$1; 8 wks. 75c. 8 wks. pen, 8 pullets, 1 cockerel \$10. S. C. Kellerstrass, white. M. E. Thompson, Redford, Michigan.

Single Comb White Leghorn Yearling Hens For Sale

To make room for young stock we offer 800 yearling S. C. White Leghorn hens for sale at bargain prices. These birds are the pick of our breeding flock, in vigor, size and egg production. Seventy-five cents in orders of 100 or more. Eighty cents in orders of fifty and \$1.00 for orders of twenty-five and less. Reference supplied on quality of stock. We guarantee satisfaction on every shipment. KRENTEL BROS., East Lansing, Mich.

Slaughter Sale of Barred & White Rocks Cocks \$3.00 to \$5.00. Hens \$1.00 to \$3.00. Young stock after September 1st. Riverview Poultry Farm, Box 798, Union, City, Mich.

S. C. White Leghorns—breeding cockerels and yearling hens for sale. Also young white Pekin breeding ducks and drakes. Write for prices. Sunnybrook Poultry Farm, R. 3, Hillsdale, Mich.

SILVER Laced Golden and White Wyandotte Eggs for hatching. Ten cents each or 30 for \$2.50. I pay parcel post charges. C. W. BROWNING, Portland, Michigan.

White Wyandotte Eggs—50c for 15, \$4.00 for 100. My two best pens \$2.00 for 15, \$3.75 for 30. DAVID RAY, 202 Forest Ave., Ypsilanti, Mich.

White P. Rocks, Pekin and white runner ducks. White guinea eggs and day old ducks and chicks. H. V. HOSTETLER, St. Johns, Michigan.

DOGS.

FOX, COON, SKUNK AND RABBIT HOUNDS Broke to gun and field. Prices right. Fox and Coon hound pups \$5 each. Stamp for reply. H. C. LYTLE, Fredericksburg, Ohio.

Sable and White Thoroughbred Scotch Collie puppies, good heelers; males \$6.00, females \$4.00. G. K. JONES, Sherwood, Michigan.

Trained Running Fox Hounds—30 Fox and Coon hound pups, Ponies. Send stamp. W. E. LECKY, Holmesville, Ohio.

FOR SALE—Collie puppies, pedigreed, beautiful intelligent, best stock and day old ducks and chicks. WALTER STANFIELD, "Brookdale Farm", Hillsdale, Mich.

FOR SALE—Registered Scotch Collies. Quick to learn, can be taught anything. Puppies, older stock. Prices cheap. (Pedigreed). Caleb Eldred, Climax, Mich.

CATTLE.

Having sold my farm I will sell at auction, two miles north of Royal Oak, on Rochester stone road 1/4 mile east of Starr's corners on Rochester car line on **August 6th, 1915**, commencing at 12 o'clock M. sharp.

Twenty Head Registered Cows and Calves

Bull Troy Fountain Spring DeKol, one year and six months old. Herd Bull Sir Jarie of Royal oak, three years old. Three heavy teams of young horses and a full line of farm implements.

M. H. BLUNT PETER BACKER
Auct. Prop

GEORGE SCOTT
Clerk

ABERDEEN ANGUS

If you are in need of an extra good bull or a few choice young cows or heifers, we have them for sale. Our herd is headed by the Grand Champion Black Monarch 3rd. We invite you to come to our Farm and see them. They are bred right and priced right. U. L. Clark, Hunters Creek, Mich. Sidney Smith, Mgr.

ABERDEEN-ANGUS

HERD ESTABLISHED IN 1900. TROJAN-ERICAS and BLACKBIRDS only. A few young bulls and cows for sale. Also breeders of Percheron, Hackney and Saddle Horses. WOODCOTE STOCK FARM, Ionia, Mich.

AYRSHIRES—One of the foremost dairy breeds. The most economical milk producers. Calves for sale. White Leghorn cockerels; Duroc Jersey swine. Michigan School for the Deaf, Flint, Michigan.

THE VILLAGE FARM,

Grass Lake, Michigan,

GUERNSEY CATTLE.

MILO D. CAMPBELL CHAS. J. ANGEVINE

BEACH FARM GUERNSEYS

Combine the blood of the following great producing sires and dams:

Masher Sequel	67 A. R. Daughters
Galaxy's Sequel	37 A. R.
Glenwood Boy of Haddon	26 A. R.
May Rose King	21 A. R.
Dairymaid of Pinehurst	910 lbs. fat
Dolly Bloom	326 "
Imp. Itchen Daisy	714 "
Selma of Pinehurst	762 "
Stanford's Princess	725 "

Bulls for sale only.

A Dairy Show Every Day.

CAMPBELL & ANGEVINE, Coldwater, Mich.

