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How to be Successful With Potatoes-II.

GOOD cultural methods are second to good preparation of the land.

The purpose of tillage is to increase the yield of potatoes through the conservation of moisture during the summer, the checking of weeds, the liberating of plant food and the maintaining of a fine texture of the soil. About one week after planting the potatoes, a spike-tooth drag should be run over the field in both directions, so as to make a good mulch. This also kills the young weeds and brings new weed seeds to the surface. These will be killed a week later during the next cultivation. After the potatoes are up, a valuable tool is the one-horse weeder. It can be used until the potatoes are eight or nine inches high, when driven across the rows after each cultivation it will destroy all young weeds. For the first two or three cultivations a riding cultivator does good work. The cultivation should be wide and about four or five inches deep. The later workings are shallower, just deep enough to maintain the soil mulch. Level culture is best maintained by the use of the spring-tooth and spike-tooth cultivators.

Potato spraying has not received the attention that it merits from the average farmer. The New York Experiment Station has been conducting experiments along this line during a period of ten years. They have obtained results that make them strongly endorse the practice of spraying every season. In 1903 they found that three sprayings increased the yield 88 bushels per acre, while five sprayings made 118 bushels more per acre. Six farmers in New York increased the net profit on their potatoes \$25.77 per acre. Spraying operations should commence when the plants are six or eight inches high and continue, at intervals of from 10 to 14 days, throughout the season. The plants

are then kept well covered with the Bordeaux mixture approximately all of the time. The benefits obtained by spraying may be summed up as follows:

1. Structure of leaf is strengthened and offers more resistance to the growth of the disease spores.
2. The transpiration of moisture is increased. This means a greater movement of plant food from the roots to

greater vigor characteristic of undiseased plants.

A man must watch his crop, the season, and the conditions. He must know what he is spraying for. The first spraying must be given early enough to ward off the first attack of the blight. No rule for the exact time can be given. Good judgment is the best adviser.

As has been stated, the spray for blight

to form a thin paste. To dissolve the copper sulphate, it should be placed in a coarse sack and suspended in the top of a barrel of water. A gallon of water will dissolve three pounds of sulphate. This is a saturated solution.

The mixing is more economical if a stage is had, under which the spray cart may be drawn. To make 50 gallons of the mixture, pour two gallons of the saturated copper sulphate

into a barrel and fill it up to the 25 gallon mark with water. Put the equivalent of four pounds of lime into another barrel and fill this one up to the same mark. These barrels should be provided with pieces of rubber hose, attached near the bottoms, so that the free ends may be placed in the spray cart. Then the barrels are emptied and the contents are mixed together. The result is a good mixture of Bordeaux.

The harvest may come early or late, according to the time of the frosts. An early frost will cause digging at a time when the potatoes are green. The shrinkage of these potatoes would be so great, if stored longer than necessary for the skins to harden up, that the sale at that time is most profitable, if the prices are at all favorable. There are

several methods of digging in use today. They are the fork, the shovel plow and the mechanical digger methods. One man with a fork can dig about three-eighths of one acre per day. Six to ten hands with two horses can plow from one and one-half to two acres per day, while a good machine with four horses can turn out from four to six acres per day. The method of digging depends largely upon the season, the amount of labor available, and the size of the crop to be harvested.

Ordinarily, it does not pay the farmer to store his potatoes unless he has a

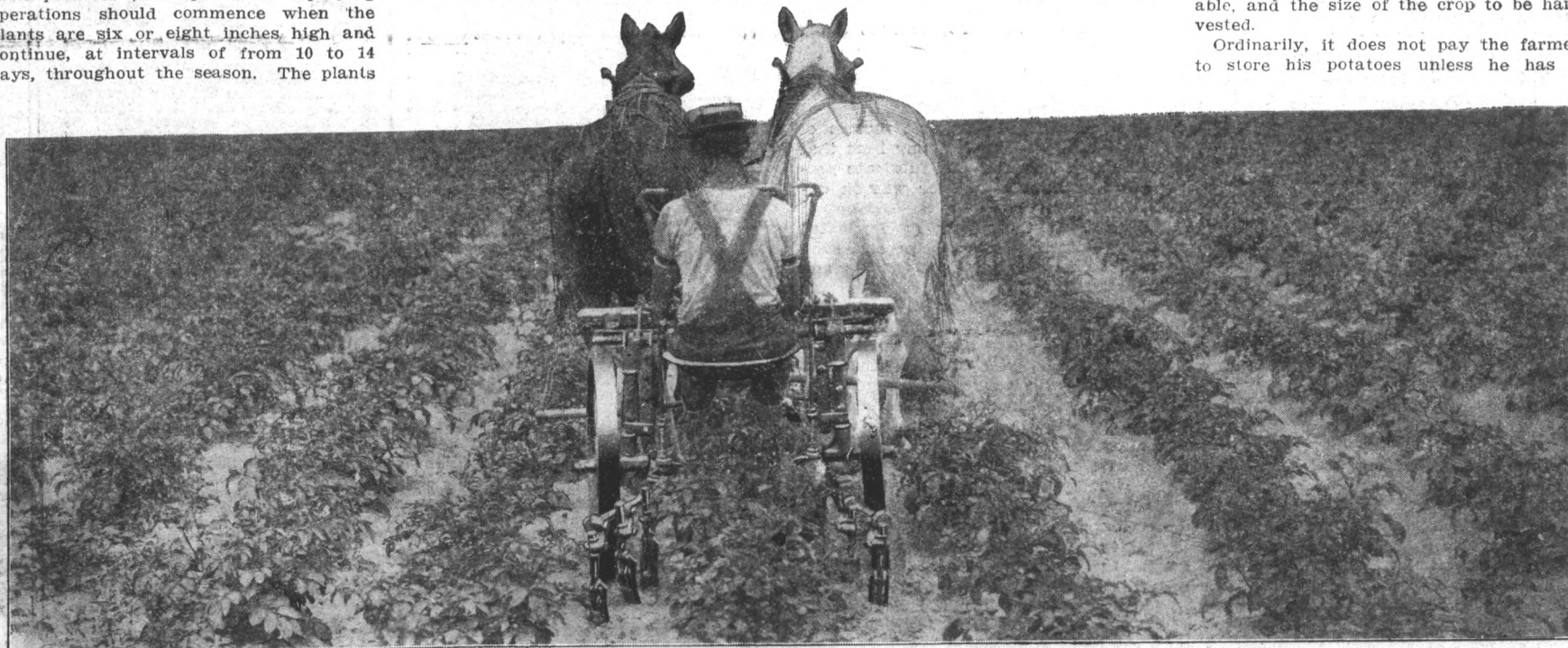


Spraying with Bordeaux Mixture is a Good Investment Even when there is no Blight.

the leaves and so a greater growth.

3. Taking in of food from the air is much greater.
4. The growing season is extended, insuring a heavier yield.
5. The tuber production is increased because of greater size and a large number of tubers to the plant.
6. Dry matter and starch formation is increased.
7. The yield is increased through the

is the Bordeaux mixture. When the potato beetle is harmful, an addition of one pound of Paris green to every 50 gallons of Bordeaux mixture is a curative. The mixture is composed of six pounds of copper sulphate, four pounds of quicklime and 50 gallons of water, for use on the potato. Use freshly burned, clean lime; slake by purging hot water over it in small amounts until the lime falls to a fine powder. Then add enough water



Clean, Shallow, Level Culture will Best Conserve the Moisture Needed to Mature a Good Crop of Tubers in a Dry Season.

good potato cellar where he can watch the crop and keep the temperature around 33 degrees F. Potatoes can be pitted and made to keep well during the coldest winter but an inexperienced man should not attempt it. There is something of an art in building a good pit, and a description will not enable a man to make one without endangering his crop.

Nearly three millions of farmers grow potatoes every year. They furnish the nation with a most important food. To keep on with this work, the increase of yields must keep up with the increase in population. It should increase faster. The progressive farmer will see that it does. Smaller acreage and bigger yields are being sought in every farm product. There is no greater opportunity for seeing this realized than with the potato crop.

Montcalm Co. A. M. BERRIDGE.

LILLIE FARMSTEAD NOTES.

A heavy rain on July 2, another on July 7, a downpour on July 12, and now another downpour on July 15, have changed conditions in this part of the country very materially. A splendid rain on July 2 soaked up the ground so that the corn came up. I was afraid that much of this would be moldy and would not grow, but seemingly every kernel grew, and we have a perfect stand of ensilage corn, but, of course, on the clay pieces where it didn't come up in the first place it is about two weeks later. This rain also brought up the beets. They are thick on the clay. The seeds remained there for about three weeks and never germinated, and now we have a fine stand of beets, but they, like the corn, are very uneven. On the moist places of the field where they came up in the first place they should have been cultivated long ago, in fact, we did cultivate them before we could see any beets on the clay at all. The only question is, is it not so late that we cannot get a profitable crop? It looks dubious to me.

The rain on July 7 did good also in many respects for a crust had formed from the previous rain and this softened it so that there was no question about the seed coming up. The rain on the night of July 12 was not needed for agricultural purposes in this country. We would have been better off without it. There was very much hay out, and consequently it is damaged, and now again this morning, the 15th of July, there was another heavy downpour. All of the lower places in the fields are filled full of water. In my corn field in front of the house I can see from the window the water standing at least two feet deep right over tile drains. Last night it was nearly taken care of from the previous rain. The drains have been working splendidly, but this rain again this morning has flooded the fields and the probability is before this dries off the corn will be ruined in those low places.

Much of my hay has been seriously damaged by these excessive rains at this time of the year. I had the most of it cut and in cocks. Ordinary rains would have done very little or no damage, but these excessive rains wet the cocks considerably, but that was not the worst of it. We had no drying weather, no wind after the rains. The atmosphere was very humid and hot, no air stirring. It didn't dry off, and the outside of the cocks that should have dried off in one day ordinarily, remained wet until it molded. When it did dry off and we began drying this mold was dry. In the bottom of the cock there was many of them covered with white mold. I really don't know just how this hay will turn out, how much of it the cattle will eat, but we put it in the barn anyway, and so far as moisture is concerned it is in good condition. The balance of the hay was not moldy at all but the heavy rain Friday night and again this morning may put that in condition so that it will be moldy, and yet today is a good drying day. There is a northwest wind with a dry atmosphere and things are working more favorably, but at best there is serious loss in the hay crop.

It is a saying that the great law of nature is compensation and while the first crop of clover has been damaged the second crop is very promising. I never saw such a nice even stand of the second growth of clover. In the first fields that we cut it is up five or six inches high now and thick and green and growing luxuriantly. If the weather is at all favorable at time of maturity there is certainly good prospects for clover seed,

certainly there would be good prospects for a second cutting of clover hay, but we had so much clover hay for the first cutting that I don't know what we would do with it for hay, but we can use the clover seed if it comes along.

These rains and hot weather have made the weeds grow wonderfully. From now on until the ground dries again it will be difficult to become master of the weeds. In some instances I doubt if we can possibly conquer them because the haying isn't all done yet, and then will come the harvesting, and some of the work will have to be neglected. The hoed crops this year are certainly getting it from all sides. First a late spring which prevented their getting in on time, then it was so dry they couldn't grow, and now an excess of moisture, and coming just at a time when the attention of the farmer must be demanded in caring for the wheat and the hay and the other crops. The hoed crops are bound to suffer, but we must simply make the best of it, and make the loss as light as possible. There certainly ought to be moisture enough so that the late potatoes will do well, but it did not come early enough for early potatoes and they are sure to be a poor crop.

There is something wonderful about the way the pastures have developed this spring. The spring was late and cold and yet the pastures grew. We had pasture almost as early as any other year, and they stood the June drought better than one would expect, and now with these rains they will continue certainly until well along into August and perhaps we will have good pasture all summer. We have one big silo half full of corn ensilage left over from last year that we intended to feed during the drought this summer. It looks now as if we would not have to open this at all. There is plenty of feed in the pasture. A neighbor just here asked why it was that the pasture grass grew so abundantly this year. There is only one reason that I can give for this and that is that the excess amount of moisture last fall soaked up the ground, it was retained by the ground, and helped the pasture this spring. I believe this is the true reason for this, because certainly there was no favorable spring for the growth of grass, and had we not had an excessive amount of moisture stored in the ground I think pastures would have been exceedingly short this year, and as it is they are good.

CORIN C. LILLIE.

ONLY ONE GRADE OF OIL NECESSARY.

With the greatly increased use of automobiles as well as gasoline engines by farmers, the question naturally arises among their users as to the proper kind of lubricating oil to use on the particular type of car or engine which they happen to own. There was formerly a great difference of opinion among users of gasoline engines as to the grade of oil best adapted to their lubrication. Some thought a heavy oil desirable, while others preferred medium, and still others light oil.

Oil companies made a number of grades of oil of different consistencies and issued charts showing the grade of oil that every car supposedly required. This necessitated the carrying of several kinds of oil by dealers and small merchants would not have them in stock, which entailed a frequent change in the grade of oil used. Naturally, this was a disadvantage which it was desirable to overcome, and a standard oil suitable for gasoline motors of all kinds that would stand any heat that a motor might develop and lubricate perfectly in summer or winter was in demand.

It has been thoroughly demonstrated that the better grades of motor oils, such as will be found advertised in this and other reputable journals, are adaptable to a gasoline motor under all conditions, except it may be an old or badly worn motor, where a heavy oil aids in developing compression, and in that event the use of heavy oils causes additional trouble in the accumulation of carbon deposits.

Dealers throughout the country generally carry one standard grade of motor oil, or will carry it in response to a general demand. Hence owners of not only motor cars but gasoline engines would find it to their advantage to use only a standard oil of this kind which will satisfy a general demand and which in response to that demand can be purchased at any small store, as well as at large dealers once the demand is made apparent.

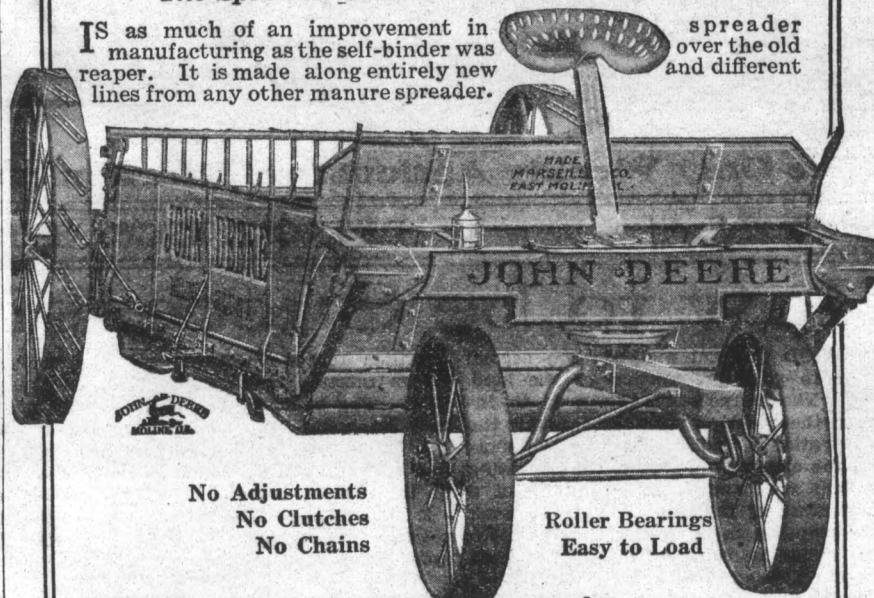
Wayne Co.

C. T. H. B.

Simplest and Strongest John Deere Spreader

The Spreader with the Beater on the Axle

IS as much of an improvement in manufacturing as the self-binder was reaper. It is made along entirely new lines from any other manure spreader.



No Adjustments
No Clutches
No Chains

Roller Bearings
Easy to Load

The Greatest Improvement in Spreaders Since Their Invention

IMAGINE a manure spreader without any of the chains; with all the clutches and adjustments removed; one that has no extra shaft for the beater, no stub axle or counter shafts; one on which the parts that drive the beater all surround the main axle and are within a distance of twelve inches from it; and one that, besides being of much lighter draft than any other you have ever seen, is so low down that it is only necessary to lift the manure as high as your hips when loading. Imagine all that and you will have some sort of an idea of what this new John Deere Spreader—The Spreader with the Beater on the Axle—is like.

It is absolutely the simplest and strongest manure spreader ever invented. It has from one hundred and fifty to two hundred less parts than the simplest spreader heretofore made. Easy to load. It is always ready for business. It cannot get out of order. There are no adjustments to be made.

The Beater on the Axle

It is a fact that most of the trouble experienced with the ordinary manure spreader has been with the parts that make up the beater driving mechanism.

On the John Deere Spreader all the shafts and chains necessary to the old style of mounting the beater have been done away with.

All of the driving parts are mounted on the main axle within the beater.

The strains and stresses of spreading are borne by the main axle—the strongest part of the spreader—and are not transmitted to the side of the box or frame of the spreader.

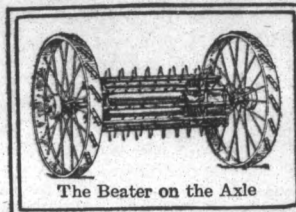
Power to drive the beater is taken from the rear axle and operates through a planetary transmission (similar to that used on automobiles) mounted on the rear axle.

Light Draft

There are at least two main reasons why the John Deere Spreader is the lightest draft spreader made.

You can readily see how decreasing the number of working parts on a manure spreader will reduce the draft correspondingly. That is one very essential reason for the light draft of the John Deere Spreader.

Four sets of roller bearings constitute



The Beater on the Axle

Easy to Load

It is easy to lift manure the first three feet when loading a spreader. The real hard work is from this height to the top of the ordinary spreader.

It is only necessary to lift each forkful these first three feet when loading a John Deere Spreader. The hard work is done away with.

Besides, it is possible to see inside the spreader at all times. Every forkful is placed exactly where it is needed, insuring an even load.

No Adjustments

On the John Deere Spreader no adjustments are necessary. On the simplest spreader heretofore made, there are from ten to twenty adjustments that have to be properly made before spreader can be used. Any one of these adjustments, if not made exactly right, will either put the machine out of business or increase the draft, which necessarily means undue wear.

Positive Non-Racing Apron

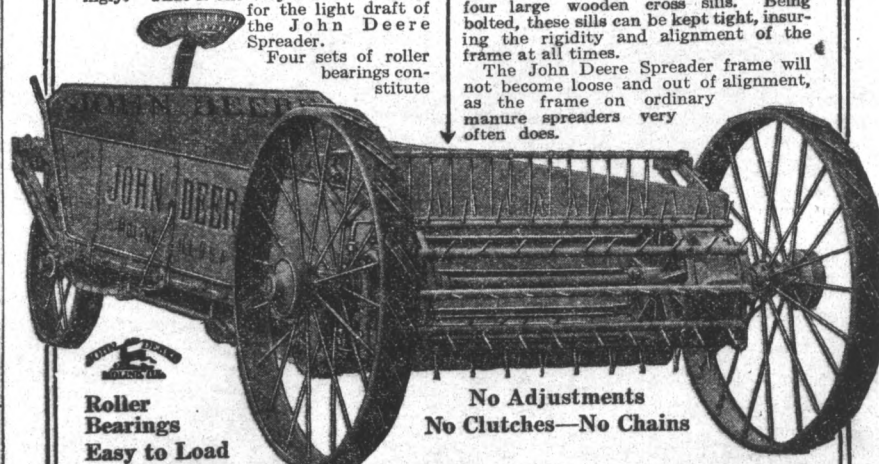
Even spreading is necessary for an even seed-bed and an even seed-bed is necessary to insure an even stand of the crop. The apron on a John Deere Spreader cannot race when spreading up hill or over exceedingly rough ground. It is positively controlled by a simple and effective locking device within the ratchet feed apron drive. This insures even spreading under all conditions. A feature that is not used on any other spreader.

Steel Bridge-Like Frame

Like the modern steel railway bridge, the frame on John Deere Spreaders is made of high-carbon steel—the strongest known mechanical construction.

Both the side sills are of channel steel with the channels or hollows turned to the inside. Into these channels are fitted four large wooden cross sills. Being bolted, these sills can be kept tight, insuring the rigidity and alignment of the frame at all times.

The John Deere Spreader frame will not become loose and out of alignment, as the frame on ordinary manure spreaders very often does.



Roller Bearings
Easy to Load

No Adjustments
No Clutches—No Chains

Valuable Spreader Book—Free This new, special spreader book contains valuable information concerning the reasons for using manure on the land, how it should be applied, how to store it and the benefits of using it in various ways. In addition there is a detailed description of the John Deere Spreader, with illustrations in color of this new spreader working in the field.

To get this book free, post paid, ask us for it as Package No. Y5

John Deere Plow Company, Moline, Ill.

LIVE STOCK

FEEDERS' PROBLEMS.

Alfalfa as a Green Forage for Hogs.

I would like to know if alfalfa makes good hog pasture? If so, how many hogs can be run on one acre all summer? Would it be best to divide the field to keep the hogs in fresh pasture?

C. A. K.

Without question alfalfa is the most valuable of our available forage crops for hogs. The experience of one farmer in this regard is given in the first page article in the issue of last week, in which it was shown that good alfalfa pasture saved about three-quarters of the grain which would otherwise have been required to fatten the hogs. Expressed in the amount of pork which one acre of alfalfa or other crops would make, F. D. Coburn, of Kansas, has estimated from available data that 15 pounds of green alfalfa will make one pound of pork, as compared with four pounds of grain.

On this basis an acre of alfalfa would make, according to his figures, 1,333 lbs. of pork as against 560 lbs. for an acre of corn that would yield 40 bushels per acre. As to the number of hogs which can be carried upon an acre of alfalfa throughout the season the same authority makes the following estimate from data given by conservative men who have had much experience in pasturing hogs upon alfalfa. As an average he concludes that uplands of fair, average fertility will support from eight to ten head of hogs per acre weighing from 50 to 125 lbs. The number of hogs which can be run on an acre of alfalfa throughout the season, however, will vary greatly with the fertility of the soil and somewhat with the stand of alfalfa. But where more economic in methods of management as high as 25 head of hogs per acre have been carried throughout the season under favorable conditions. For best results where a field is to be used for this purpose it should be divided into several lots and the hogs moved from one lot into another as occasion requires.

A great many failures with alfalfa pasture for hogs have resulted because it was pastured too soon. Under ordinary conditions alfalfa will not bear close pasturing, and it should not be pastured at all the first season, and not as heavily the second season as after it becomes well established. For best results the pasture should, of course, be supplemented by grain feed, but, as was the case in the instance noted in the issue of last week, good alfalfa will displace a large proportion of grain feed in the ration and result in much more economic production of pork. Another advantage in alfalfa as a forage for hogs is that it is high in its content of protein, making a natural complement for corn in the ration for hogs.

As to the value of alfalfa pasture per head of hogs which a field will support it will fall somewhere between \$5 and \$10 per head for the season, depending materially upon the price of grain and pork, probably approaching the last named figure under present conditions. In one trial reported, when corn was worth 35c per bushel and pork sold at 5½¢ per lb., the value of alfalfa pasture was determined to be \$7.07 per head of hogs maintained upon it. But even if these results cannot be attained by the average farmer, there is no question but that the value of alfalfa pasture is so great that the average farmer who keeps only a few hogs cannot afford to be without it.

Perhaps when its value is placed in comparison with the value of clover as a pasture for hogs it will be best appreciated by the average reader. This comparison is best expressed by proportions, it having been determined that the comparative production of green forage from alfalfa and clover during the season under identical conditions is as 20:12.

RELATION OF LIVE STOCK TO FERTILITY.

The relation between the keeping of live stock and the maintenance of fertility is of the closest character. It would not be correct to say that fertility cannot be maintained in the absence of live stock, but it is correct to say that ordinarily on the farm it cannot be profitably maintained in any other way. It is not the fertility alone which live stock bring to land that results in improving it, but the humus also which their presence brings to the soil and the rotation which the keeping of live stock compels wherever it is extensively carried on.

When all the food grown on a farm is

fed to live stock kept upon the same, and when the fertilizer made is put back upon the land, it should grow richer rather than poor. It may be asked, "How can this be, since some fertility taken from the land is sold in the form of meat, milk, wool or bone?" The answer is as follows: The growing of live stock compels the growth of crops to feed. Prominent among these are the legumes which are so helpful in growing and in producing milk. Live stock are also fond of these and it is well that this is so.

These legumes, clover, alfalfa, peas and vetches, add to the nitrogen in the soil more than they take from it, the addition coming as is generally known, from the air. When therefore, these crops are grown and fed to stock, and when the manure, solid and liquid, goes back again upon the land, the increase in nitrogen is certain. If, in addition, a part of the food is purchased, the increase in nitrogen is still greater.

But what of the phosphoric acid and potash which cannot be found in the air? When the food is all fed and the manure is put on the soil, the loss in these is very small. If such deep-rooted legumes as clover are grown, they bring up phosphoric acid and potash from the subsoil, a large portion of which eventually goes back again into the surface, or tillable area. If some food is purchased and fed, the amount will be proportionately increased. In this way the supply of phosphoric acid will be maintained. Whether it will be sufficiently maintained in the cultivated portion without purchasing some feed will depend upon the extent to which deep-rooted plants are grown.

Where stock are grown there must be pasture. There must also be hay. When the ground is broken where these pastures or hay grew, there is buried in the soil many tons of vegetable matter for every acre of soil. This consists of roots and stubbles. This vegetable matter exercises an important influence on soils. It helps to keep them mechanically right. It makes heavy soils lighter by keeping the particles apart. It makes light soils lie more compactly by filling the spaces between the particles. It arrests moisture coming up from below or going down from above. It prevents nitrogen from washing out of the soil in the form of nitrates, and when commercial fertilizers are applied it makes their action more certain and immediate. If the vegetable matter thus buried is supplemented by farm manure the benefits resulting will be proportionately increased, and if the manure is applied in the fresh form, the benefit will be greater than if applied in the decomposed form.

Live stock compels rotation. It makes necessary the growing of grasses and clovers, and the growing of these puts the land in condition for growing other crops successfully. For instance, corn will yield much better after clover or grass than when these are not grown, and the same is true of many other crops.

Is it wiser, then, to purchase commercial fertilizers in large quantities, and to apply them in order to maintain fertility or to maintain it through keeping live stock and purchasing food to supplement what is grown? That is a question of conditions. In order to grow certain high-priced crops it may be necessary to purchase commercial fertilizers. Fertilizers also may be profitably used to supplement the stable manure for the production of maximum crops. But the aim should be, as far as possible, to maintain fertility through the medium of feeds which are fed to live stock and the residue returned to the soil as manure.

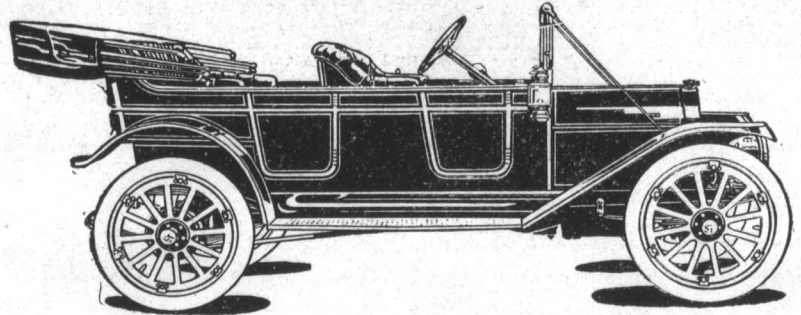
The close relations between live stock and fertility is shown in another way. Where live stock is not kept at all, save for the purpose of tilling the land, all history has shown that the land finally becomes impoverished. It has shown further that where a moderate amount of stock is kept, the equilibrium in fertility is maintained. It has also shown that where live stock in large numbers are kept, the fertility of the land increases. Farms in the highest condition as to fertility are invariably found in communities where live stock are abundant.

Illinois. W. H. UNDERWOOD.

The wool market is working higher from week to week, and recent London sales showed an advance of six cents.

High-grade veal calves have been commanding very high prices in the markets of the country of late. Butchers have encouraged marketing them for the reason that they could make larger profits from them than from beef steers. The high prices are paid only for prime veal calves of light weights, with heavy calves selling as low as ever and not wanted by butchers.

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Remember that you place yourself under no obligation whatever in asking for the demonstration.

We simply want you to have the right idea about the Krit; and you can't get it unless you see the car do its work.

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And you are going to admit to yourself secretly—if not openly—that you can't see the advantage of a larger, heavier car; or one that costs more money.

If you don't know the Krit dealer nearest you or can't locate him, write us and we will send you his name and a card of introduction.

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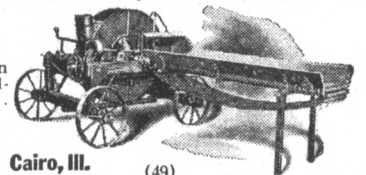
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CONDUCTED BY W. C. FAIR, V. S.

Advice through this department is free to our subscribers. Each communication should state history and symptoms of the case in full; also name and address of writer. Initials only will be published. Many queries are answered that apply to the same ailments. If this column is watched carefully you will probably find the desired information in a reply that has been made to some one else. When reply by mail is requested, it becomes private practice, and a fee of \$1.00 must accompany the letter.

Chronic Cough—Nasal Catarrh.—I have a 12-year-old mare that has been coughing more or less since last March and part of time has discharge from nostrils. Both of our local Vets. have prescribed for her, but fail to help her much. When she does any hard pulling the exertion appears to bring on a coughing spell. W. H. B., Morley, Mich.—Apply to throat one part turpentine, one part aqua ammonia and four parts olive oil every day or two. Give a dessertspoonful of fluid extract opium, a teaspoonful of fluid extract lobelia and a teaspoonful muriate ammonia at a dose in damp feed three times a day for two or three weeks.

Loosened Hoof.—I have a five-year-old mare that injured her fore foot while working on the potato digger last fall; the ground was soft, her fore feet sank down, she tramped fore heel with hind foot, loosening hoof, which is only partially healed. Our local Vet. has treated her with rather poor results and I should like to know what you think about the case. W. L., Dundee, Mich.—In the treatment of such cases I find it good practice to remove all loose hoof to give nature a chance to grow and reproduce lost parts. Cut off all diseased and loose parts and apply equal parts oxide of zinc and boric acid to raw surface after using caustic a few times. I am assuming that you have a raw sore. If the trouble is entirely in hoof, then cutting it enough in wet clay two or three hours a day will have a good effect.

Infectious Ophthalmia in Cattle.—Several of my cows have been troubled with sore eyes, some of them have recovered and one cow lost sight of one eye. This must be an infectious trouble for I believe it is going through my whole herd, or it may be the result of bee stings. J. D., Jenison, Mich.—Apply powdered boric acid to eyes once a day and calomel once a day and this is best done by blowing some of the powder into eyes through a straw or quill or with an insufflator. Give each cow a dessertspoonful of powdered nitrate potash at a dose in soft feed two or three times a day. It is needless for me to say that the eyes of man or beast when sore are irritated by bright light.

Diseased Scalp of Mane and Tail.—I have a two-year-old filly that seems to be losing the hair of both mane and tail and I would like to know what can be done to check it. Last spring when I turned her to grass she had a fairly heavy mane and tail, but now it is nearly all gone. W. L. H., Frontier, Mich.—Wet mane and tail with one part bichloride of mercury and 500 parts water twice a day for a few days, then once a day and occasionally apply some vaseline to soften scalp.

Calves Chewed Tail Off.—I have an eight-year-old mare that lost the entire hair of tail, caused by a calf chewing it. I applied kerosene, but this failed to prevent the calf eating the hair. J. F. D., Muskegon, Mich.—Would it not be a good plan to separate the calf from mare? When a calf has the habit of chewing hair off horses tails, it is difficult to prevent them. I have applied beef gall or fluid extract of aloes and it seems to be so offensive that they cease licking tail.

Hernia—Enlarged Hock.—I have a mare colt two months old which has been ruptured for the past five weeks. The bunch is about the size of a hen egg and I would like to know what to do for it. I have a five-year-old horse that hurt his hock last spring, causing an enlargement which blisters fail to reduce or remove. J. Y., Crosswell, Mich.—Leave your colt alone and she may get well without treatment; if not, have her operated on next November. Apply iodine ointment to hock three times a week and it will gradually, but very slowly, remove the bunch.

Barb Wire Cut.—Three weeks ago my 12-year-old mare cut her leg nearly an inch deep and about four inches long on barbed wire. This wound is gaping open and does not seem to heal rapidly. Have been applying hydrogen peroxide twice a day, also carbolic acid and water, but this fails to do much good. E. R. W., Ellsworth, Mich.—Wounds of this kind are always slow in healing during the hot weather. Apply equal parts oxide of zinc and boric acid, covering wound lightly with oakum and a light cotton or linen bandage. Wound should be dressed once or twice a day.

Inactive Skin Glands.—Will you prescribe for a team of horses that do not perspire freely, but pant badly during hot weather? They are in good flesh and apparently healthy in other respects. The team is about 12 or 14 years old; weight about 2,700 or 2,800 lbs.; black in color, the latter of which may make some difference. Earlier in the season the feed was corn with good clover pasture, but more recently the grain has been changed to equal parts by weight of bran, corn meal, to which 20 per cent of

oil meal is added; the run of the clover field being allowed, as hay is scarce. E. H., Fennville, Mich.—Give your horses each a tablespoonful of sweet spirits of nitre and a teaspoonful of fluid extract arnica root at a dose in feed or water two or three times a day. Wash your horses with warm water every morning and evening.

Soreness.—I have a horse that is six years old which had sick spells last year and our local Vet. treated him for pleurisy, but horse never coughed. When ever he is worked a stiffness or soreness comes on him and by allowing him a few days rest and run to pasture he gets well. This horse is a good one weighing 1,600 lbs. Our home Vet. has perhaps done all that can be done for him, however, I would like to have your advice about him. J. H., Gobleville, Mich.—It is possible that he has a sort of chronic chest trouble that he will not get well of. Give him 2 drs. potassium iodide and a teaspoonful of fluid extract of arnica root at a dose in feed or water two or three times a day.

Indigestion—Stomach Stagnation.—I have several pigs about three months old that are not thriving as well as they should. They appear to have blind staggers, run around, fall down, run against each other, squeal and nearly all of them have sore ears. They are in range pasture and are fed separator milk. C. G., McCords, Mich.—Give your pigs enough epsom salts or castor oil to purge them. Feed them more salt and notice that their bowels are kept moderately active.

Periodic Ophthalmia.—I have a valuable mare seven years old, seemingly well in every other way, but has a scum growing over both eyes, one being worse than the other. When out in bright sun light, tears run down the face and I would like to know if anything can be done to relieve her. A. M., Alden, Mich.—Your mare will perhaps be benefited by blowing small quantity of calomel into eyes once a day. Also give her 2 drs. iodide potassium at a dose in feed two or three times a day. A bright light will irritate her eyes. Her bowels should be kept open and this is best done by giving her grass or green fodder and she should not be worked so hard as to overheat her.