A GUERNSEY BARGAIN. Two bred heifers. Two mature cows (one fresh). One bull ready for service. A. R. breeding. G. A. WIGENT, Watervliet, Mich.

For Sale—Reg. Guernsey Cattle and BERKSHIRE JOHN EBELS, R. 10, Holland, Michigan.

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

GUERNSEYS—Write for prices and particulars. 2 bulls 1 year old. Several bull calves, all from A. R. cows and cows on test. Geo. N. Crawford, Holton, Mich.

GUERNSEY BULLS FOR SALE, ready for service from A. R. Dams. If you want the right kind write for price and breeding. BYERS & BARNES BROS., Coldwater, Michigan.

HEREFORDS; Two last Oct. bull calves for sale. Big fellows. ALLEN BROS., Paw Paw, Michigan.

Do You Want A Bull?

Ready For Service.

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

EDWIN S. LEWIS, Marshall, Mich.

Espanore Farm, LANSING, MICHIGAN.

Home of the great Holstein bull "Pledge Spofford Calamity Paul"—sire of a 35-lb. cow and three over 30 lbs. If you are looking for a bull calf of this kind of breeding write for prices and pedigrees.

CHASE S. OSBORN, } Owners.
ADAM E. FERGUSON, }

I 4-YEAR-OLD BULL

by a 31-lb. son of Pontiac Korndyke, and out of 27-lb. dam. 2 two-year-old and three yearling bulls. The above bulls have breeding and individuality to spare. Also a few richly bred bull calves. These will be priced right. This is a chance to get a valuable bull for little money. Get busy, as this ad. will appear but twice.

L. E. CONNELL, Fayette, Ohio.

The Two Greatest Bulls

KING OF THE PONTIACS

DE KOL 2d's BUTTER BOY 3rd

I have young bulls from cows having high official records and Granddaughters of above bulls. Stock extra good. Prices reasonable.

BIGELOW'S HOLSTEIN FARMS,
BREEDSVILLE, MICH.

HATCH HERD

YPSILANTI, MICHIGAN

Registered Holstein-Friesian sires, grandson's of World's greatest dairy sire, out of choice A. R. O. dams and King Pontiac Jewel Korndyke; Brother of K. P. Pontiac Laas 44.15; average record of 50 dams in his pedigree 31.25 in 7 days; average per cent of fat three nearest dams 4.37; of his own dam 4.93. Sires in first three generations already have over 600 A. R. O. daughters. A few females bred to "King". Prices reasonable.

REGISTERED Holsteins—Herd headed by Alma Bonte Butter Boy. His dam has A. R. O. records as follows: at 2 yrs. milk 430, but or 18.85; 4 yrs. milk 604.8, butter 27.03; at 6 yrs. milk 620, butter 28.55 lbs. W. B. READER, Howell, Mich.

TWO well-bred Holstein bulls, 8 and 16 mos. old, from A. R. O. dams, \$50 each. Also splendid brown gelding, 14 mos. old. Mrs. Fred Crandal, Howell, Michigan.

\$100 Gets 5 mo. 3/4 white grandson of Friend Hengerveld De Kol & Maplecrest Pontiac Flora Hartor, 30 lbs. butter 7 days, 1232 lbs. in 1 yr. M. L. McLAULIN, Redford, Mich.

FOR SALE—REGISTERED HOLSTEIN BULL born Feb. 26, 1915. Mostly white. Dam has A. R. O. record, also Chester White Pig. CHARLES I. COOK, Box 433, Fowlerville, Michigan.

REG. HOLSTEIN BULL CALVES good A. R. O. breeding, and plenty of 30-lb. blood in their pedigrees. Dewey C. Pierson, Hadley, Mich.

HOBART W. FAY Holstein-Friesian Cattle. Established 1910
MASON, MICHIGAN.

High Class HOLSTEINS My herd is headed by Smithdale Alcartra Pontiac, whose dam is the famous Alcartra Polkadot. Have few young bulls and females for sale at reasonable prices. Will buy a few heifers about 15 months, not bred, Farm 1/4 mile from court house. SETH B. RUBERT, Howell, Mich.

FOR SALE Registered Holstein Bulls ready for service, and bull calves, also females. FREEMAN J. FISHBECK, Howell, Michigan.

HOLSTEIN BULL CALVES—Don't buy until you write us. No better breeding in Michigan. Long Beach Farm, Augusta, Kalamazoo Co., Mich.

HOLSTEIN CATTLE and Duroc Jersey Swine. Choice pigs of both sex now ready to ship. Prices reasonable. E. R. CORNELL, Howell, Michigan.

MICHIGAN HOME AND TRAINING SCHOOL LAPEER, MICHIGAN
Breeder of High Grade Holstein Cattle. Lists and prices upon application.

HOLSTEIN CATTLE and O. I. C. SWINE ELMER E. SMITH, Redford, Michigan.