Indigestion—Worms—Cough.—This is our first year at farming and last April we bought a sound young mare and sent her to our newly purchased farm. Shortly after we got her she developed a cough and later a ravenous appetite, but gradually lost flesh. Our neighbors tell me she has heaves; if so, would her colts be affected? We have taken the Michigan Farmer since Christmas but fail to find a parallel case to ours treated. Mrs. F. A. C., Detroit, Mich.—It is possible that your mare is suffering from incipient heaves which, if so, she must have more or less digestive trouble; furthermore, she may have some worms. Give her a dessertspoonful of Fowler's solution and the same quantity of tincture opium at a dose in damp feed three times a day. Also give her 1 dr. santalnine, 25 grains calomel at a dose three times a week for two weeks. Grain and grass are the best kinds of feed you can give her. Broken-winded mares should not be used for breeding purposes.

Cow Gives Bloody Milk—Infected Udder.—About three weeks ago one of my cows began to give bloody milk; not knowing what to do for her, she was not treated. She has since been getting worse every milking and her bag is now in a gargety condition. F. B., Empire, Mich.—Your cow must have bruised her udder to have caused this leakage of blood and the gargety condition is the result of bacterial infection through teat opening. These cases are difficult to treat; however, by careful milking and preventing her from bruising bag, she will soon show some improvement. Apply warm linseed oil to caked parts of udder and give her 1 oz. bicarbonate soda at a dose in feed or water twice a day.

Indigestion.—I am a breeder of thoroughbred swine. When my pigs are about two months old their backs will bend a little and the pig will drop belly until it reaches the ground, then he will suddenly jump as if in pain. When he falls his legs do not bend, but remain rigid and stiff. The sows eat soaked corn and separator milk with swirl from the house and the pigs probably get about a small teaspoonful twice a day. Swirl contains some muddings. The hogs seem worse since I tured them on rape and their ears, tail and back are sore and sometimes a scab five or six inches long will peel off. These pigs are not thriving and I would like to know what can be done for them. P. L. G., Delton, Mich.—I fully believe if your food supply was changed and if you will feed the sows some bicarbonate soda and ginger, and also give the young pigs some of this same medicine in their feed, it will prevent them having spasms and colic. They will perhaps soon become accustomed to eating rape and suffer no bad effects from it.

Nasal Gleet—Indigestion—Dropsy.—My mare, age 23, which you have previously cured of navicular disease, is now ailing. For several years she has lacked ambition, has always had discharge from nostrils, especially when head was lowered, and her mate has had several attacks of looseness of bowels. I have owned both of these mares for 15 years, one swelled on inside of thigh and under belly but the thigh trouble is all right and most of swelling has disappeared from under body. This team is not worked hard, eat fairly well, but are low in flesh and need building up. G. W. G., Rapid City, Mich.—Give each of your mares a dessertspoonful of fluid extract lution, a tablespoonful of fluid extract cinchona and a teaspoonful tincture nux vomica at a dose in feed or as a drench three times a day. Their teeth may need a little attention; furthermore, it might be a good plan to feed them crushed or ground grain.

FOR SALE, CHEAP.

IMPORTED PERCHERON STALLION, a ton horse. Sound. A Colt gelding will trade for good auto. J. C. BUTLER, Portland, Michigan. Bell phone.

For Sale—Horses, cattle, sheep, swine, poultry and dogs, nearly all breeds. Sires exchanged. South West Michigan Pedigreed Stock Ass'n., David Woodman, Sec'y-Treas., Paw Paw, Mich.

FOR SALE, One Registered Percheron Mare 2 years old. M. A. BRAY, Okemos, Michigan.

Write W. A. EWALT, MT. CLEMENS, MICH., for and white COLLIE PUPPIES, natural stock workers.

BREEDERS' DIRECTORY.

CATTLE.

ABERDEEN-ANGUS.

Herd, consisting of Trojan, Erica, Blackbirds and Prides, only, is headed by Egerton W. a Trojan Erica, by Black Woodlawn, sire of the Grand Champion steer and bull at the International in Chicago, Dec., 1910. A few choice bred young bulls for sale.

WOODCOTE STOCK FARM, Ionia, Mich.

AYRSHIRES—One of foremost dairy breeds; young bulls and bull calves for sale. Berkshire swine. All pure bred. Michigan School for Deaf, Flint, Mich.

GUERNSEYS—Two nicely marked bull calves dropped in March, at farmers prices. ALLAN KELSEY, Lakeview, Mich.

For Sale—Registered Ayrshire Bull Calves at prices you can afford to pay. (Reg.) W. W. BURDICK, Wayland, Mich.

GUERNSEY BULL CALVES, YORKSHIRE PIGS, Good Stock.

HICKS GUERNSEY FARM, Saginaw, W. S., Mich.

A 24-lb. Bull

Have Bull Calves out of—13, 20, 23, 24-lb. Cows A. R. O. By a 24-lb. Bull.

My herd averages 19 lbs.

If you want this kind write

BIGELOW'S HOLSTEIN FARMS, Breedsville, Michigan.

HOLSTEINS

I can please any body with a service bull, bulls from one to ten months old, sired by Johanna Concordia Champion. Also cows and heifers bred to him. Write me for anything you want in Holsteins.

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HOLSTEIN BULL calf sired by best son of Pontiac Butter Boy, 58 daughters in advanced Registry, out of a grand daughter of De Kol 2nd Butter Boy 3rd, over 100 daughters in advanced Registry. A beautiful calf of choicest breeding. Price only \$60.

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"Top-Notch" Holsteins. Choice bull calves from 6 to 10 mos. old, of fashionable breeding and from dams with A. R. O. records, at reasonable prices. Also one 2-year-old bull, fit to head a good herd.

MCPHERSON FARMS CO., Howell, Michigan.

3 \$200 Holstein Bulls.

Any breeder in Michigan looking for this kind? If so see their pedigrees before buying.

LONG BEACH FARM, Augusta, Michigan.

HOLSTEIN BULL ready for service.

A fine individual, beautifully marked, two-thirds white. His sire a grandson of Pontiac Korndyke and Hengerveld De Kol. His dam a fine young daughter of Sir May Hartog Poch.

ED. S. LEWIS, Marshall, Michigan.

Holstein Bull Calves—dropped Feb. 17, 1912, nearly white, 37½% blood Hengerveld De Kol dams; record Senior 2-year-old, 18.37 lbs. butter.

GEORGE E. LAPHAM, R. 8, St. Johns, Mich.

Holstein-Friesian Cattle—The kind that make good. GREGORY & BORDEN, Howell, Michigan.

Purebred Registered HOLSTEIN CATTLE The Greatest Dairy Breed Send for FREE Illustrated Booklets

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REGISTERED HOLSTEIN CATTLE—Bulls all sold. Herd headed by Hengerveld Coin Pietertje LOYD F. JONES, R. F. D. 3, Oak Grove, Mich.

Big Bull Bargain—Choice registered HOLSTEIN ready for service. Hatch Herd, Ypsilanti, Mich.

JERSEYS AND DUROC JERSEYS FOR SALE.

A few high class boars from such champion boars as Orion Chief, Instructor, and King of Illinois. Also a few bred sows, Jersey bulls, cows and heifers.

BROOKWATER FARM, ANN ARBOR, MICH., R. F. D. 7.

Lillie Farmstead JERSEYS

Bulls ready for service, also bull calves and heifer calves. Cows all in yearly test. Satisfaction guaranteed.

COLON C. LILLIE, Coopersville, Mich.

MARSTON FARM—JERSEY CATTLE. T. F. MARSTON, Bay City, Michigan.

NOTICE—I offer for sale a fine three-year-old Jersey cow. Also two young bull calves at bargain prices. C. A. TAGGETT, R. No. 1, Caro, Mich.

Jersey Cattle For Sale. C. A. BRISTOL, Fenton, Michigan.

BUTTER BRED JERSEY BULLS FOR SALE CRYSTAL SPRING STOCK FARM, Silver Creek, Allegan County, Michigan.

RED POLLED—Choice lot of females any age, also some bull calves.

J. M. CHASE & SONS, Ionia, Michigan.

RED POLLED BULLS FOR SALE—from good milking strains. JOHN BERNER & SON, Grand Ledge, Mich.

DAIRY BRED SHORTHORNS—Milk strain, beef type. Stock for sale. Cash or good note. J. B. HUMMEL, Mason, Mich.

SHEEP.

Hampshires—Who wants 18 good ewes and ewe lambs, and a good 800 lb. imported ram for \$225. Also have 7 good ram lambs for sale. All registered. E. A. Hardy, Rochester, Mich.

Oxford Down Sheep—Good Yearling Field Rams and ewes of all ages for sale. I. R. WATERBURY, Highland, Michigan.

Reg. Rambouillets—Wish to close out both sexes. All ages, low price. Farm—2½ miles E. Morrice, on G. T. R. R. and M. U. R. J. Q. A. COOK.

HOGS.

Durocs and Victorias—Young sows due Mar. & April. Bred to 1st prize and champion boar. Priced to move them. M. T. Story, Lowell, Mich.

BERKSHIRES—2 fancy gilts, bred, at \$35. Boars servicable age, \$25 and up. Am booking orders for spring pigs. Elmhurst Stock Farm, Almont, Mich.

BERKSHIRES for Sale—March farrowed boars and gilts, sired by Handsome Prince 3d, out Weyeneth Lady Francis. A. A. FATTULLO, Deckerville, Mich.

Quick Maturing Berkshires—Best breeding; best type. Satisfaction guaranteed or money refunded. C. S. BARTLETT, Pontiac, Mich.

BERKSHIRES Weaned pigs either sex \$15 two for \$25; bred gilts \$35; bred sows \$50, registered and transferred. Excellent breeding. Choice individuals. C. C. COREY, New Haven, Michigan.

Improved Chesters—Spring pigs, either sex. Also have a choice young boar and a few sows bred for early fall farrow. W. O. WILSON, Okemos, Mich. Both phones.

O. I. C's Special Prices on spring pigs and service male's, also fall pigs 300 to pick from. Shipped on approval. ROLLING VIEW STOCK FARM, Cass City, Michigan.

O. I. C. SWINE—Males weighing 200 lbs. each. Also a few very choice gilts, bred for June farrow. Geo. P. Andrews, Dansville, Ingham Co., Mich.

O. I. C. Extra choice bred gilts, service boars and spring pigs, not akin from State Fair winners. Avondale Stock Farm, Wayne, Mich.

O. I. C's—All ages, growthy and large, sows bred, 100 to select from. Attractive prices on young stock. H. H. Jump, Munith, Mich.

O. I. C's—I have some very fine and growthy last fall pigs, either sex, males ready for service now, pairs not akin. OTTO B. SCHULZE, Nashville, Mich., half mile west of depot.

OUR Imp. Chester Whites and Tamworth swine won 251st at Fairs in Ill. Service boars, also sows bred for spring farrow of either breed that will please you in quality and price, Adams Bros., Litchfield, Mich.

O. I. C. swine and Buff Rock cockerels of right type, best of breeding, price way down for quick sale. G. D. SCOTT, Quimby, Mich.

O. I. C. Choice spring pigs, by "Frost's Challenger" (2531) Write for prices. GLENWOOD STOCK FARM, Zeeland, Mich.

O. I. C's of superior quality. Service boars, gilts, spring pigs. No akin pairs. Also Buff Rock eggs \$1.50 per 15. Fred Nickel, R. 1, Monroe, Mich.

O. I. C's with size & quality, the kind I can positively guarantee to give satisfaction with or return money. Newman's Stock Farm, R. No. 1, Marlette, Mich.

O. I. C. SWINE Write me for price on Spring Pigs, pairs and trios, not akin. Have a number of service males of good type. Write me describing of your wants. A. J. GORDEN, R. No. 2 Dor, Mich.

O. I. C.—Orders Booked For Spring Pigs. C. J. THOMPSON, Rockford, Michigan.

O. I. C's of March and April farrow, shipped on approval or c. o. d. OTIS GREENMAN, R. 4, Bellevue, Eaton Co., Mich.

DUROC JERSEYS—One service boar; two bred gilts; spring pigs of either sex. Choice breeding. Prices reasonable. Write or come and see. R. G. VIVIAN, R. No. 4, Monroe, Mich.

Duroc Jerseys—Sows bred for May and June. Spring pigs. I pay the express. J. H. BANGHART, Lansing, Mich.

DUROC JERSEY SWINE—THE BIG KIND. Write your wants. F. A. LAMB & SON, Cassopolis, Mich.

DUROC-JERSEY SOWS bred for July and August farrow. Choice bred spring pigs. Prices reasonable. JOHN MCNICOLL, North Star, Mich.

DUROC JERSEYS—10 Fall and 10 Winter Boars, ready for service. Prices right for 10 days. Write or come and see J. C. BARNEY, Coldwater, Mich.

POLAND-CHINA SWINE Bred for September. R. W. MILLS, Saline, Mich.

Big Smooth Poland China Hogs from large sires, all ages, both sexes, at Farmers reasonable prices. ALLEN BROS., Paw Paw, Mich.

Poland Chinas—Bred from large type. Stock all ages, both sexes, at Farmers prices. W. J. HAGELSHAW, Augusta, Michigan.

POLAND CHINAS—Gilts and yearling sows bred for first of Sept. farrow a few big types. E. D. BISHOP, Route 38, Lake Odessa, Mich.

POLAND CHINAS—Either sex, all ages. Something good at a low price. P. D. LONG, R. No. 8, Grand Rapids, Mich.

LARGE TYPE P. C.—Largest in Mich. Come and see greatest herd of big, prolific P. C. in state. Sows avg. 10 pigs to litter. Free livery, expenses paid if not satisfied, order early and get choice. Prices reasonable, quality considered. W. E. LIVINGSTON, Parma, Mich.

BIG TYPE Poland China fall and Spring pigs, sows bred, Dairy bred Shorthorn bulls and calves. Prices low. ROBERT NEVE, Pierson, Mich.

15 Poland China Sows bred for spring litters, priced to sell. WM. WAFFLE, Coldwater, Mich.

POLAND CHINAS—Young sows bred for April farrow. Extra good fall pigs, either sex. L. W. BARNES & SON, Byron, Shiawassee Co., Mich.

Big Type P. C. Sows bred to Big Bone Junior. A. A. WOOD & SON, Saline, Michigan.

Mulefoot Hogs—30 SOWS and GILTS. Boars all ages. G. C. KREGLOW, Ada, Ohio.

For Sale, Yorkshire Gilts—Bred to farrow of August. Also pigs, both sexes. WATERMAN & WATERMAN, Meadow Land Farm, Ann Arbor, Mich.

Lillie Farmstead YORKSHIRES.

A few choice Gilts bred for September farrow, good ones. Spring pigs, either sex, pairs and trios not akin. Satisfaction guaranteed.

COLON C. LILLIE, Coopersville, Mich.

PRACTICAL SCIENCE.

NUTRITION STUDIES.

BY FLOYD W. ROBISON.

(Continued).

Armsby's Standard.

The Armsby standards bring us back a little more closely to our studies on calorimetry in that these standards are based on the therm. We may recall that in one of our preceding discussions on calorimetry the therm was explained. A therm represents the amount of heat required to raise 1,000 lbs. of water four degrees F. In other words, then, a therm is the equivalent of 1,000 calories. One hundred pounds of pure digestible protein when burned in a calorimeter yields in heat 186 therms. One hundred pounds of pure digestible carbohydrates when burned in a calorimeter yield in heat 186 therms. One hundred pounds of pure digestible fat under the same conditions yield 422 therms.

A Therm in the Body is the Same as a Therm in the Calorimeter.

It is assumed that the same equivalent is given in the body when the food is consumed for the functional purposes of the body as when burned in the calorimeter. For instance, according to Armsby's standards, in oat straw there are 90.8 lbs. of dry matter and 1.09 lbs. of digestible protein. The value in therms, therefore, of 100 lbs. of oat straw would be 21.2. This value is based not alone on the calorimeter measurements but upon the net energy available after deducting from the digestible nutrients the loss due to the mastication of the food, etc.

With alfalfa hay containing in 100 lbs. 6.9 lbs. of digestible protein, Armsby gives a value of 34.4 therms. With 100 lbs. of corn silage containing 1.2 lbs. of digestible protein Armsby gives a value of 16.5 therms. With mangles containing in 100 lbs. 0.14 lbs. of digestible protein he gives a value of 4.6 therms. With corn meal containing in 100 lbs. 6.8 lbs. of digestible protein Armsby gives a value of 38.8 therms. With oats containing 8.3 lbs. of digestible protein per 100 lbs. he gives a value of 66.2 therms. With wheat bran containing 10.2 lbs. of digestible protein per 100 lbs. he gives a value of 48.2 therms.

Therm Value Shows the Real Value of the Feed.

Very striking differences are shown in Armsby's tables in the therm equivalent of the various classes of feeds. For instance, corn with its 6.8 lbs. of digestible protein has 25 per cent more thermal value than does oats containing nearly two per cent more digestible protein. The inference is very plain, suggesting as it does, its own explanation.

It has been customary in studies in nutrition and the balanced ration to attribute food value to corn and oats based largely upon their relative amounts of digestible protein. For instance, consulting Table III in the Appendix in Henry's Feeds and Feeding, we find for corn meal 6.1 lbs. of digestible protein, 64.3 lbs. of digestible carbohydrates and 3.5 lbs. of digestible fat. Were we to figure these two feeds according to the analysis showing their digestible nutrients we should be obliged to ascribe to oats practically as prominent a place in the ration as we do to corn meal. Of course, corn meal has the higher content by 12 lbs. of digestible carbohydrates but on the other hand, oats has the advantage of corn meal by 4 lbs. of digestible protein. It is evident, however, from the Armsby table that oats with the considerable amount of fibrous, woody matter with which the oat kernel is surrounded, are digestible at much greater expense to the animal system than is the case with corn meal. Consequently corn with its lower content of digestible protein is given a value one-fourth greater on the basis of its thermal value than oats. It would do well for the reader to study under Chapter VIII in Henry's Feeds and Feeding the very comprehensive discussion which he there gives of the Armsby feeding standards.