Holstein-Friesian Breeder—The best families of the breed represented. D. D. AITKEN, Flint, Michigan.

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THE WILDWOOD JERSEY HERD Registered Jersey Cattle of Quality. Tuberculin tested. Majesty's Wonder No. 90717 heads the herd. Bull calves for sale, also a two-year-old bull that is right. For prices and description write or come. ALVIN BALDEN, Capac, St. Clair Co., Michigan.

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

FISHERTON FARM JERSEYS—Some fine grandsons of Hood Farm Pogie's 9th., from Register of Merit dams. FISHERTON FARM, Pontiac, Michigan.

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Shorthorns For Sale, farm 1/4 mile east of Davis ages for sale at farmers prices. C. W. Crum. Secy. Cent. Mich. Shorthorn Breeders' Assn., McBride, Mich.

MILKING SHORTHORNS—TWO BULLS 10 months old. \$125 and \$150. DAVIDSON & HALL, Tecumseh, Michigan.

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

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

Dairy Bred Shorthorns of best Bates Strains. Young bulls 7 months old for sale. Price \$100 each. J. B. HUMMEL, Mason, Mich.

Breeders' Directory—Continued on page 95

Markets.

WEATHER FORECAST.

Beginning July 28, for the region of the Great Lakes. Overcast showery weather the first half will be followed by generally fair weather the latter half of the week. Temperatures will average near or slightly below the normal.

GRAINS AND SEEDS.

July 27, 1915.

Wheat.—The market has been variable during the week. Bad weather for harvesting and a good foreign demand caused an advance early in the week but the report of the sinking of the Leelanaw, an American ship, by a German submarine caused heavy selling and a decline. The decline was checked, however, when the foreign markets failed to follow the American decline. The market gained further advances through reports of black rust from the west and the prompt absorption of the light offerings. New wheat reaching the market in poor condition; it is damp. One year ago No. 2 red wheat was quoted at 86½¢ per bushel. Quotations for the past week are as follows:

	No. 2	No. 1	Sept.
	Red.	White.	
Wednesday	1.12	1.10	1.06½
Thursday	1.10	1.08	1.06½
Friday	1.11	1.09	1.07½
Saturday	1.14	1.12	1.11
Monday	1.12	1.10	1.09
Tuesday	1.12½	1.10½	1.10

Chicago.—July wheat \$1.11; Sept. \$1.06½.

Corn.—This grain was generally quiet during the week. What fluctuations there have been in prices came about chiefly through sympathy with wheat. There is no change in crop conditions and the offerings on the market have been light as has also been the demand. One year ago No. 3 corn was quoted at 75¢ per bushel. Quotations for the past week are as follows:

	No. 3	No. 3	Sept.
	Mixed.	Yellow.	
Wednesday	80½	81½	81½
Thursday	80½	81½	81½
Friday	81	82	82
Saturday	82	83	83
Monday	82	83	83
Tuesday	82½	83½	83½

Chicago.—July corn 78½¢; Sept. 74½¢.

Oats.—The seaboard demand for this grain has kept it firm. The demand is greater than the supply and the general trend of prices has been upward. One year ago the price of standard oats was 40¢. Quotations for the past week are as follows:

	No. 3	No. 3	Sept.
	Standard.	White.	
Wednesday	56½	56	56½
Thursday	57	56½	56½
Friday	58	57½	57½
Saturday	59	58½	58½
Monday	59	58½	58½
Tuesday	59	58½	58½

Chicago.—July oats 51½¢; Sept. 37½¢.

Rye.—This grain is steady at an advance of 2¢ over last week's price. Cash No. 2 is quoted at \$1 per bushel; August 96¢.

Beans.—The demand for beans is light; prices are 10¢ lower than last week. Detroit quotations are: Cash \$2.70; August \$2.80. Chicago trade is quiet and steady. Pea beans, hand-picked, choice, are quoted at \$2.82@3; common \$2.62@2.80; red kidneys \$3.25@3.50.

Clover Seed.—Prime spot \$7.90; October \$8.20; alsike \$8.65.

Timothy Seed.—Prime spot \$2.75.

DAIRY AND POULTRY PRODUCTS.

Butter.—Market is easy on account of heavy offerings. Prices unchanged. Extra creamery 25¢; firsts 24¢; dairy 21¢; packing stock 18¢.

Eggs.—Market is steady at a decline of ½¢ under last week. While receipts are not as large as heretofore they are in excess of same time last year. Quotations for the week 24½¢ per pound.

Chicago.—The market is easy at current quotations which are slightly lower than last week. Demand good but medium grades sell best. Extra creamery 25@25½¢; extra firsts 24@24½¢; firsts 23@23½¢; seconds 21½@22½¢; packing stock 19@19½¢.

Poultry.—Offerings are very light excepting broilers which have declined 3¢ in price. Other kinds unchanged. Market steady. Live.—Broilers No. 1, 20@21¢; No. 2, 18@19¢; hens 14@14½¢; ducks 15@16¢; geese 10@11¢.

Chicago.—Market is firm at prices slightly higher than last week. The

supply and demand are good. Fowls, good weights 13½¢; spring chickens 18@20¢; ducks 13¢; young ducks 14@15¢; geese 8@9¢; spring geese 12½@14¢; guinea hens \$2.75@3 per dozen.

Eggs.—Market steady and consumption active. Prices lower. Fresh stock sells at 17¢ per dozen.

Chicago.—Market is firm with no change in prices. Trade is good for fresh stock. Miscellaneous lots, cases included 14@17½¢; ordinary firsts 16½@16½¢; firsts 17½@17½¢.

Veal.—Quoted steady at 13@13½¢ for fancy, and 10@11¢ for common.

FLOUR AND FEEDS.

Flour.—Jobbing lots in one-eighth paper sacks are selling on the Detroit market per 196 lbs., as follows: Best patent \$6.50; seconds \$6.20; straight \$6; spring patent \$7.10; rye flour \$6.50.

Feed.—In 100-lb. sacks, jobbing lots are: Bran \$25; standard middlings \$29; fine middlings \$32; cracked corn \$28; corn and oat chop \$30 per ton.

Hay.—Market is firm. Carlots on the track at Detroit are: No. 1 timothy \$20.50@21; standard \$20@20.50; No. 2, \$18.50@19; light mixed \$20@20.50; No. 1 mixed \$18@18.50; No. 1 clover \$14@15.

New York.—Firm. Prime \$26.50; No. 1, \$22.50; No. 2, \$24.50; shipping \$20 per ton.

Straw.—Rye straw \$9@9.50; wheat and oat straw \$7@7.50 per ton.

FRUITS AND VEGETABLES.

Cherries.—In demand at \$1.25@1.35 per 16-qt. case.

Chicago.—Demand is moderate. Some are going into storage. Sour sell at 65¢@1 per 16-qt. case; sweets \$1@1.75.

Raspberries.—Steady and scarce. Reds are quoted at \$5@5.50 per bu; blacks at \$1.75@2 per 16-qt. case.

Chicago.—Market is steady for all kinds. Soft and mouldy hard to dispose of. Quotations: Blacks \$1@1.40 per 16-qt. case; reds \$1.25@1.75 per 24-pt. case.

Blackberries.—Active at \$2 per 16-qt. case.

Chicago.—Market steady. Michigan dewberries sell at \$1.25@1.50 per 16-qt. case; 24-qt. Indiana Eldorado are quoted at \$1.50@1.65.

Gooseberries.—Are selling well at \$2@2.25 per bushel.

Chicago.—Large, sound berries are in good demand. Downings sell for \$1@1.35 per 16-qt. case. \$1@1.25 per 16-qt. case; others 90¢@1.

Currants.—Cherry currants sell well at \$2.75 per bushel; smaller kinds at \$2@2.25.

Chicago.—Demand is good for large desirable goods. Cherry currant, 16-qt. case 90¢@1; others 50@65¢.

WOOL.

Boston.—The market is still displaying great firmness but is slightly easier on account of the prospective offering of some fleeces and territory wools. The west is being cleaned up of the new clip at prevailing prices, and more looms are getting busy. There is a shortage in Australian wool and also one in South American wools. The underlying strength of the market has inspired confidence and it is expected that the consumption of wool in the United States will soon become normal again and a demand for clothing will be seen. Michigan unwashed delaines are quoted here at 28@29¢; do. combing 29@35¢; do. clothing 24@30¢.

GRAND RAPIDS.

Red raspberries are selling around \$2 per case; black caps \$1.50@1.75; gooseberries and currants 80@90¢; huckleberries \$2.25@2.50. New potatoes, home-grown, readily brought 60¢ early this week, with market somewhat firmer than a week ago when shipped-in stock was more plentiful. Wax beans are in good supply this week and both beans and peas are selling around 60¢ per bushel. The egg market holds steadily at 17@17½¢ per dozen; dairy butter 20@21¢. Fowls live weight, are worth 11@12¢; broilers 18@20¢. The local market for new red wheat, 60-lb. test, starts off at \$1.

LIVE STOCK MARKETS.

Buffalo.

July 26, 1915.

(Special Report of Dunning & Stevens, New York Central Stock Yards, Buffalo, N. Y.)

Receipts here today as follows: Cattle 115 cars; hogs 76 d. d.; sheep and lambs 7 d. d.; calves 1000 head.