It seems to the writer that the Armsby standards are much more adaptable to the requirements of the American feeder than are the Kellner standards, and we would recommend likewise that the reader apply to the Pennsylvania Experiment Station, at State College, Pa., for Bulletin 114, by Mr. H. E. VanNorman, which discusses with remarkable clearness the net energy standards of Armsby.

TYPHOID FEVER IN ITS RELATION TO THE MILK SUPPLY OF CREAMERIES.

Until the sanitary problem is better in hand than it is at present among our rural population and as well among some of our cities, we are going to be confronted continually with the necessity of establishing safeguards against typhoid infection.

When the writer was state analyst for the Michigan Dairy and Food Department, it became necessary on a great many occasions to place an embargo on the sale of milk in various communities in the state, due to the prevalence of typhoid fever on the premises furnishing the milk supply. In a number of instances the loss accruing to the dairyman through a supply thus cut off was a very serious item and we were applied to to find out if possible some avenue or outlet through which this product could be marketed with safety to the public. It was thought that possibly milk so contaminated or at least suspected to be contaminated might be diverted to the creameries where, after being ripened in the usual way the presence of the high content of lactic acid might destroy the virulence of the typhoid bacillus. This line of experimentation was suggested to Dr. Marshall at the Michigan Experiment Station, and he promised to take up an investigation along this line.

There has just come to our attention the Technical Bulletin No. 9 published by the Division of Bacteriology and Hygiene, of the Michigan Agricultural Experiment Station, by Miss Zae Northrup, dealing with the influence of the products of lactic organisms upon bacillus typhosis. This series of experiments is very interesting and very instructive from a technical standpoint. The author of the bulletin has been very painstaking in her work and has evidently studied it from such points as would demonstrate conclusively regarding the theme. The conclusions, however, as far as the evidence contributed in the bulletin is concerned, are disappointing in that they do not answer the question involved.

The conclusions are given herewith. If any of our readers are interested in the technique, it is suggested that they apply to the experiment station, Lansing, for this technical bulletin.

Conclusions.

Taken from Technical Bulletin No. 9, Michigan Agricultural College Experiment station. Division of Bacteriology and Hygiene.

The minimum acidity produced by Bact. lactis acid (from sour milk) which will destroy B. typhosis is +37 degrees in lactose broth. This corresponds to 80 degrees acid in milk and 28 degrees acid in whey.

The minimum inhibitive acidity produced by Bact. bulgaricum is +53 degrees in lactose broth. This corresponds to +208 degrees acid in milk and to 66 degrees acid in whey.

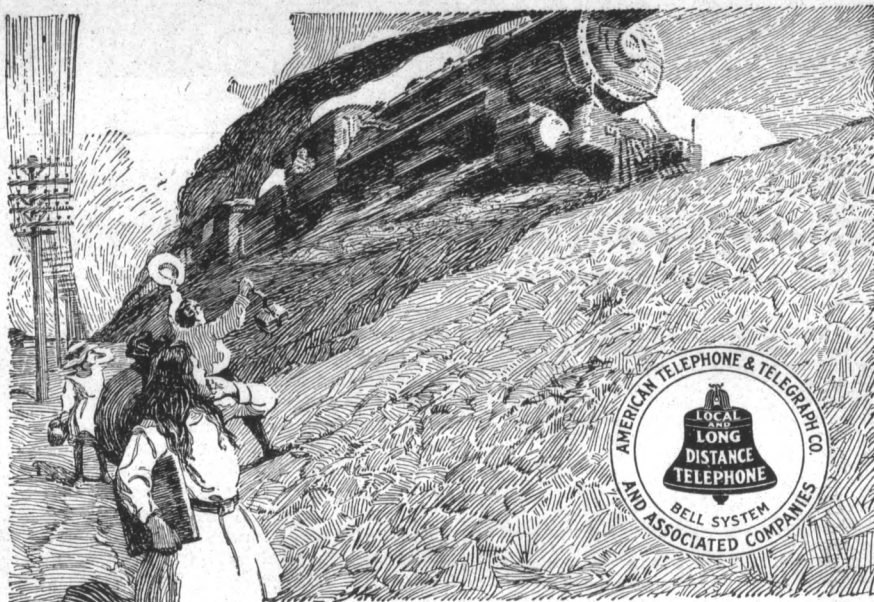
The above amounts of acid in milk corresponding to the acidity produced in whey and lactose broth by the same organism are theoretically the minimum acidities at which the typhoid bacteria will be killed.

However, in raw milk, the medium of natural infection, many factors enter which are never constant, e. g., the character of the initial microbial flora, the flora gained by the necessary exposure to sources of contamination, and the temperature condition under which the milk is kept after being strained.

If certain species of micro-organisms are present in milk, they may, either by growing in association with the lactic bacteria, or by some of their own metabolic products cause a more rapid destruction of the typhoid organisms than the lactic bacteria are capable of causing alone. Or, on the contrary, certain species of bacteria may predominate which will check the production of acid by the lactic bacteria, some even living in symbiotic relationship with B. typhosis.

It is very probable that some one of these conditions will occur in the greater number of infected milk samples since milk infected with typhoid bacteria must have been subjected to sources of contamination from which a varied flora would be acquired.

Thus, while this series of experiments brings out some very interesting facts the many normal factors entering prevent any definite conclusions being made.



The Right of All the Way

Railroad service and telephone service have no common factors—they cannot be compared, but present some striking contrasts.

• Each telephone message requires the right of all the way over which it is carried. A circuit composed of a pair of wires must be clear from end to end, for a single conversation.

A bird's eye view of any railroad track would show a procession of trains, one following the other, with intervals of safety between them.

The railroad carries passengers in train loads by wholesale, in a public conveyance, and the service given to each passenger is limited by the necessities of the others; while the telephone carries messages over wires devoted exclusively for the time being to the individual use of the subscriber or patron. Even a multi-millionaire could not afford the exclusive use of the railroad track between New York

and Chicago. But the telephone user has the whole track and the right of all the way, so long as he desires it.

It is an easy matter to transport 15,000 people over a single track between two points in twenty-four hours. To transport the voices of 15,000 people over a single two-wire circuit, allowing three minutes for each talk, would take more than thirty days.

The telephone system cannot put on more cars or run extra trains in order to carry more people. It must build more telephone tracks—string more wires.

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THE DAIRY

CONDUCTED BY COLON C. LILLIE.

SUMMER DAIRY SANITATION.

There seems to be a general tendency on the part of dairymen to neglect sanitary conditions during the summer months. While the work in the fields is pressing the gutters are allowed to become full of manure, the alleys scattered with litter, the windows and walls dirty and covered with cobwebs and a general air of neglect is apparent.

Cows that are kept in the pasture will keep reasonably clean so that grooming generally takes care of itself; however, if the pasture is so situated that the cows have access to muddy pools or stagnant ponds they will often stand in the water up to their knees, fighting flies and plastering themselves with mud. This mud dries quickly and readily falls into the milk pail. It is one of the most objectionable forms of dirt because it quickly finds its way through the strainers and settles at the bottom of the cans and bottles. It is also loaded with dangerous bacterial life that have a deleterious effect upon the milk and its products. Cows that are plastered with this kind of mud should have the belly, flanks, udder and teats thoroughly washed before being milked.

There is no single factor that will do as much toward insuring high-grade products during the summer months as that of keeping the utensils used in handling the milk clean and sanitary. Milk may be produced in sanitary stables by healthy and well-fed cows and drawn in a cleanly manner, but the good effects of such care will be wasted unless it is extended to the utensils. Bacteria are unusually active in warm weather. Thousands may be concealed in a crevice so small that it can hardly be seen, and if these get into the milk they may increase more than one thousand fold within 24 hours. A little milk left in the seams, or about the rim of the pails and cans harbors thousands of bacteria, and their injurious effect is sure to be great if the conditions are favorable for their development.

In buying utensils for the dairy one should select those which can be easily cleaned. Those having corners or parts which are hard to reach with water and a brush or cloth should be avoided. Sharp, angular corners are very difficult to keep sanitary. Wooden pails or vessels should never be used for handling milk. It is not economy to keep old, battered-up pails, cans and utensils of any kind. Cans and pails with double bottoms or patches on the sides, dents or bare iron from which the tin has been worn are not found in the best dairies.

One of the most prolific sources of trouble during the summer months is the old, sour strainer cloths which are rinsed in luke-warm water and hung up to dry. These cloths should be put in boiling water for a few moments and thoroughly cleaned before being used for another milking. Ordinary wire strainers are worse than none at all. They are very difficult to keep clean and are practically worthless for removing fine particles of dust and dirt.

There are certain fundamental principles in cleaning pails, cans and other utensils. Milk should never be allowed to dry on and become sour. If it is impossible to thoroughly clean the utensils soon after use, they should be filled with water, and then they can be easily cleaned later. Milk should always be rinsed out of utensils before they are scalded. If this is not done the albumen of the milk will be coagulated by the heat and adhere to the surface, making its removal difficult. It is important, therefore, to rinse the cans in warm water before scalding. Some use cold water, but it may be quite warm without changing the condition of the albumen. The best method is to rinse the utensils with warm water, then wash with hot water with the aid of some cleaning preparations, then rinse carefully to remove all soap or cleaning material, exposing them to live steam for a few minutes. Milk utensils are generally imperfectly cleaned. The common practice on many farms of rinsing with cold water, filling one can or vessel with hot water and pouring the cloth and water into the next vessel, the same water being used for the other vessels, leaves the last ones in bad condition for preserving the milk. If the water is not hot, the grease is not removed, but simply smeared over the tin.

The best preparations to use in cleaning dairy utensils are the alkalies and carbonates, like soda lye and salsoda, because they have the power to dissolve the coagulated albumen and this gives them a special value for cleaning up old, dirty utensils. Still, pails and cans may be kept in good condition without the use of large amounts of these preparations. Salsoda is one of the best and cheapest of all materials, as it is neither poisonous or corrosive. The amount of salsoda required is small and can be quickly learned by experience. Some object to its use because it has a tendency to discolor the tin, but this does not occur unless too much is used and the utensils are not thoroughly rinsed after its use. Strong alkalies are objected to by many dairymen because they cause the skin of the hands to chap and crack. If the utensils become dull and need scouring there is nothing superior to common salt, it is cheap, does good work and leaves no bad flavor. Sand is often used, but it should be very fine or it is apt to scratch the tin. Some soaps have fine sand mixed with them and make good scouring combinations.

It is somewhat anomalous that boards of health in cities take a deep interest in the water supply for human consumption, and that the brewers and distillers have the water as nearly chemically pure as it is possible to obtain it, and practically no attention is paid to the character of the water consumption of dairy cows. It is too often the case that cows are confined in a pasture with access to no water except such as stands in stagnant pools and perhaps covered with a green slime and which intense thirst compels them to drink. Such foul water cannot help but be productive of injurious bacteria. Too often the well from which they obtain their supply of water is located at the lowest part of the barnyard and subject to surface drainage, yet the cows are forced to drink this water and are expected to produce milk of high quality. If the water in the pasture cannot be procured from a clean spring or running stream it should come from a deep well that is not subject to surface drainage. The same principles apply to the quality of water used for washing the dairy utensils. Impure water used for washing utensils is a frequent cause of bad-flavored milk.

Special attention should be devoted to keeping the manure cleaned up about the yards and stables during warm weather. Manure piles are an ideal place for flies and bacteria to thrive and multiply. It is impossible to produce high-grade milk under filthy surroundings. Cows that are kept under such conditions will wade through the manure and get their legs plastered and during rainy weather their teats will be spattered with the foul-smelling liquid manure in the yards. It pays to clean up the yards early in the season and destroy the breeding places of flies and vermin. Lime spread liberally in the yards and stable will keep down foul odors and make life less comfortable for the flies and vermin. Sawdust is an excellent absorbent to use in the gutters while the cows are being kept on grass and other succulent foods.

Milk should be removed from the stable and promptly cooled as soon as it is drawn from the cows. Some use aerators, but they are not to be recommended unless the milk room is absolutely free from dust. It is better to put the milk in cans and place the cans in a tank of cold water and stir frequently until the milk is reduced in temperature to about that of the water. This removes the animal heat without exposing the milk to the air which under even the most ideal conditions is sure to have more or less bacterial life floating in it. Cleanliness and cold are the agents that must be employed in making high-grade milk during the summer.

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and it is possible to have as much as two per cent of casein, or curd, in butter. I'll admit that this would not be very good butter, but here would be 23.9 per cent of the butter something besides butter-fat. Under the standard that is in force now by the revenue department nothing is taken into consideration except the moisture. If there was 23.9 per cent of moisture, salt, and casein, that would leave 76.1 per cent of butter-fat which is the base of the problem in percentage and 23.9 per cent being the percentage, dividing the percentage by the base gives the rate of 31.4 per cent over-run. Of course, under the pure food law of the National Pure Food and Drug Act, the butter-fat is taken as a standard instead of moisture, and that says that butter shall contain 85 per cent of butter-fat. Taking this as a standard then it would be impossible to get as large an over-run. Now I say this over-run of 31.47 is possible, but it is not probable. The probability is that if you have this much over-run you have got more than 16 per cent of moisture. Then again, it is not safe to try and incorporate 15.9 per cent of moisture. If you do you will get into trouble. It is not safe for the buttermaker to work beyond 15 per cent of moisture. Then he has some butter that will run close to the danger line. Besides, this over-run supposes that there is no loss whatever, and there are always mechanical losses, for instance, there is a loss in churning, for you can't get all of the butter-fat out of the buttermilk. There is a loss in rinsing the cans, some of the cream is spilled. It is impossible not to lose some in various ways.

Now in practical work in a creamery if a buttermaker gets a 20 per cent over-run he is doing pretty well. Some buttermakers get 25 per cent, some try to average 20 per cent, but I say, if the buttermaker gets a 20 per cent over-run no one should find serious fault with him. This, of course, is with gathered cream. With whole milk there is not only a loss in churning and the other mechanical losses which we have in the manufacture of butter from gathered cream, but there is a loss in the skimming, and one is not able to get as large an over-run with whole milk as he is with gathered cream.

A GOOD HERD OF GRADE COWS.

I am always interested in personal experiences of other dairymen, and trust you will think the following records of my herd will be of general interest.

Seven years ago last spring I left an office job to try my luck on a farm, and purchased, in partnership with my tenant, a good herd of registered Shorthorns. Before the year was gone, however, I decided that milk production would be more to my taste, so we disposed of our herd and I started in the next year on my own hook with only six grade cows.

From the very first I kept an accurate daily milk record of each cow, and after six years' experience am more than convinced of the great importance of weighing each cow's milk every milking. The first year I set a mark of 6,000 lbs. per cow as my aim for a herd record, and determined to keep no cow that fell below 5,000 lbs.

At the end of the third year of dairying I had 16 good cows (that being the capacity of my barn), besides quite a bunch of young stock of which I had great hopes, for in the fall of my first year I had purchased a registered Holstein bull. I next increased the capacity of the barn to 38 head, and for the last three years have had a tenant who owns half the herd. This tenant, Mr. Albert Bruin, is one who is not afraid to buy whatever feed is necessary, and consequently the cows are always in prime condition.

Year before last we had worked the average production up so that the 23 head which we had the full year averaged 8,501 lbs.; the lowest being 5,895 lbs. and the highest 10,657 lbs. For the year ending last spring we made what we consider a wonderful record, the average for the 34 head which were here for the full year being 9,327 lbs. per cow, and there was only one cow that gave less than 7,000 lbs., and one cow reached the high mark of 12,361 lbs. To state the records more in detail: One cow gave over 12,000 lbs., four others over 11,000 lbs., seven others over 10,000 lbs., nine others over 9,000 lbs., six others over 8,000 lbs., six others over 7,000 lbs., and one other over 6,000 lbs.

Until last year we sold milk without a butter-fat test, so neglected to test individual cows, but the condensary records show a very good herd test for last year, the average being 3.65 per cent, and run-

ning from 3.4 in June to 3.9 in December. Our milk deliveries to the condensary for last year totaled over 330,000 lbs., and we used about 4,000 lbs. on the farm besides, so the four cows which did not have a full year's record gave about 17,000 lbs.

Our silos have a capacity of 250 tons, and we also give the cows all the hay they will eat in winter (either alfalfa, clover, or oats and peas.) We also feed whatever fodder we happen to have. The bill for mill feeds in the winter amounts to seven or eight cents per day per cow, according to price of feed. In the summer the cows have natural pasture, and the mill feed is cut down according to the condition of the pasture.

In the course of building up the herd we have bought quite a number of head, and the records show there have been 60 different cows on the place during the six years. The 22 which are gone are accounted for as follows: Five died, (two lightning, one milk fever), eight sold for beef, (four spoiled bags, two sterile, two poor producers), nine sold for dairy, (four because of high price offered, five rather poor producers). We still have the old bull (now over seven years old), as his heifers have all been good. We also have another bull, Royalton Canary Prince (63821), whose dam recently tested 34.60 lbs. of butter in seven days, A. R. O. We have several registered females on another farm.

We would like very much to know how this grade herd compares with others. Lenawee Co. R. P. CLEMENT.

THE STABILITY OF DAIRYING.