With 115 cars of cattle on our market here today, all the strictly good dry-fed cattle sold 15@25¢ per cwt. higher than last week, but all the cattle that had been to grass sold just about steady with last week, in some instances no higher and then again 10¢ per cwt. higher. The market closed

early with everything sold. Again we want to caution our shippers in the country to be careful about these half-fat grass cattle, as we do not think they are going to sell any higher in the future.

Our receipts of hogs were some lighter than expected and with good demand from all sources market was anywhere from 10@25¢ per cwt. higher than Saturday, the big advance being on the light weights. Extreme heavy hogs sold a little higher than the close of last week; choice grades weighing around 300 lbs. sold at \$7.75, and 240 to 250 lbs at \$8@8.10; light light mixed weighing around 190 to 225 lbs. sold from \$8.15@2.25; yorkers and pigs \$8.30@8.35, with a few loads of choice up to \$8.40; roughs were again extremely dull, the choice kinds selling at \$6.25; thin sows from \$4@5; stags \$5@5.50. Market closed steady on all light weights, but dull on anything heavy, and a few of the latter kinds going over unsold.

The market was active today on lambs and sheep, with prices 50¢ higher than the close of last week; most of the choice lambs selling at \$9.75. Look for steady prices last of week with moderate receipts.

We quote: Lambs \$9.25@9.75; cull to fair \$7.50@9; yearlings \$6.25@7.50; bucks \$3@4.50; handy ewes \$5.50@6; heavy ewes \$4.50@5; wethers \$6@6.75; cull sheep \$3@4; veals, choice to extra \$11.50@12; fair to good \$8.50@10.50; heavy calves \$5@8.50.

Chicago.

July 26, 1915.

Cattle. Hogs. Sheep.

Receipts today. 15,000 34,000 14,000
Same day 1914. 11,813 28,206 18,315
Last week. 35,710 130,602 48,538
Same wk 1914. 38,026 104,385 85,685

Shipments from here last week amount to 8,044 cattle, 23,692 hogs and 48,538 sheep, comparing with 13,566 cattle, 19,824 hogs and 11,675 sheep the corresponding week of 1914. Hogs received averaged 241 lbs.

Butcher cattle sold at steady prices this morning, but steers were slow, and prospects were that while choice lots would go at no lower prices, the others would be slow and perhaps weaker. Hogs were steady. Most of the receipts in the sheep house consisted of range lambs and yearlings, and owners were holding the best lambs for \$8.25.

Cattle were in much poorer demand than usual last week, and prices were on the down-grade, especially for the lower grades of grass steers and warmed-up offerings, marked declines taking place. Bulk of the steers found purchasers at a range of \$8.35@10.10, with warmed-up steers bringing \$8.10@8.75, while medium grades sold at \$8.80@9.45 and good steers at \$9.50@9.95. Yearlings sold all the way down to \$7.75@8.75 for the commoner offerings, of which the supply was much too generous. Butcher cows and heifers were in excellent demand at \$5.20@10 for ordinary to fancy grades, with prime little yearling heifers selling much the highest and the best cows at \$7.75@8.25. Cutters went at \$4.70@5.15, canners at \$3.35@4.65 and bulls at \$5@7.85. Calves were in fairly large supply and in the usual demand, with sales at \$5@10.75 for the coarse heavy to prime light vealers.

Hogs were marketed much more freely during the past week, and prices underwent several sharp reductions, with a further widening of the range of values. The week closed with hogs selling at \$6.50@6.90 for heavy packing lots and at \$7.75@7.85 for the best light shipping lots; with fair to fancy heavy shipping hogs at \$6.95@7.50, while pigs sold mostly at \$6.25@7.75. A week earlier hogs brought \$6.80@8.12½.

Spring lambs have suffered sensational declines in prices in recent weeks, with some small rallies now and then, the lack of a shipping demand helping local packers to establish values. Idaho range lambs comprise the principal share of the offerings, with some big bunches coming from Washington, and a number of good sized consignments of range yearlings have arrived. Aside from these, the receipts run mainly to native lambs and ewes. Most of the time fluctuations in lamb prices are much wider than in yearlings or sheep. Few wethers are offered. Despite the great shortage in the lamb crop, recent prices sank to a little lower level than a year ago. At the week's close prices stood as follows: Lambs \$5.75@8.10; yearlings \$5.50@7.15; wethers \$5.75@6.65; ewes \$3@6; bucks \$4.25@5.

CROP AND MARKET NOTES.

(Continued from page 92).

small and wild fruit, fair pear crop, some apples, but no peaches; some plums. Wool 30¢; butter-fat 24¢; corn 1.06 per cwt; oats 45¢; wheat \$1; rye 85¢; hay \$4@10 per ton; sheep \$3@10; hogs \$7.40; cattle \$5@8.50.