It is the stability of dairying that is so important. One must have capital invested other than the farm and tools, other than what is merely necessary for the production of crops. It is a separate and distinct investment of itself. It is the kind of business that isn't ruined by a bad year, like crops. For instance, this year all over the north central west there is a very poor crop of wheat on the average. Once in a while a man has a fairly good crop, but wheat this year is a poor crop. Last year it was a good crop. It is the same with other crops. One year conditions are right for a good corn crop, another season the crop fails. So one year we have a splendid yield of potatoes, another year we have a poor yield of potatoes. A man who puts his all into any one crop, beans, for instance, or potatoes, will suffer greatly when this bad year comes, which is sure to come. His business isn't stable. It depends too much upon conditions over which he has no control. On the other hand, dairying has stability. It makes no great difference if you do have a poor corn crop this year your business of dairying goes on just the same. You substitute some other crop for the corn crop as feed for the dairy cow, but the business goes on. If clover fails you put in cowpeas or soy beans, or raise peas and oats, some substitute crop for the clover crop, and you buy more grain to feed, but your main business, the business of dairying, goes on just the same. So dairying is more than crop production, it has got more stability than crop production, and a man who is far sighted enough and willing to put capital into a good commercial herd of dairy cows may be sure that he is not going to be affected by a bad year, or by two bad years. It is something that he can rely upon. It is something that, if his crops fail or are poor, he can go outside of his own farm and buy the feed for his dairy cows and bring it onto his farm and then feed it to the dairy cows and make a profit, because he charges the feed to the cows at the market price. If he raised the feed himself and can produce it for less than the market price then, of course, he makes a profit off from the feed and also from his dairy cows. But he can go outside of his farm and buy the feed at the market price and with a good herd of cows make a good legitimate profit. Consequently you have got something that you can depend upon, something that will stay by you on a rainy day, something that will give you employment the year around, something that will furnish you a cash income the year around, and this is one of the great reasons why dairying almost invariably brings prosperity to the dairy farmer or to a dairy community, because it is something you can tie to and something that is not affected by a bad season.

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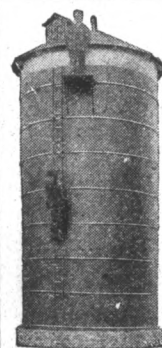
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DETROIT, JULY 27, 1912.

CURRENT COMMENT.

The fact that Michigan's Agricultural Opportunities. of farm property in the United States more than doubled in a period of ten years, as shown by the recently published census figures, is a matter for sincere congratulation to the farmers of Michigan, as well as of other sections of the country. This is certainly an unexampled record of agricultural prosperity in which Michigan has shared to a gratifying degree.

The census figures show that the total value of all farm property in Michigan in 1910 aggregated \$1,088,858,379, as compared with a total value in 1900 of \$690,355,734, an increase of 57.7 per cent, as compared with the increase in the country of 100.5 per cent. This proves the fact many times mentioned in these columns that farm lands of the better class have in recent years sold more cheaply in Michigan than in any of the adjoining states.

This condition of affairs, however, has not been so pronounced since the taking of the statistics for the thirteenth decennial census, the increase in the sale price of farm land in many sections of the state having advanced rapidly during the past two years. This advance has been so marked and so general, that, were a new census to be taken this year, we believe it would be found that the margin of difference between the increase in the value of farm property during the decade from 1900 to 1910, as shown by the above comparison would be largely, if not entirely, eliminated.

Notwithstanding this fact, there is no question but that better agricultural opportunities await the young man right here in Michigan than is the case in almost any other section or country of the world. Notwithstanding the advance in farm property as above noted in recent years, the better grade of agricultural lands in Michigan still sell at figures below their real value, as compared with the prices which prevail in the sister states to the south of us, while we still have a great undeveloped agricultural empire in the northern portion of the state, including the upper peninsula, which awaits the hands of men who desire to make for themselves permanent homes upon the land. A trip through the northern sections of the lower peninsula and the upper peninsula could not but convince any observing man of this fact.

Very much of this undeveloped land is as good as the average of that which has already been developed. A considerable percentage, however, is plains land or land which would require drainage on an extensive scale to make it available for agricultural purposes. The future value of these farm lands, and particularly the plains land has been a matter of frequent discussion and disagreement, even among those who are best informed with regard to the resources of the state. We believe there is no doubt but that ultimately the great bulk of this land will have a value for agricultural purposes which is not generally appreciated at this time. At least this has been the case with similar lands in other countries.

Much of the land in Germany upon which sugar beets and other staple crops are now regularly grown was originally land very similar in character to our own plains land but which, by scientific treatment, has been made permanently profitable for agricultural purposes. The methods by which the poorer of these Ger-

man lands have been reclaimed, as recently related by a Michigan business man who has spent considerable time in the agricultural sections of Germany studying the beet sugar industry as developed there, is most interesting.

In order to provide a more stable foundation for improving the fertility and humus content of this soil it was many years ago deeply plowed and a heavy application of lime was made in the bottom of the furrows, thus tending to form an artificial hardpan some 30 inches below the surface as the initial step in improving its fertility and crop producing power. By this means and by subsequent good farming the fertility of these lands has been increased to a degree which has made them permanently profitable for agricultural purposes.

Ultimately, either with or without expensive preparation such as was there used in earlier days, even the poorest of our Michigan plains lands will be made productive. But this is a problem which does not press for solution while there is yet such a body of good land awaiting development as is the case in Michigan.

Within the next decade the development of this great agricultural empire within our state is bound to progress rapidly and it is not without good reason that we predict that when the next national census is taken Michigan will be well toward the top in the increase in the value of farm property as compared with her sister states. Truly, there are greater agricultural opportunities in Michigan than in any other state in the country, not alone because of the land which is available at comparatively cheap prices, but as well because of the great diversity of our agriculture, and the fact that we are first in the production of many staple products and crowd other states for first honors in many other lines. Our young men would do well to first look over the opportunities right at their door before considering prospects which are made to look more alluring from a distance, but which in reality do not offer as favorable opportunities for the making of desirable homes and the early accumulation of a satisfactory competence.

Optimism as a Business Asset.

There is a very noticeable difference in the feeling of the average farmer regarding the season's prospects since the occurrence of recent rains, which have been rather general throughout the state. During the dry, hot month of June there was a very general pessimistic feeling regarding the outlook for the season's campaign. A late spring delayed the planting of the spring crops while the dry June weather seemed to be the forerunner of a severe mid-summer drought and conditions appeared to be anything but encouraging for the average farmer. For the time being it was forgotten by many that compensation is a law of nature, and that weather conditions generally average up much better than we fear during unfavorable periods. But with the falling of welcome rains, the season's prospects have materially improved and the average farmer wears a smile more frequently and constantly than was the case a few weeks ago, except perhaps in cases where there was a loss in the quality of the hay crop from the same cause which so materially benefited the growing crops.

Thus in this case, as in practically every case in which we are confronted by discouraging conditions, there was a silver lining to the cloud which obscured our vision. Also, in this case as in others which may effect our viewpoint of things material, a cheerful optimism would have been a more desirable frame of mind to cultivate. Too many people do not seem to appreciate the fact that optimism is a real business asset. That it is a valuable asset in any business cannot be questioned by the thoughtful and observing man, but it is perhaps a more substantial asset in farming than in most other business enterprises, for the reason that the farmer is less able to control the conditions which make for a maximum success than most other business men. But if he cannot control the conditions under which he must work, he can at least obviate the more serious handicaps which they may temporarily impose, providing he maintains the optimistic view of future conditions which experience warrants. If a dairyman, instead of bemoaning his luck when a drought comes and the pastures fail, maintains the production of his herd by supplementary feeding until weather conditions improve, and the grower of cash crops, by thorough tillage tides his crops

over until rain comes, he can thus secure more profitable yields than would have been possible had he become discouraged and failed to make up for the shortcomings of nature as best he could.

This is but one illustration of many which might be cited to prove that optimism is a valuable business asset on the farm. But it is far more than a simple business asset. It is a desirable personal attainment, which will make its possessor a more cheerful and acceptable companion in the home and more likable as an acquaintance, to say nothing of the added enjoyment which the reasonably optimistic man will derive from life as compared with the pessimist.

Someone has well said that there are two things in this world which it does not pay to worry about: the things which we can help, and those which we can't help. Let us then cultivate an optimism which, tempered with reason and guided by experience, will be both a valuable business asset and a desirable personal attainment.

A Move for Direct Marketing.

An idea has been evolved by the management of the State Fair in planning this year's exhibition and approved by a committee of the Detroit Board of Commerce appointed to confer with the directors of the State Agricultural Society with regard to ways and means of bringing producers and consumers together. This plan contemplates the establishment of a municipal market centrally located in the city of Detroit where produce may be shipped in carlots, as well as drawn in by wagons, and sold direct to consumers as is now done on a smaller scale at the public markets in this and other cities.

It is proposed to discuss ways and means for the permanent establishment of this enterprise at a barbecue to be held at the State Fair, the Board of Commerce committee in the meantime to consider the problem of a location for such a market. As a means of creating interest in this enterprise the purely agricultural exhibits at the State Fair are to be sold to the people of the city at the close of the fair.

Investigation has shown that in other cities where municipal markets have been established, of which Des Moines, Iowa, is a prominent example, they have met with success from the start, it being stated that at Des Moines the number of producers who have been enabled to sell direct to the consumers through this medium has increased by hundreds, while the price of produce to the consumers of the city has been very materially reduced, thus benefiting producers and consumers alike. There is no question but that the problem of distribution is as important as that of production. Neither is there any doubt that the present cost of distribution is altogether too high, and a movement of this kind in Michigan may well result in increasing the proportion of the consumer's dollar which will be received by producers within reach of the proposed municipal market, should the plans to this end be worked out successfully.

If the plan should be demonstrated to be a success here it could also be worked out on a smaller scale in other Michigan cities. At any rate it is a step in the right direction toward the solution of this vexed question of the distribution of farm products to the ultimate consumer and the outcome will be watched with interest by both producers and consumers throughout the state.

Relative Importance of the Corn Crop.

Recently published census figures emphasized the importance of the corn crop as compared with other grain crops grown upon the farms of the country. These figures show that all cereal crops being represented by 100 the acreage devoted to corn in the country is 51.4 per cent of the total. In the east-north central states, to which group Michigan belongs, the percentage of the area of corn as compared to the total of grain crops is almost exactly similar to that of the country as a whole, being 51.8 per cent.

In the north, as a whole, the corn acreage forms 45 per cent of the total acreage in cereals, while in the south it is 77.9 per cent of the total acreage in grain crops. The west grows comparatively little corn, the acreage of corn being only 6.1 per cent of the total acreage in cereals. The country east of the Mississippi river has a corn acreage comprising 59.4 per cent of the total acreage in grain crops, while west of the Mississippi the percentage is 45.3.

In no states, except the mountain and Pacific states, the New England and middle Atlantic states, does the area of any other grain crop exceed that devoted to corn. In the cases mentioned the east grows a larger acreage of oats than of corn, while in the west wheat comprises the greater acreage.

It will thus be seen that the value of the corn plant to agriculture is recognized by the farmers of the country over and that there is a reason for the average condition of the corn crop being generally taken as an index of the agricultural conditions for the entire country, as it is the most widely distributed and generally grown of all our crops.

HAPPENINGS OF THE WEEK.

National.

Unexpected complications have developed from the probe into the circumstances surrounding the murder of Herman Rosenthal, a New York gambler. There is considerable evidence leading to the belief that the police department of the American metropolis is connected with the crime.

Wm. L. Bullock, of Texas, a midshipman at Annapolis, in fulfilling the academy tradition that it is necessary for a newly entered midshipman to climb the topmast of Commodore Farragut's old flagship, which is now anchored at the naval academy wharf, was killed by falling from the mast after he had succeeded in reaching the top.

It is expected that the wool tariff will be voted on in the U. S. Senate, Thursday of this week, the exercise bill on Friday and the sugar tariff bill on Saturday. In the house the cotton bill will be voted upon. The house will also consider the eight hour law covering government work, a bill for the admission without tariff duty materials used in building American ships and one requiring wireless apparatus upon vessels.

It is estimated by the post office department that during the past fiscal year \$120,000,000 was filched from the American people by fraudulent operations through the mails. The authorities have arrested 1,063 persons, 452 of whom were convicted and 571 cases are awaiting final disposition.

An order has been issued by the Pennsylvania railroads discontinuing the selling of liquors on trains east of Pittsburgh.

The Straus arbitration committee selected to render a decision in the locomotive engineers' trouble with the railroad owners, is in session in New York city taking testimony from the officers of the several companies concerned, and from representatives of the locomotive engineers.

The state dairy and food department of Michigan has reported that 41 out of 56 samples of drugs analyzed, were found to contain impurities. Of 30 samples of meat 20 were found to be either misbranded or adulterated. Of 602 samples of food products, 123 were found to be adulterated or misbranded. Candy appeared to be the purest of all substances analyzed, for out of 278 samples investigated not a single one was found to be adulterated or misbranded.

The house committee on elections decided by a vote of six to three that Congressman Catlin, of Missouri, was not properly elected and that he should be deprived of his seat in the house.

There is evidence that at least thirty persons met death in the flood which swept the hillsides and canyon at Mozauma and Seven Troughs in Humboldt county, Nevada.

An important investigation involving the United States Steel Corporation has been ordered by the interstate commerce commission. The inquiry will be into the rates, practices, rules and regulations covering the transportation of cement, iron ore, iron, steel and their products.

The Michigan state convention of the National Progressive party was held at Jackson last Saturday and L. Whitney Watkins' name was proposed for governor, Nathan P. Hull's for congressman-at-large, and Theodore Joslin's for United States senator.

Foreign.

Reports indicate that the Emperor of Japan is very seriously ill and that his death is expected at most any moment. He has been a victim of diabetic nephritis since 1904. The present Emperor was born in 1852 and ascended the throne upon the death of his father in 1867. Japan has made great progress during the 43 years of his reign.

Anticipating the change in commercial routes by the completion of the Panama canal, Peru has already planned for the construction of railroads across the Andes into the rich country lying to the east of the mountains, to carry the products of that vast region to the west instead of to the east, as has heretofore been the course.

Last week reports reached this country of an attempt by Italian torpedo boats to force a passage through the Dardanelles. The attempt was unsuccessful on the part of the Italians, as was also the previous one on April 18. The Turks consider the situation grave, however, when foreign forces are so bold as to attempt the passage of this extremely well fortified channel.

It is announced that the Canadian government will build a new lock at the Soo. The amount of traffic demands larger facilities and the new lock on the Canadian side will be of much assistance to commerce passing to and from Lake Superior.

An invitation has been extended to this country to assist in a great horticultural exposition to be held in St. Petersburg, Russia, in 1913.

POULTRY

DESPOILERS OF THE YOUNG POULTRY FLOCK.

The other day I happened to glance through the window from the corner of an eye just as a bird, flying low and swiftly, was making straight for one of my small chicken parks. The glance was timely only so far as it showed me a pesky hawk flying back to the woods with a young chicken in his claws.

Now this hawk was known to be about, and the chickens were supposed to be safe under the protection of poultry netting. However, a few of the little rascals had found an exit and were enjoying their freedom in chicken fashion, when Mr. Hawk spied them.

This hawk is of the species known as sparrow hawk. They are so small and swift that they come and go before one is aware that they are anywhere around. Even the quick-eyed Brown Leghorns are not quick enough to give the alarm, or else they judge them to be of no consequence. A large hawk they will spy while it is yet beyond the vision of the human eye, and give the alarm while every last one of them scurries for shelter. The sparrow hawk is perhaps the most difficult of control of any of the various chicken enemies. At any rate the problem of keeping my chickens out of its clutches is a vexatious one.

My present plan is to keep them in runways or parks, which are covered with poultry netting. This should be of inch mesh. The sides have inch boards one foot wide. If the boards fit snugly to the ground there will be no chance for the chickens to get out or the hawk to get in. The prospective winter layers are then safe so far as the hawk is concerned. One objection to the plan is that the labor of caring for the broods is greatly increased, and then the chickens do not do as well in these covered runs as upon a free range. When upon free range a brood of chickens gather in, during the day, large numbers of insects, and these insects contain animal food elements which are essential to rapid and perfect development of bone and muscle. Moreover the exercise gained while gathering in this insect life is just as nature designed. Nothing artificial will ever be devised to serve this purpose so well. Nevertheless I much prefer to raise 100 chickens by the aid of the covered run, than to raise 25 on a free range, the hawk appropriating the remaining 75. None of my neighbors are making use of the covered run, but all are losing chickens right along, and some of them a great many.

There are several other enemies which are worse even than the sparrow hawk—the mink and the weasel, for instance. When these vermin do make a raid on the chicken coop, they usually make a thorough job of it, often getting away with a good-sized brood in one night. Then there is the crow, too, who, though he does not make it a regular business, perhaps, to hunt for chickens, yet, when he does get a taste of young chicken, makes fearful inroads on a brood. Skunks sometimes make trouble for the chicken raiser but are not usually troublesome.

The fellow that gives us the most trouble is the little hawk before mentioned. He is the more aggravating, perhaps, because we are not smart enough to get him with a gun.

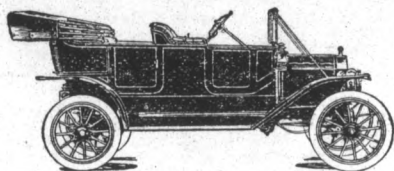
And perhaps we must not forget to mention the house cat. Once a cat gets a taste of chicken her head had better be taken off. Once started she will hunt chicken most diligently, and work slyly while hunting. The cats got after my chickens this spring and I got rid of the cats very promptly. There are no birds nesting around the house this year simply because, as I think, there were so many cats about the premises. It would seem that we must keep a good cat on the farm in order to dispose of the rat and mouse question, but if so they will hereafter be confined during the summer months because of the number of song birds captured by a good mouser.

I should also mention rats among the chicken enemies, and the rat is a foe not to be despised. Taken altogether, it would seem to be a miracle that ye farmer's wife succeeds in bringing a sufficient number of chickens to maturity to replenish the farm flock, for, in addition to animal enemies, there are the various diseases to which chicken life is subject and which often bring about heavy losses.

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U. S. DEPARTMENT OF AGRICULTURE

FARMERS' BULLETIN 461.

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PREPARED BY THE OFFICE OF PUBLIC ROADS.



WASHINGTON GOVERNMENT PRINTING OFFICE, 1911.

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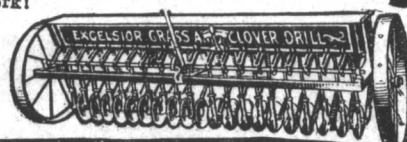
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MARKETS

DETROIT WHOLESALE MARKETS.

July 24 1912.

Grains and Seeds.

Wheat.—This market the past week has been very precarious. Last Friday there was an advance of 1c in cash and 1½c in future deals, but the following day this advance was lost. On Monday a decline of ¾c in cash grain and 1c in futures was made, while on Tuesday both cash and futures advanced 2c. Weather conditions and the reported closing of the Dardanelles Strait are credited with influencing the change. Heavy rains over the entire country were particularly discouraging to those harvesting winter wheat and an attempt by Italy to force a passage through the Dardanelles caused the Turkish government to close the channel to all commerce. This cuts off the European markets from the supply of southern Russia. As a result a large advance and a firm tone prevail there. One year ago No. 2 red wheat was quoted by the local trade at \$4¼c per bu. Quotations for the past week are:

	No. 2	No. 1	Sept.	Dec.
Thursday	1.02½	1.01½	1.04	1.06½
Friday	1.03½	1.02½	1.05½	1.07½
Saturday	1.02½	1.01½	1.04	1.06½
Monday	1.01½	1.00½	1.03	1.05½
Tuesday	1.03½	1.02½	1.05	1.07½
Wednesday	1.03	1.02	1.03½	1.05½

Corn.—This cereal ruled more steady than wheat, which grain is largely responsible for the few fluctuations that occurred in corn circles. The weather has generally been favorable for the growing crop, although the loss resulting from late planting and poor seed can hardly be repaired. Old corn is being rapidly consumed and there is scarcely sufficient in sight to carry the public over until the new corn is available. One year ago the price for No. 3 corn on this market was 67c per bu. Quotations are as follows:

	No. 3	No. 3
	Corn.	Yellow.
Thursday	74½	76½
Friday	74½	76½
Saturday	74	76
Monday	73½	75½
Tuesday	74½	76½
Wednesday	75	77½

Oats.—In spite of the changes in wheat and corn, oats have steadily advanced since a week ago, the change amounting to 2½c. The recent heavy rains over the important oat producing sections of the country have not benefited the crop. Where the straw is heavy much of the grain has gone down. Harvesting is progressing north of the Ohio valley. One year ago standard oats were quoted at 40c per bu. Quotations for the past week are as follows:

	Standard.	No. 3
		White.
Thursday	54½	54
Friday	55	54½
Saturday	55½	55
Monday	56	55½
Tuesday	57	56½
Wednesday	58½	58

Beans.—There are no reported sales of beans on the market the last week. Quotations are merely nominal. The new crop, however, is showing good growth in this state and with favorable weather ought to mature well. The nominal figures are:

	Cash	Oct.
Thursday	\$2.65	\$2.25
Friday	2.65	2.25
Saturday	2.65	2.25
Monday	2.65	2.25
Tuesday	2.65	2.25
Wednesday	2.65	2.25

Clover Seed.—No change is noted in local quotations for October clover seed. The outlook for June seed has been improved by recent rains. Nominal quotations are:

	Prime Oct.
Thursday	\$9.75
Friday	9.75
Saturday	9.75
Monday	9.75
Tuesday	9.75
Wednesday	9.85

Rye.—The price remains unchanged. No. 2 rye being quoted at 73c per bu.

Flour, Feed, Potatoes, Etc.

Flour.—Price are steady with the trade slow.

Straight	\$5.60
Patent Michigan	5.80
Clear	5.00
Rye	5.40

Feed.—All prices rule steady with week ago. Carlot prices on track are: Bran, \$26 per ton; coarse middlings, \$28; fine middlings, \$30; cracked corn and coarse corn meal, \$31; corn and oat chop, \$30 per ton.

Hay and Straw.—Changes are slight. Quotations: No. 1 timothy, \$21.50@22; No. 2 timothy, \$18@19; clover, mixed, \$16@20.50; rye straw, \$11@11.50; wheat and oat straw, \$10@10.50 per ton.

Potatoes.—Prices for potatoes have improved under a good demand. There are but few Michigan offerings as yet. The ruling price for southern offerings is \$3 per bbl.

Provisions.—Family pork, \$18.50@19.50; mess pork, \$19; clear, backs, \$19.50@21; hams, \$15@16; brisquets, 11½@13c; shoulders, 12c; picnic hams, 10½@11c; bacon, 13@15½c; pure lard in tierces, 13c; kettle rendered lard, 13c per lb.

Dairy and Poultry Products.

Butter.—Offerings are about normal for this season of the year. There is an active demand and prices are ruling the same as a week ago. Quotations are: Extra creamery, 26½c; first creamery, 25½c; dairy, 21c; packing stock, 19c per pound.

Eggs.—With only moderate offerings this trade shows a fractional advance in price the past week under an active demand from consumers. Current receipts, candled, are quoted at 20½c per dozen.

Poultry.—There is a steady market in poultry with prices practically the same as last week. Quotations are: Live—Broilers, 24@25c; chickens, 13½@14c; turkeys, 16@18c; geese, 10@11c; ducks, 14c; young ducks, 15@16c per lb.

Veal.—Fancy veal higher; fancy, 11@12c per lb; choice, 8@9c.

Cheese.—Steady except that Limburger rules higher. Michigan flats, 16@17c; York state flats, 17@18c; Limburger, 17@19c; domestic Swiss, 22@23c; brick cream, 17½@18c.

Fruits and Vegetables.

Cherries.—Sour are higher and quoted at \$2@2.25 per 16-qt. case; sweet, \$2@2.25 per 16-qt. case.

Raspberries.—Prices have declined. Reds selling at \$4.50@5 per bu; black, \$1.40@1.50 per 16-qt. case.

Blackberries.—Steady. Ruling quotations are \$1.50@1.75 per 16-qt. case.

Huckleberries.—Selling at \$3@3.50 per bushel.

Gooseberries.—Steady at \$2@2.25 per bushel.

Honey.—Choice to fancy comb, 15@16c per lb; amber, 12@13c.

Apples.—New apples are quoted at \$5@5.50 per bbl.

OTHER MARKETS.

Grand Rapids.

Hay is bringing \$14@16 on the city market. Potatoes are worth \$1 per bu. Fruits range as follows: Red raspberries, \$1.60@2; black caps, \$1.50@1.65; currants, \$1.25; cherries, \$2; huckleberries, \$1.75; apples, \$1. Vegetables are selling as follows: Turnips and beets, 10c; cabbage, 30@35c; peas, \$1.40@1.60; beans, 60c; sweet corn, 20c doz. The egg market is unchanged from last week.

Chicago.

Wheat.—No. 2 red, 97½@1.00½; Sept., 94½c; Dec., 97½c.

Corn.—No. 3, 69½@70c; Sept., 66½c; Dec., 57½c.

Oats.—No. 2 white, 54½@56½c; Sept., 34½c; Dec., 35½c.

Butter.—Volume of business fair at prices which have ruled for several weeks past. Quotations: Creameries, 23@25c; dairies, 21@24c per lb.

Eggs.—Miscellaneous offerings are ½c higher; better grades unchanged. Market steady. Quotations: Firsts, 17½c; ordinary firsts, 16c per doz; at mark, cases included, 15½@16½c.

Potatoes.—Prices are higher than a week ago due to light receipts. Early Ohio from Kansas and Missouri are quoted at 75@77c per bu; Illinois stock, 70@72c; Minnesotas, 75c.

Beans.—Little activity in this market and all grades are quoted lower. Quotations: Pea beans, choice hand-picked, \$2.85@2.88 per bu; prime, \$2.75@2.78; red kidneys, \$2.50@2.60.

Hay and Straw.—Market steady to firm at last week's figures. Quotations: Timothy, choice, \$23@24; No. 1, \$21@22; No. 2 and No. 1 mixed, \$18@19.50; clover, \$9@12; No. 2 and no grade, \$5@9; alfalfa, choice, \$13.50@14; No. 1, \$11@13; No. 2, \$9@11. Straw—Rye, \$10@11; wheat, \$7.50@8.50; oat, \$7.50@8.50.

New York.

Butter.—Prices are substantially the same as a week ago. Demand is normal and supply moderate. Prices are complained of as being too high for storage men to put away butter. Quotations: Creamery, special extras, 27@27½c; do. firsts, 26@26½c; do. seconds, 25@25½c; factory, current make, firsts, 22½@23c per lb.

Eggs.—Supply keeps up and the poorer grades show slight weakness. Good kinds steady. Fresh gathered extras, 23@24c; extra firsts, 20@22c; first, 18½@19½c; western gathered whites, 19@24c per dozen.

Poultry.—Dressed, steady. Western broilers, fresh killed, 24@27c; fowls, 15@17c; turkeys, 16@17c per lb.

Boston.

Wool.—About the only change to note in this week's market is an increase in activity. The smaller mills have followed the action of the larger companies and have gone into the market to take wools at the prices asked by the dealers, believing that the future market will be even stronger than the present. They are also being forced to this by unusually strong demands for woollen goods. The demand for fleece wools has improved with unwashed Michigan ¾-blood combings quoted at 29@30c and ½-blood at 28@29½c. One-quarter blood is also quoted at 29@30c and Michigan delaines 26@27c. These quotations are for unwashed wools. Much of the Ohio and Michigan clip is retained by local dealers and buyers and has not been forwarded to the large wool centers. Fine wools are becoming better property, especially since the recent sales in London where prices advanced sharply.

Elgin.

Butter.—Market is firm at 25c per lb., which is the quotations of one week ago.

THE LIVE STOCK MARKETS.

Buffalo.

July 22, 1912.

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

Receipts of stock here today as follows: Cattle, 125 cars; hogs, 75 double decks; sheep and lambs, 40 double decks; calves 2,200 head.

With 125 cars of cattle on our market here today, and with only 11,000 reported in Chicago, the market on all the best grades of cattle was from 10@15c higher than last Monday. The market was quite

active, and by noon the cattle were nearly all sold.

We quote: Best 1,350 to 1,500-lb. steers \$8.60@9.25; good prime 1,200 to 1,300-lb. do. \$8.50@8.75; good prime 1,100 to 1,200-lb. do. \$8.15@8.50; medium butcher steers 1,000 to 1,100, \$7.40@7.65; butcher steers, 950 to 1,000, \$6.50@6.65; light butcher steers, \$5.75@6.25; best fat cows, \$5.50@6.25; fair to good do., \$4@5; common to fair kind, \$3.25@3.50; trimmers, \$2.50@3; best fat heifers, \$7@7.50; fair to good do., \$5.50@6; light butcher heifers, \$4.50@5; stock heifers, \$3.50@4; best feeding steers, dehorned, \$5@5.25; common feeding steers, \$4@4.50; stockers, inferior, \$3.50@4; prime export bulls, \$6@6.25; best butcher bulls, \$5@5.50; bologna bulls \$4.25@4.75; stock bulls, \$3.75@4.25; best milkers and springers, \$5@6; common kind do., \$25@35.

Today's receipts of hogs was about like last week's, 75 double decks on sale. Western markets all reported a liberal supply today, and lower prices prevailed all over the west, but a strong demand here from both local buyers and shippers and our market opened full strong with last week's close; general sales around \$8.25, with a few decks of selected at \$8.30; and on the close one or two loads of fancy hogs on the yorker order sold at \$8.30@8.35. Pigs and lights ranged from \$8.15@8.25 as to quality; roughs, \$6.50@7; stags, \$5@6. Our market closed high compared with other points, and light receipts will be necessary to hold prices with today's level.

The lamb market was slow and from 25@50c lower than the close of last week; most of the choice spring lambs selling at \$3@8.25; yearlings, \$6@6.50. The sheep market was also a quarter lower; most of the best ewes selling from \$4@4.25; wethers, \$5@5.25. Look for about steady prices on both sheep and lambs the balance of the week.

Choice spring lambs, \$8@8.25; cull to fair do., \$5.50@6; yearlings lambs, \$6@6.50; bucks, \$2.50@3; wethers, \$5@5.25; handy ewes, \$4@4.25; heavy ewes, \$3.50@3.75; cull sheep, \$2@3; veals, choice to extra, \$9.50@9.75; fair to good do., \$7.50@9.

Chicago.

July 22, 1912.

Cattle. Hogs. Sheep. Received today11,000 44,000 28,000 Same day last year, 26,771 43,483 22,276 Received last week, 33,041 97,118 97,175 Same week last year, 51,606 129,112 105,572

How abnormally small is the consumption of beef at the present time is demonstrated by the cattle market today. Although the Monday run is astonishingly light, steers have been selling extremely slowly, and most sellers find no improvement in prices. There are reports of some sales 10c higher, however, and early sales of desirable butcher stock averaged about 15c higher, with the improvement lost later on a restricted demand. Some prime beefs were not sold at a late hour. The hog market was 5c lower, with some coarse, heavy packing lots as much as a dime lower. Hogs sold at \$7.10@7.85. Hogs marketed here last week averaged 239 lbs., compared with 232 lbs. a year ago, 245 lbs. two years ago, 245 lbs. three years ago and 224 lbs. four years ago. Sheep and lambs showed very little change, with about 3,000 southern lambs shipped direct to local packers and a large showing of range lambs from Idaho and Oregon, as well as a fair number of range wethers and yearlings. Prime selected range lambs brought \$7.45, and a sale was made of three double-decks of Montana range wethers at \$4.70.

Cattle were marketed very sparingly last week, yet the demand was so small that prices broke on an average 30@40c, and there was a late sharp decline Monday, although only 15,381 head arrived that day. It was apparently a case of hot weather and high prices checking beef consumption. The bulk of the steers sold last week at \$7@9, and even the best steers sold way off, the choicest lots bringing \$8.80@9.55, while the poorest grass steers of light weight sold at \$5.50@6.50. Sales took place of fair little killers at \$6.60@7.50, while medium grade steers sold at \$7.60@7.95 and good steers at \$8@8.75, desirable yearlings bringing \$8@9.10. Cows and heifers shared in the decline selling at \$4.15@8.25, with cutters selling at \$3.25@4.10, canners at \$2.10@3.20 and bulls at \$3.45@7, not many bulls going near the top price. Calves had a fair demand at \$3.25@8.65, early sales being made as high as \$8.75. There was little animation in the stocker and feeder traffic, despite the low prices, sales being made at \$4@6.80, with choice stockers bringing around \$5.50@6. Milch cows had a fair demand at \$35@75 per head, buyers usually wanting choice cows. A fancy big Holstein cow of the highest type, being a backward springer and a cow that any breeder would be proud to own, sold for \$100. Few such cows are marketed at any time, and they are sure to sell high, but ordinary cows have sold slowly at declining prices. The outlook for beef cattle depends very much on whether they are marketed sparingly or not. Good cattle are very scarce everywhere and are expected to sell extremely high all along, even if they do not fetch the recent top figures, but the ability of many beef consumers to pay the prices asked in retail meat market is limited. Buyers of selected heavy feeders had to pay advances of 15@20c, very few being offered.

Hogs have continued to bring much higher prices than in most former years, 1909 and 1910 excepted, and whenever farmers cannot sell as high as \$7 on the farm they are disposed to hold their swine for better terms. Slowness part of the time in eastern shippers' operations is a hindrance to placing prices on a firm basis, but local packers have a strong desire to buy hogs for their large fresh pork trade, as well as for converting into lard and cured meats, the dearthness of beef making a much better outlet for hog products. The startling decrease

in the operations of western packers since March 1 compared with the number of hogs packed in the corresponding period last year is a bullish factor that cannot be ignored, and conditions are favorable for good prices for hogs for months to come. Stocks of provisions at the five principal western packing points on July 1 aggregated 321,192,000 lbs., being not greatly different from a year ago, stocks having increased during June about 1,000,000 lbs., against an increase of about 21,000,000 lbs. for the same month last year. The proportion of rough, heavy hogs is increasing, and heavy hogs have to sell at a much greater discount than a short time ago, choice light butcher hogs being much the best sellers. The great falling off in the receipts last week caused the biggest advance in prices seen in a long time, closing sales being at \$7.10@7.90. Prices were the highest in a long period, the best ruling 25c higher than on the preceding Saturday. Pigs sold at \$6.25@7.50 and stags at \$7.90@8.45. Light hogs sold the highest and heavy packing lots the lowest.

Lambs have been marketed freely from the Idaho, Oregon, Washington and other ranges, as well as from farming districts, and the packers have continued to receive large supplies of southern lambs consigned to them direct from their buyers stationed at Louisville. Native ewes have been plentiful, but most of the yearlings and wethers came from the ranges. The best demand has been for fat handy weight lambs, with ewes selling at fairly high values, and there was a good demand all week for western range feeding lambs and for breeding ewes, with the best feeders higher than heretofore. Choice lambs closed on Saturday somewhat higher than a week ago, but inferior live muttons were irregularly lower. Lambs were salable at \$4.25@7.40, with feeder lambs wanted at \$5.25@5.85. Yearlings went at \$4@5.60, wethers at \$3.50@5.25, ewes at \$2@4.40, bucks at \$2.50@3.25 and breeding ewes at \$4@5.25. Range feeder wethers brought \$3.50@4 and feeder yearlings \$4@4.50.