War Prices for Beans

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still leads all others as the most reliable and satisfactory tool for harvesting beans. Don't be deceived—demand the machine with the name "Miller" plainly stenciled. Wood or Steel frames. Manufactured by Le Roy Plow Company, Le Roy, N.Y. Ask your Dealer or write us.

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will do your work quickly, easily and get all the potatoes in perfect condition.

Save Time—genuine patent tilting frame permits shortest and quickest turns at end of rows, without any danger of tipping over. Lightest Draft—elevator is lower and our method of separating saves power. Rigid Pole—gives absolute control over movement of digger at all times, and allows it to be backed if desired.

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THIS IS THE FIRST EDITION.

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

DETROIT LIVE STOCK MARKETS.

Thursday's Market.

July 22, 1915.

Cattle.

Receipts 1406. There was another heavy supply of cattle on hand at the local stock yards this week and a decidedly dull draggy market from start to finish at prices 15@20c lower on everything but canners, which held steady. All the local meat dealers are well supplied and if heavy runs keep up as they have for the past three weeks little improvement may be looked for. The quality was as a rule common, few good dry-fed being in the receipts. Nothing new has developed in the quarantine situation, and no stockers, feeders or milch cows can as yet be taken back for feeding purposes. It is said that before they can be handled the yards must be cleaned again and the railroad company is unwilling to stand the seemingly unnecessary expense. The close Thursday was dull and draggy at the decline. Best dry-fed steers \$8@8.50; best handy weight butcher steers, grass \$7@7.75; mixed steers and heifers \$6.50@7.25; handy light butchers \$6@6.50; light butchers \$5.50@6; best cows \$5.75@6; butcher cows \$4.50@5.50; common cows \$4@5; canners \$3@4; best heavy bulls \$6; bologna bulls \$5@5.75.

Bishop, B. & H. sold Parker, W. & Co. 2 canners av 750 at \$3.50, 1 bull wgh 1210 at \$5.50, 2 cows av 790 at \$4, 2 do av 995 at \$5.50, 5 do av 1092 at \$5.50, 3 bulls av 1020 at \$5.50, 3 do av 1103 at \$5, 5 do av 1012 at \$5.60; to Hammond, S. & Co. 1 bull wgh 1790 at \$6.25, 25 butchers av 1023 at \$7.35, 8 do av 920 at \$7, 17 do av 868 at \$7, 2 cows av 1065 at \$5, 1 do wgh 970 at \$4.50, 1 do wgh 1230 at \$5.50, 2 do av 980 at \$5.25, 2 steers av 1185 at \$8; to Sullivan P. Co. 11 cows av 1100 at \$5.25, 1 do wgh 1200 at \$5, 5 butchers av 1040 at \$7, 10 steers av 1160 at \$8; to Breitenbeck 9 cows av 1058 at \$4.85; to Kull 6 steers av 960 at \$7.50; to Breitenbeck 1 cow wgh 950 at \$5.25, 1 bull wgh 850 at \$5.50; to Remick 7 butchers av 768 at \$5; to Hammond, S. & Co. 24 steers av 1057 at \$7.65; to Mich. B. Co. 31 do av 1019 at \$7.65; to Sullivan P. Co. 10 do av 955 at \$7.10, 14 do av 1093 at \$7.65.

Reason & S. sold Thomas 4 cows av 1017 at \$5.75; to Sullivan P. Co. 4 do av 1065 at \$5.50, 11 butchers av 845 at \$6.75; to Mich. B. Co. 27 steers av 940 at \$6.90, 9 do av 1055 at \$7.50, 3 butchers av 910 at \$6.50; to Rattkowsky 2 bulls av 860 at \$5.25, 1 do wgh 710 at \$5, 3 cows av 1050 at \$5.80; to Brown 2 bulls av 1275 at \$5.60, 3 do av 1273 at \$5.60, 3 do av 1023 at \$5.25, 1 do wgh 960 at \$5, 2 do av 800 at \$5.

Johnson sold Hammond, S. & Co. 3 cows av 1060 at \$5.10, 4 butchers av 1072 at \$7, 1 bull wgh 930 at \$5.50; to Bennett & S. 8 butchers av 867 at \$6.50.

Veal Calves.

Receipts 603. Good grades of veal calves brought steady prices but culls and those of the common order were dull and 75c@1 lower than last week, selling as follows: Few choice \$11; bulk of good \$10@10.50; heavy \$6@6.50; culls and mediums \$7@8.

Haley & M. sold Newton B. Co. 17 av 160 at \$10.50; to Mich. B. Co. 4 av 150 at \$10; to Goose 2 av 210 at \$10, 4 av 200 at \$6, 3 av 145 at \$10.50, 3 av 200 at \$10; to Mich. B. Co. 3 av 200 at \$10.

Sheep and Lambs.