Horses last week had a slow outlet so far as the poorer kinds were concerned, with sales around \$85@125 per head, and farm workers sold sparingly at \$100@200, according to quality, the less attractive horses going much lower than earlier in the year, when trade was animated. Some sold \$23@30 lower than in March. The choicer heavy drafters were as good sellers as ever, with no excessive offerings, and quotations ruled at \$250@325, while light drafters sold on a basis of \$175@225. Most of the sales of wagon horses were at \$160@200, and chunks sold at \$230 and upward for very desirable ones, a few fetching \$280. Mules have become more active at \$400@500 a pair for good to prime grades, with a fair demand for shipment to Michigan farms, as well as for use in the United States army.

LIVE STOCK NOTES.

Ray Gardner, of northern Illinois, showed up in the Chicago market recently with a consignment of 24 head of prime Shorthorn steers that averaged 1,386 lbs. and found a purchaser at \$9.55 per 100 lbs. The young stock feeder has watched the reports of the experiment feeding stations carefully and has made scientific feeding a study, with the best practicable results, inasmuch as this shipment netted him the tidy sum of \$877. The cattle were purchased by Mr. Gardner in Chicago on April 1, for \$6.40 per 100 lbs., having averaged in weight at that time 1,061 lbs. The venture looked a little risky at the start as viewed by some observers, but similar ventures have made other stockmen plenty of money this year. It is the best class of beefs that has maintained firmness of late at times when the medium and plain cattle were weakening in value. Far too many half-fat steers are being marketed for the best interests of stockmen.

Reef steers selling between \$6.75 and \$7.50 per 100 lbs. have experienced a remarkable reduction in prices in the Chicago stock yards in recent weeks, and beef steers selling from \$7.50 down have dropped all of \$1.50@1.75 from the high time before the decline started. These cattle embrace short-fed and grassy natives and are forced to compete with southwestern grass cattle, which have been selling relatively lower and which are cheaper on the hooks. The midsummer period is the time when this change in values is always expected to take place.

A prominent live stock commission firm with its main headquarters at Chicago and branches at other important markets says: "We do not think it advisable to hold either sheep or lambs of a good fat class back for the express purpose of striking a higher market. In our opinion, their place is on the market. However, such as are thrifty and are shy of good flesh condition can, we believe, be held on grass for better flesh condition to good advantage. Their place is in the country."

The best judges of the hog trade view the situation optimistically, taking note of the fact that the marketing of hogs at western packing points since the close of February has shown a great falling off compared with the same period a year ago, and they place great stress upon the large consumption of fresh pork, largely because of the dearthness of beef and other meats. The leading packers seem to look upon their large holdings of provisions stored away in their cellars as worth good money, and they are awake to the important fact that the cotton states will want large quantities of the cheaper class of hog meats. Already this demand has got a good start, and there is also an extremely large trade in lard.

F. H. Paddleford, of Bannock county, Idaho, says there are as many sheep and lambs in Idaho as there ever were. He says that unlike Wyoming and other states south of Idaho, sheepmen lost practically no sheep last winter.

THIS IS THE LAST EDITION.

In the first edition the Detroit Live stock markets are reports of last week; all other markets are right up to date. Thursday's Detroit Live Stock markets are given in the last edition. The first edition is mailed Thursday, the last edition Friday morning. The first edition is mailed to those who care more to get the paper early than they do for Thursday's Detroit Live Stock market report. You may have any edition desired. Subscribers may change from one edition to another by dropping us a card to that effect.

DETROIT LIVE STOCK MARKETS.

Thursday's Market.

July 25, 1912.

Cattle.

Receipts, 1,665. Market steady at Wednesday and last week's prices; fairly active trade.

We quote: Extra dry-fed steers, \$8@8.25; steers and heifers, 1,000 to 1,200, \$6.50@7; do. 800 to 1,000, \$5.50@6.25; grass steers and heifers that are fat, 800 to 1,000, \$5.50@6; do. 500 to 700, \$4@4.50; choice fat cows, \$5@5.25; good fat cows, \$4@4.75; common cows, \$3@3.10; canners, \$2.50@3; choice heavy bulls, \$4@4.50; fair to good bolognas, bulls, \$3.50@4; stock bulls, \$3.25@3.50; choice feeding steers, 800 to 1,000, \$4.50@5.40; fair feeding steers, 800 to 1,000, \$4@4.25; choice stockers, 500 to 700, \$4@4.50; fair stockers, 500 to 700, \$3.25@3.50; stock heifers, \$3.25@3.60; milkers, large, young, medium age, \$4@5; common milkers, \$2@3.

Spicer & R. sold Mich. B. Co. 3 butchers av 860 at \$4.65, 12 do av 826 at \$5.60, 8 cows av 910 at \$4.65; to Newton B. Co. 1 canner weighing 730 at \$2.75, 2 do av 680 at \$3, 1 do weighing 710 at \$2.50; to Morgan 8 stockers av 560 at \$4.50, 1 do weighing 610 at \$4.50, 2 do av 565 at \$4.50; to Bresnahan 24 do av 390 at \$4, 7 cows av 921 at \$4, 2 do av 1,010 at \$4; to Sullivan P. Co. 3 do av 710 at \$3, 2 steers av 715 at \$5.50, 2 bulls av 675 at \$4.25, 4 butchers av 670 at \$5, 5 cows av 1,008 at \$4.50; to Breitenbeck 5 do av 1,074 at \$5; to Parker, W. & Co. 20 steers av 932 at \$6.90; to Fromm 11 butchers av 634 at \$4.25; to Goose 6 do av 353 at \$3.50; to Newton B. Co. 1 bull weighing 870 at \$4.25, 2 cows av 990 at \$4.75; to Bresnahan 4 do av 1,080 at \$3.65, 1 do weighing 820 at \$3, 2 do av 910 at \$3.25, 8 cows av 1,021 at \$4, 3 heifers av 520 at \$4.60; to Morgan 6 stockers av 661 at \$4.50, 7 do av 453 at \$4.25; to Hammond, S. & Co. 2 steers av 1,150 at \$7.40; to Marx 7 do av 780 at \$5.85; to Lachalt 9 butchers av 715 at \$5.50; to Mich. B. Co. 7 do av 870 at \$5.20, 1 cow weighing 860 at \$3.25; to Sullivan P. Co. 6 cows av 1,013 at \$4.75, 7 do av 1,097 at \$4, 1 do weighing 850 at \$5.

Haley & M. sold Rattkowsky 3 bulls av 550 at \$4.40, 1 cow weighing 1,000 at \$5.50, 2 do av 900 at \$4.50; to Mich. B. Co. 5 butchers av 696 at \$5, 6 do av 809 at \$6, 2 steers av 825 at \$6, 4 do av 537 at \$4.50, 1 cow weighing 910 at \$5.25, 5 butchers av 794 at \$5.50, 15 do av 915 at \$7; to Sullivan P. Co. 1 steer weighing 1,100 at \$6.50, 2 cow and bull av 955 at \$4.50, 1 steer weighing 840 at \$6.50, 1 bull weighing 730 at \$4, 6 cows av 930 at \$4.75, 4 butchers av 815 at \$5.85, 6 do av 643 at \$4.75; to Elk 2 do av 860 at \$4; to Schlischer 4 cows av 840 at \$4.25; to Breitenbeck 1 do weighing 1,040 at \$3.75, 3 heifers av 780 at \$5, 5 steers av 880 at \$6.35; to Bresnahan 2 canners av 800 at \$2.65; to Sullivan P. Co. 4 butchers av 762 at \$4.80; to Fry 9 do av 765 at \$5.80; to Thompson Bros. 8 do av 770 at \$4.80, 2 cows av 895 at \$3.25, 1 bull weighing 840 at \$4.25, 5 do av 856 at \$4.75; to Rattkowsky 7 cows av 953 at \$4.25, 4 butchers av 415 at \$4, 4 do av 872 at \$3.80; to Applebaum 10 do av 520 at \$4.35; to Morgan 5 stockers av 604 at \$4.40; to Thompson Bros. 2 cows av 1,015 at \$4.25; to Hammond, S. & Co. 11 steers av 1,170 at \$7.20; to Kamman 4 steers av 767 at \$5.50, 1 do weighing 560 at \$4.50.

Roe Com. Co. sold Regan 8 butchers av 544 at \$4.10; to Sullivan P. Co. 5 bulls av 1,154 at \$5, 14 butchers av 800 at \$5, 1 bull weighing 880 at \$4.25, 1 cow weighing 920 at \$3; to Mich. B. Co. 4 do av 970 at \$5, 7 butchers av 809 at \$5.25; to Fry 20 do av 667 at \$5.15; to Austin 6 stockers av 416 at \$3.75; to Cooke 11 steers av 940 at \$6.65, 2 do av 815 at \$5.50; to Heinrich 15 do av 810 at \$5.85, 3 do av 650 at \$4.85; to Parker, W. & Co. 20 do av 964 at \$7.60, 2 canners av 760 at \$2.75; to Bresnahan 3 do av 940 at \$3.25; to Sullivan P. Co. 1 steer weighing 1,020 at \$6, 2 do av 1,115 at \$5.

Bishop, B. & H. sold Gerisch 2 steers av 885 at \$6.50, 14 do av 1,030 at \$7, 6 do av 981 at \$7; to Sullivan P. Co. 3 cows av 1,146 at \$4.50, 3 do av 877 at \$3.75, 2 do av 715 at \$3.75, 16 butchers av 960 at \$5, 5 cows av 820 at \$3, 1 bull weighing 660 at \$4, 6 cows av 920 at \$5, 14 butchers av 851 at \$5; to Kamman 8 do av 782 at \$3.75, 18 do av 470 at \$3.75; to Newton B. Co. 7 do av 821 at \$6; to Parker, W. & Co. 12 do av 737 at \$5.50, 12 do av 700 at \$5.25, 1 bull weighing 1,000 at \$4.40; to Bresnahan 3 cows av 700 at \$3, 3 do av 810 at \$3.25, 8 butchers av 572 at \$4.40, 4 cows av 810 at \$3, 3 canners av 947 at \$2.75; to Rattkowsky 2 cows av 965 at \$4.10; to Lock 5 feeders av 826 at \$5.40, 31 do av 700 at \$5.40; to Hammond, S. & Co. 13 steers av 916 at \$6.65, 13 cows av 970 at \$4.65, 2 do av 1,020 at \$3.25, 2 heifers av 775 at \$5.50, 4 steers av 802 at \$6.25, 5 do av 520 at \$4.50, 1 bull weighing 1,300 at \$4.75; to Goose 8 butchers av 666 at \$4.60; to Mich. B. Co. 25 steers av 1,000 at \$7.25; to Applebaum 7 butchers av 726 at \$4.75; to Schlischer 17 do av 780 at \$4.50; to Goose 14 do av 490 at \$4; to D Goose 8 cows av 887 at \$4.10.

Weeks sold Hammond, S. & Co. 7 steers av 836 at \$6.25.

Same sold Bresnahan 2 cows av 800 at \$2.75, 1 do weighing 790 at \$3.

Veal Calves.

Receipts, 1,180. Market active at Thursday's prices. Best, \$8.75@9.50; others, \$4@7.50.

Spicer & R. sold Mich. B. Co. 4 av 150

at \$6.50, 10 av 145 at \$8.75, 4 av 135 at \$8.50; to Parker, W. & Co. 5 av 275 at \$5, 7 av 160 at \$8.75; to Rattkowsky 5 av 145 at \$9.25, 2 av 275 at \$5; to Korff 4 av 140 at \$9.25; to Hammond, S. & Co. 10 av 180 at \$9.50, 4 av 155 at \$7.

Weeks Bros. sold Applebaum 13 av 155 at \$9.25.

Haley & M. sold Newton B. Co. 5 av 125 at \$9, 6 av 170 at \$9; to Mich. B. Co. 9 av 175 at \$9.25; to Rattkowsky 13 av 135 at \$8, 1 weighing 150 at \$9.50, 5 av 125 at \$9.50; to Mich. B. Co. 4 av 145 at \$9, 9 av 150 at \$9, 5 av 165 at \$6, 13 av 150 at \$8.50, 2 av 150 at \$6, 2 av 350 at \$4; to Parker, W. & Co. 7 av 160 at \$9, 3 av 125 at \$9.50, 8 av 150 at \$9.50, 18 av 135 at \$8.50, 19 av 155 at \$9.25; to Sullivan P. Co. 1 weighing 110 at \$7, 3 av 140 at \$9.

Roe Com. Co. sold Newton B. Co. 7 av 250 at \$5, 7 av 145 at \$8.50; to D. Goose 5 av 125 at \$9, 17 av 225 at \$5.50; to M. Goose 21 av 215 at \$5; to Mich. B. Co. 19 av 135 at \$8; to Burnstine 1 weighing 780 at \$7, 19 av 155 at \$9.50; to Mich. B. Co. 24 av 150 at \$9.

Kalahar sold Mich. B. Co. 6 av 155 at \$8.75.

Allington sold Goose 8 av 120 at \$8.

Bishop, B. & H. sold Newton B. Co. 3 av 170 at \$6.50, 12 av 150 at \$9.25, 3 av 170 at \$9.50, 16 av 165 at \$9.50; to Sullivan P. Co. 15 av 150 at \$9.25, 11 av 160 at \$9.50, 1 weighing 230 at \$7, 3 av 155 at \$9.50, 4 av 130 at \$8.50; to Parker, W. & Co. 4 av 130 at \$9.50, 10 av 144 at \$9, 2 av 120 at \$7.50, 6 av 160 at \$9.25, 3 av 155 at \$7, 13 av 160 at \$9.25, 7 av 145 at \$9.50, 22 av 215 at \$6.50, 2 av 140 at \$9.50; to Goose 3 do av 200 at \$5, 23 do av 165 at \$9.50, 13 do av 160 at \$9.50; to McGuire 7 do av 135 at \$9, 29 do av 155 at \$9.50; to Friedman 2 av 130 at \$7.50; to Parker, W. & Co. 15 av 150 at \$9, 10 av 147 at \$9, 21 av 170 at \$8, 38 av 175 at \$8.50; to Hammond, S. & Co. 11 av 135 at \$6.50, 14 av 160 at \$9.50.

Sheep and Lambs.

Receipts, 3,756. Market 25c lower than on Wednesday or last Thursday. Best, 6.75; light to common lambs, \$4@5; yearlings, \$4@6; fair to good sheep, \$2.50@3.50; culs and common, \$1.50@2.25.

Spicer & R. sold Newton B. Co. 30 lambs av 68 at \$7.25; to Hayes 39 sheep av 85 at \$2.75; to Thompson Bros. 43 yearlings av 80 at \$4; to Mich. B. Co. 18 sheep av 110 at \$2.85, 20 do av 90 at \$2.75, 20 yearlings av 95 at \$4.65, 17 lambs av 55 at \$6.50; to Young 2 sheep av 109 at \$3, 10 lambs av 54 at \$5.75, 56 do av 65 at \$7; to Mich. B. Co. 15 sheep av 90 at \$3.50; to Sullivan P. Co. 11 lambs av 50 at \$6.50; to Hammond, S. & Co. 16 do av 65 at \$6.50, 25 sheep av 70 at \$3.

Haley & M. sold Mich. B. Co. 213 lambs av 60 at \$7, 10 sheep av 110 at \$3, 10 do av 116 at \$3, 8 yearlings av 95 at \$5, 14 do av 90 at \$5, 32 lambs av 67 at \$7, 50 do av 59 at \$7, 128 do av 57 at \$6.50, 4 yearlings av 95 at \$5, 2 sheep av 125 at \$3, 78 lambs av 65 at \$7.50; to Newton B. Co. 15 sheep av 90 at \$3.75, 1 buck weighing 160 at \$3.25, 16 lambs av 70 at \$7.50; to Mich. B. Co. 53 sheep av 90 at \$3.25, 11 lambs av 85 at \$5; to Petrowsky 8 lambs av 67 at \$5, 12 sheep av 100 at \$3.50.

Roe Com. Co. sold Newton B. Co. 3 sheep av 110 at \$3.25, 56 lambs av 65 at \$7.

Kalahar sold Mich. B. Co. 15 lambs av 60 at \$7.25.

Bishop, B. & H. sold Nagle P. Co. 9 sheep av 125 at \$3, 22 do av 120 at \$3; to Mich. B. Co. 19 lambs av 110 at \$2.75, 43 lambs av 60 at \$7, 76 do av 65 at \$6.75, 14 sheep av 105 at \$3.50, 59 do av 90 at \$3.25, 10 do av 70 at \$2, 30 lambs av 57 at \$5; to Hayes 22 do av 60 at \$7, 29 do av 50 at \$6; to Sullivan P. Co. 31 mixed av 65 at \$4.25, 21 lambs av 70 at \$7.40, 16 do av 55 at \$5.50, 16 do av 65 at \$7.50, 17 do av 78 at \$7.75, 24 do av 60 at \$6.75; to Hammond, S. & Co. 31 do av 73 at \$7.25, 12 do av 55 at \$5, 47 do av 65 at \$7.25, 50 do av 65 at \$7.25, 23 do av 50 at \$5, 13 sheep av 105 at \$3.25; to Thompson Bros. 24 lambs av 70 at \$7.25, to Newton B. Co. 27 do av 75 at \$7.25, 61 do av 77 at \$7.50, 5 sheep av 120 at \$3; to Smith 39 do av 95 at \$2.75; to Parker, W. & Co. 16 lambs av 62 at \$7; to Fitzpatrick Bros. 79 sheep av 110 at \$3.30, 21 lambs av 60 at \$7, 20 sheep av 120 at \$3.25; to Hammond, S. & Co. 29 lambs av 65 at \$7, 19 do av 50 at \$5; to Sullivan P. Co. 31 mixed av 70 at \$4.50, 11 lambs av 50 at \$5.