Receipts 1942. The supply of sheep and lambs was small but there was plenty to supply the local demand. Quality is cutting quite a figure at present, many of the lambs are of the common order with little fat. Prices averaged about the same as last week, \$8 being the extreme price for fancy lambs and \$5 for choice sheep; the close was dull. Best lambs \$8; fair lambs \$6.50@7.50; light to common lambs \$5.50@6; fair to good sheep \$4.50@5; culls and common \$3@4.

Roe Com. Co. sold Sullivan P. Co. 51 sheep av 120 at \$4.25; to Mich. B. Co. 37 sheep av 125 at \$4.50; to Newton B. Co. 15 lambs av 65 at \$7, 11 yearlings av 90 at \$6, 10 lambs av 63 at \$7.50, 40 do av 73 at \$7; to Young 54 do av 65 at \$7.85.

Reason & S. sold Sullivan P. Co. 42 lambs av 80 at \$8, 12 yearlings av 90 at \$6, 5 sheep av 115 at \$4.

Hogs.

Receipts 3585. In the hog department Wednesday pigs and yorkers brought \$7.75@7.80, with bulk at \$7.80. Heavies \$7.50@7.70; up to noon on Thursday no hogs had been sold but prospects look a trifle higher.

Light yorkers \$7.75@7.85; heavy do. \$7.50@7.55.

Friday's Market.

July 23, 1915.

Cattle.

Receipts this week 1570; last week 2031. Market dull and 10@15c lower on everything but good fat steers. Best dry-fed steers \$8@8.50; best handy-weight butcher steers, grass \$7@7.75; mixed steers and heifers \$6.50@7.25; handy light butchers \$6@6.50; light butchers \$5.50@6; best cows \$5.75@6; butcher cows \$4.50@5.50; common cows \$4@5; canners \$3@4; best heavy bulls \$6; bologna bulls \$5@5.25.

Veal Calves.

Receipts this week 709; last week 757; market strong. Best \$10.75@11; others \$6@9.50.

Sheep and Lambs.

Receipts this week 2276; last week 2198; market dull. Best lambs \$8; fair do \$6.50@7.50; light to common lambs \$5.50@6; fair to good sheep \$4.50@5; culls and common \$3@4.

Hogs.

Receipts this week 4528; last week 5164; pigs and yorkers \$7.80@7.85; heavy \$7.50@7.70.

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Wonderful improved varieties, with strong vigorous new blood, that will increase your yield 20 to 50%. Grand Prize a marvel of productiveness; Michigan Red Wave with a record of over 55 bushels per acre. Other leading sorts. All graded over the best special power machinery ever built for the purpose. You get the cream. Write today for special Price List No. 24 of Famous Seed Wheats, Timothy, Vetch, Rape, Grimm Alfalfa and other Clovers.

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Practical Science.

CHEMISTRY IN RELATION TO AGRICULTURE.—V.

BY FLOYD W. ROBISON.
Feeds and Feeding.

A line of agricultural procedure which has been very profitable to a good many farmers has been the feeding of live stock and the feeding and care of dairy cattle. In this line of agricultural procedure chemistry, and the laboratory, has had a very pronounced influence. In fact the more successful methods of procedure have been the direct outgrowth of the deductions formulated in the laboratory.

Little Attention Paid to Scientific Rations on the Ranch.

When the raising of cattle upon the ranches of the west was a common practice little attention was paid to the scientific features of the matter. In fact, it was unnecessary and undoubtedly impossible, but when this began to decline and in more civilized communities the feeding of live stock for purposes of meat production was continued it became apparent very speedily that different methods must be invoked. Likewise in the management of dairy stock. As long as roughage was plentiful and economic production was not considered, little attention was paid by the farmer to the scientific features of the ration dispensed. With the advance of the business of dairying, however, competition became more keen and it became necessary to purchase on the market feeding stuffs to supplement the home ration, and it then became necessary for farmers to pay more attention to the science of nutrition and to know more about the principles involved in economic stock feeding.

History of the Balanced Ration.

The history of the scientific feeding of animals is a very recent one. Almost the pioneer ideas in this line were not promulgated previous to 1864 when Wolff promulgated what he called his "Feeding Standards." The logic of his reasoning at once took hold of the experimental world and chemists began at once to compound rations bearing in mind the principles promulgated by Wolff. At the present day even we are giving very great consideration to but slight modifications of these original Wolff feeding standards.

The standards promulgated by Wolff in 1864 were given, however, very little consideration in America until Atwater, probably the pioneer of American nutrition experts, brought the idea to this country. In 1880 Armsby, of the Pennsylvania Station, published his Manual of Cattle Feeding which was among the early American contributions to this subject.

The feeding standards idea took root early in scientific discussions and became the basis for what was more popularly termed "the balanced ration." Various improvements have from time to time appeared in which some of the original weak points of the Wolff standards have been eliminated until now we have the feeding units which are really a direct outgrowth of the original feeding standards. The balanced ration is a direct outgrowth of laboratory experiment and deductions and its firm hold upon the feeding world is another testimonial to the very intimate relationship existing between chemistry and this branch of agriculture.

The Proximate Principles.

It should be borne in mind that the balanced ration has to do with the composition of foods and feeds, and the relation of feeds of varying compositions to animal nutrition. The items of consideration in a feeding stuff with which the balanced ration

has to do are termed the proximate principles of food. We are familiar with these principles under the terms protein, carbohydrates and fats. The science of the balanced ration consists in preserving or providing the most satisfactory proportion of these three proximate principles. We have in very recent times a very excellent comparison of the logic of a balanced ration.

A Modern Comparison.

We think the gas engine furnishes an excellent illustration. In the operation of an engine using gasoline as fuel the maximum efficiency of the engine depends upon securing a very careful balance between the vapor of gasoline burned and the intake of air. It is possible to operate the engine with an excess of gasoline vapor over that of air. It is also possible to operate it with an excess of air over that of gasoline vapor, but in either instance mentioned the engine operates below its optimum efficiency. In plain words, there is a point in the operation of the engine which provides a certain almost definite mixture of gasoline vapor and air to produce the most favorable results, the most perfect ignition, and consequently the maximum amount of power. Crudely analogous to this is the animal organism and the proximate principles have a somewhat similar significance. It has been shown that it is absolutely necessary to have a certain amount of protein in the ration to carry on the various animal functions and in the case of dairy cows to provide as well for the enormous amount of nitrogenous matter, (casein and albumin), which is secreted in the milk supply. A dairy cow or the domestic animal will exist and furnish a certain form of energy on a diet which consists largely of protein but as maximum efficiency, particularly when we take into consideration economic efficiency, cannot be reached on an exclusively protein diet it is desirable that the ration shall contain varying proportions of the other proximate principles, that is, carbohydrates, and fats.

Maximum economic efficiency of a dairy cow or other domestic animal depends upon supplying the protein of the ration to that point only where protein may be needed and then the addition for the balance of the ration of the less expensive and, for other purposes, more desirable carbohydrates and fats. The craving which the appetite has for variety in foods is undoubtedly nature's plea for this careful consideration in the diet. Fortunately it seems to us the most direct demands as called for in the balanced ration are likewise indicated by an economic consideration of the commercial value of foodstuffs.

The Balanced Ration is the Most Economic Ration.

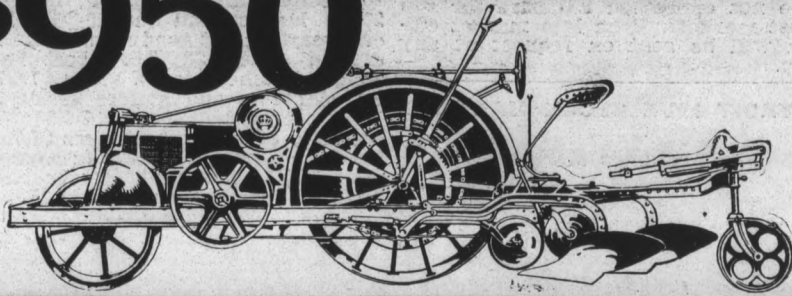
For at least in the northern states it is a well known truth that those feeds containing large percentages of digestible protein are the feeds which are more expensive. Consequently economic considerations alone would sanction the use of protein feeds in the ration only so far as they are absolutely necessary. The real facts of the case are that the cost of protein feeds has been so high that farmers have, as a rule, provided too small an amount of protein feeds in the ration and thereby have not provided a sufficient amount of real working material for the animal body.

(Continued next week.)

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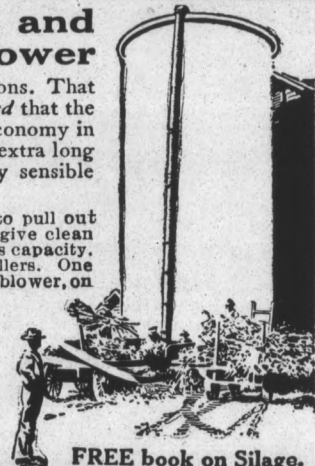
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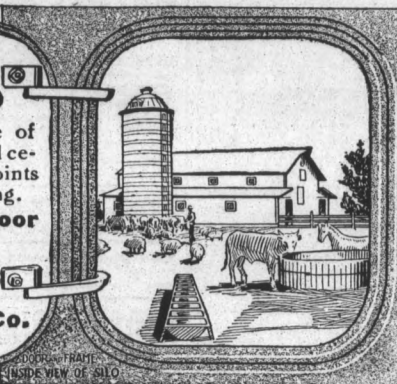
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