Hogs.

Receipts, 2,253. Market steady with Wednesday; 25c higher than last Thursday.

Range of prices: Light to good butchers, \$7.70@8; pigs, \$7@7.75; light yorkers, \$7.75@8; stags one-third off.

Roe Com. Co. sold Sullivan P. Co. 325 av 175 at \$8.05.

Bishop, B. & H. sold Parker, W. & Co. 910 av 190 at \$8.10, 500 av 170 at \$8.05, 300 av 150 at \$8.

Spicer & R. sold Hammond, S. & Co. 120 av 260 at \$8.10, 140 av 190 at \$8.05, 30 av 140 at \$7.90.

Haley & M. sold same 260 av 210 at \$8.10, 175 av 180 at \$8.05, 110 av 160 at \$8.

Market closed 25@35c higher than last week.

Friday's Market.

July 19, 1912.

Cattle.

Receipts this week, 1,010; last week, 1,112. Market strong at Thursday's prices.

We quote: Extra dry-fed steers, \$8@8.25; steers and heifers, 1,000 to 1,200, \$6.50@7.25; do. 800 to 1,000, \$5.50@6.25; grass steers and heifers that are fat, 800 to 1,000, \$5.50@6.25; do. 500 to 700, \$4@4.50; choice fat cows, \$5; good fat cows, \$4@4.50; common cows, \$3@3.50; canners, \$2.50@3; choice heavy bulls, \$4@4.50; fair to good bologna bulls, \$3.50@4; stock bulls, \$3.25@3.50; choice feeding steers, 800 to 1,000, \$4.50@5.25; fair feeding steers, 800 to 1,000, \$4@4.25; choice stockers, 500 to 700, \$4@4.50; fair stockers, 500 to 700, \$3.25@3.50; stock heifers, \$3.25@

3.50; milkers, large, young, medium age, \$4@5; common milkers, \$25@35.

Veal Calves.

Receipts this week, 916; last week, 1,046. Market active and 25@50c higher than on Thursday. Best, \$9@10; others, \$4@7.50.

Sheep and Lambs.

Receipts this week, 2,982; last week, 1,687. Market steady at Thursday's prices. Best lambs, \$7.50@8; fair to good lambs, \$6@7; light to common lambs, \$4@6; yearlings, \$4@6; fair to good sheep, \$2.75@3.75; culs and common, \$1.50@2.25.

Hogs.

Receipts this week, 2,553; last week, 2,380. Market, quality considered, steady with Thursday. Range of prices: Light to good butchers, \$7.60@7.70; pigs, \$7@7.25; light yorkers, \$7.50@7.60; stags one-third off.

The demand for lambs and sheep for feeding purposes is increasing at Chicago and other prominent sheep markets, and it promises to reach large proportions before long. Farmers expect to be able to pick up bargains in this line, and experienced sheepmen know that the business is usually a profitable one when conducted properly. It is believed that a large July business in this line will be transacted, and that a low scale of prices will be established. The demand for breeding ewes is also increasing, and it is probable that good numbers will be purchased for shipment to various sections where the sheep industry flourishes, and breeding sheep.

CROP AND MARKET NOTES.

Washtenaw Co., July 17.—The protracted drouth which had existed for the past few weeks has broken to some extent. As a result the crops, and especially corn, are making a fine growth and farmers feel much encouraged. A very good hay crop has been secured in first-class condition. Hay will average around one ton per acre. Wheat is as near a failure as it has ever been in this township of Salem. Pastures are getting pretty short and supplementary feeds of oats and peas are being fed by a good many dairymen. Small fruits have been in good supply and apples promise to be a fine crop. Stock, other than milch cows, has been marketed very closely, owing to the high price of hay and grain. Hogs are in short supply, many farmers having sold entirely out.

Newaygo Co., July 12.—June was rather a dry month toward the latter part, but we got good rain on July 3, 6 and 11 and it still looks like more rain, which is ideal for corn on the upland and with the hot weather it is certainly making it grow. Too much rain for making good hay, which is in progress and is a fairly good crop. Oats are very poor. Early potatoes are going to be a good crop owing to the recent rains. Rye and wheat almost ready to cut. A large acreage of potatoes and beans in. Beans are looking fine. Potatoes and beans are both a good stand. No early apples, but the prospects are good for late varieties. Crops of all kinds look fairly promising, only a little later than usual.

Mecosta Co., July 18.—Rains came the first of the month which helped oats, corn and pasture immensely. Had it not come when it did the oats and pasture would have burned out, while the corn would have been a short crop. No plums, few peaches, good crop of cherries and best prospect for years for a good apple crop. Potatoes look good. Hay a fair crop. Have had very warm weather.

Ogemaw Co., July 20.—Haying is on in full blast and more than an average crop will be put away here this year. While the yield in old meadows is generally poor, the new seedings are fine and owing to the high price prevailing last year many old fields were left in hay which should have been plowed down. Men have offered to contract for future de-

livery at \$18@20, but farmers are looking for still better figures. Oats are looking good but wheat is poor. Corn has gone right ahead during the past week and now is in shape to bring 90 per cent of a crop. Potatoes look well and will more than make up for the loss on corn. Feed prices are high and not much stock is being kept. Many good horses have been shipped out of the county this spring, and now several carloads of western horses are being brought here to take their places. Eggs are firm at 17c; butter, 20c. A few new potatoes coming in at \$1.20@1.30 per bu.

Ohio.

Carroll Co., July 17.—Farmers are busy making hay. About half of the hay crop is up. Most of the wheat is cut, but it was not a very good crop, on account of it being put in so late last fall. Rye is also ripe enough to cut. Some early apples and peaches are getting ripe. The late potatoes came up well but they will not amount to much unless we get rain. Corn is growing nicely.

Indiana.

Laporte Co., July 11.—We had seasonable rains, with some heavy electrical showers last week in some localities. Barns and stock struck by lightning, but no fires reported. Wheat very poor, estimated five to 10 bushels per acre. Corn growing fast and generally clean. Oats are good with prospect for a good yield. Potatoes have a good growth of vines and prospect of a fair yield. Grass light, clover mostly cut and timothy will mostly be cut next week.

CATALOG NOTICE.

John Deere Spreaders, "the spreader with the beater on the axle," are fully illustrated and described in a 16-page catalog, illustrated in colors, published by Marseilles Company, East Moline, Ill., successors to Kemp & Burpee Manufacturing Co. This is a low-down spreader, built on a new and simple, but efficient plan. Write for the catalog, mentioning the Michigan Farmer, to John Deere Plow Co., Moline, Ill. Ask for package No. Y 5, and get valuable information on how to store and apply manure for best results.

Bean Growers

Take Notice

Goodchild's Cultivator Guards was O.K'd by users last year and pronounced by farmers at State and County Fairs; also at the State Round Up Farmers Institute as Ideal Bean Growing equipment for late cultivating, are also for Beets, Potatoes, Garden Truck and all similar crops.

1 bushel of beans extra will almost pay for two pairs; every day of labor saved pays for a pair. Booklet free at dealers. "Value of Cultivating" by Farmers Agri. Experts and U. S. Dept. of Agriculture. Phone him now or write for demonstration.

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Good Working Farmer Wanted on 50-acre farm, located in prosperous village of 700. Free house, garden, etc. Salary and interest in crops. Board wanted by owner. Must have good references. Address B. J. HOLCOMBE, Wolverine, Mich.

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AN IMMENSELY PROFITABLE CROP.

Sow now for Fall and Spring Pasture and for next season's Soiling or Hay crop. We are offering a very choice stock of genuine, pure, clean Sand Vetch. Will mail sample if desired.

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HORTICULTURE

EXPERIENCE WITH COVER CROPS.

Anent the question of a cover crop for orchards the adaptation of one's system of cultivation to that growth is a matter that has been quite serious with some orchardists. Some very good men have had grass growing in their orchards and while the weather was wet have allowed the grass to grow so as to get the largest amount possible to turn down, and then, when the dry weather came on, were busy with other work and left the orchards until the ground was too dry and hard to work except with a heavy plow, and this they were afraid to put into the orchards so late in the season. In order to turn a furrow in such ground the plow would have to run so deep that the root system of the trees would be too much disturbed. I have myself been caught in this way with one orchard of 20 acres of peaches and pears. The ground where these trees stand is quite well filled with red-top, and by allowing it to stand for a time in the spring this rapidly spreads and makes considerable vegetable matter to turn down. By taking it at just the right time it can be turned under with a gang-plow and is out of the way for the season, but the roots live and start to growing during the wet weather in the fall. In this particular orchard this makes a sure and convenient cover, or humus, crop and maintains itself with very little trouble on our part. But this season just as this work should have been done the teams were busy with the apple spraying and this went over until nothing but the two-horse plow would subdue it. This requires more work than has been needed to keep those orchards that were cultivated early with the disk in good shape.

In deciding what kind of a cover crop we shall use this season, therefore, an important factor, growing out of the season's experience, will be how it may affect the work of cultivation next spring. The work question is a serious one, and I have found that the orchards can be kept in the best shape with the least work where cultivation begins as early in the spring as the ground can be worked. Two of our apple orchards have been kept in fine shape so far this season with only three diskings, and we are just starting in a fourth time with the spring-tooth harrow, as the ground is just drying off after a good rain two days ago. But, on the other hand, the work question is not, after all, perhaps the supreme one. Doubtless the greatest problem in the way of orchard fertilization is the humus supply, and the cover crop which will furnish the greatest amount of humus to the soil is the most valuable, even though it requires more work in handling the orchard than would some other crop.

Experience helps out a great deal in these matters. In the apple orchards about the most available cover crop we have found is oats. These usually make a fair growth in the fall, nearly always sufficient to trap the leaves as they fall, and the leaves furnish a material supply of humus. The oats die down in the fall and allow early cultivation in the spring. This about approaches my ideal. But we do not find it practicable to sow oats in all of the orchards. In order to do well they need to be put in soon after a rain, when the ground is moist. I have put them in when the ground was too dry and the seeding was lost entirely. We never succeed in getting over all of the orchards so as to get them all covered with such a crop, so in some we have adopted other methods. In the one spoken of the red-top has come in, so the most convenient thing we can do is to encourage it. In another orchard of large apple trees chickweed is growing and as this seeds itself we encourage this. This catches the leaves and maintains the humus supply fairly well. In another orchard of peaches and pears standing side by side, chess, such as is a nuisance in wheat, has obtained a foothold and by encouraging this there is a volunteer cover crop of considerable value. This does not make the growth in the fall that some others might, but still it is as much as rye would make, but it makes a good growth in the spring and roots shallow so that it does not seem to rob the soil of moisture as rye does. This is left until it is heading out when it is plowed down, usually with the gang plow, and the heads left standing between the furrows so that they mature

seed enough to establish the plants again in the fall. In the subsequent harrowing we disregard this chess entirely and it disappears, but the seeds remain notwithstanding, and the harrow spreads them so that the whole orchard has become quite thoroughly seeded. If any farmer with an orchard has wheat with chess in it he might do worse than to screen it out and sow it in his orchard. It is a plant that is hardy and persistent, and I like something like this that will seed itself in case the pressure of other work or unfavorable weather prevents the sowing of some other cover crop just when it should be put in.

I may say that I am not so thoroughly impressed with the value of the legumes on account of their nitrogen gathering powers as some seem to be. This for three reasons. In the first place I do not understand that the trees require such a large quantity of nitrogen, anyway, and, next, any decaying vegetable matter in the soil, such as is furnished by any ordinary humus crop, furnishes nitrates, perhaps as much as the trees need, and, third, the legumes do not begin to draw the nitrogen from the air until growth is well advanced in the spring, and if the ground is left until this time before cultivation is given the trees are liable to suffer both from lack of moisture and from root disturbance, as the heavy plow must be used in turning the mass down and this must cut too deep for the good of the trees. I am no chemist and may be wrong in this, but from what I learn from others I am satisfied I am correct.

I think that authorities will agree with me that the chief value of a cover crop is in the humus it supplies to the soil. It has other points of merit, but this is the principal one. The plant which will supply the largest amount of this element and still allow cultivation to be done before the ground dries out in the spring is, in general, the best for the purpose. Allegan Co. EDWARD HUTCHINS.

VEGETABLES THAT MAY YET BE PLANTED.

There are still a number of garden plantings that can be made in time to secure crops this fall. These plantings are restricted to the quick growing vegetables that thrive well during the cool nights of September. Beets of the early table sorts may be sown. Where given careful and thorough hoeings celery may yet be set out and mature sufficiently to provide the gardener a very satisfactory product. Of radishes the winter sorts should be put in. They will need an abundance of plant food and frequent stirring of the soil to prevent any interruption in their development. Turnips may also be grown to table size if sown now and given a good chance. Lettuce needs a sheltered place and the soil ought to contain a liberal per cent of moisture.

THE LAST SPRAYING FOR APPLES.

One more spray is yet required for the bearing apple trees. The second generation of the codling-moth will appear in largest numbers between the first and tenth of August. They are certain to do the apples upon the trees much damage if allowed to work uninterrupted. A spray consisting of a weak solution of bordeaux mixture or a dilute lime-sulphur solution and arsenate of lead or Paris green will kill a very large per cent of this generation of the insect and save the fruit. Use about a pound of Paris green to 150 gallons of either of the solutions, or about three pounds of arsenate of lead to 50 gallons of either bordeaux or dilute lime-sulphur. This spray is necessary if good fruit is expected for without it a large percentage of the apples is certain to be wormy.

LIME-SULPHUR FOR MILDEW ON APPLES.

A German experimenter has found that while grape mildew appears to flourish best after heavy precipitation, the apple tree mildew seems to be favored by dry weather. For control of both these fungi sulphur is recommended. In his experiments with lime-sulphur (1:20) after the outbreak had become general, the first application stopped the spread, and a second killed the remaining fungi, the dead leaves fell, and new leaves appeared. It is recommended that the spraying be done early—late April or early May for the first, and the latter part of June for the second, while appropriate means should be adopted in the winter to combat the disease.

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Address all communications relative to the organization of new Clubs to Mrs. C. P. Johnson, Metamora, Mich.

Associational Motto.—

The skillful hand, with cultured mind, is the farmer's most valuable asset.

Associational Sentiment.—

The farmer, he garners from the soil the primal wealth of nations.

FACE THE RIGHT WAY.

A clipping from the address of the retiring president of the Columbia Farmers' Club at the annual meeting of that organization contains a thought so helpful that the editor would pass it along for the benefit of others. In part, he said:

During the last eight or ten years the business of farming has been fairly prosperous. The introduction of farm tools and machinery has done much to lighten the work on the farm, and on the whole I think the farmer is more independent, and gets more satisfaction and enjoyment out of life than those in any other occupation. Of course, there are times on the farm when everything seems to go dead wrong, the same as in any other line of business, but the thing to do is to grapple with the situation and do the very best we can.

"Don't hunt after trouble, but look for success.
You'll find what you look for; don't look for distress.
If you see but your shadow, remember, I pray,
That the sun is still shining, but you're in the way.
Don't grumble, don't bluster, don't dream and don't shrink.
Don't think of your worries, but think of your work.
The worries will vanish, the work will be done,
No man sees his shadow who faces the sun."

CLUB DISCUSSIONS.

The Annual June Picnic of the Lenox and Chesterfield Farmers' Club was held on Friday, June 28, at the home of Mr. and Mrs. Lahey Allor. There were guests present from Mt. Clemens, New Haven and New Baltimore. The day was fine and a large crowd attended. Dinner was served from 11:30 to 2 o'clock, and 125 people partook of the sumptuous repast. At 2:30 they all gathered on the large lawn, where a good program was rendered. The exercises were in charge of Frank Corey, president of the Club. Music by the young people was followed by recitations, solos and duets, also a male quartet. Miss Ruth A. Russell, of Mt. Clemens, formerly of New Baltimore, then took the stand in behalf of woman suffrage, and in a short speech scored many points in favor of the issue and no doubt made converts to the cause. Rev. F. McCorkle, pastor of the local Congregational church, followed on the same subject, and extolled the wisdom that women demonstrate in all their undertakings, mentioning Frances Willard, Clara Barton, and Carrie Nation as examples of the work that women might perform. The president then asked if anyone cared to uphold the other side, when someone in the crowd remarked, "How can we gainsay the truth?" The program ended at 4:30, as did also a can of ice cream. A handshake all round, a scurry for the rigs, a parting good-bye until the next meeting in September, brought the meeting to a close.

Will Take August Vacation.—The Hartland Farmers' Club met in July at the home of Mr. and Mrs. Henry Huskingson. Meeting called to order by the president, H. W. Clark. The question box was omitted and the time was taken up by Mr. Lawson, from the Highland Club, inviting the Hartland Club to join with them for the annual picnic at Maxfield Lake the 27th of July. It being so very warm the program was cut short. The August meeting will be omitted.—Mary E. Openo, Cor. Sec.

Women in History.—At a recent meeting of the Ingham County Farmers' Club, a paper was read by Mrs. Taylor, entitled, "Women in History." No notes can do justice to such a paper. After speaking of Eve and Queen Esther, she spoke of women as rulers of nations and had it not been for Queen Isabella, American might still be in the wilds. Queen Elizabeth ruled England for 25 years and her policy was to keep out of war. Queen Victoria's reign was one of peace and prosperity and Queen Wilhelmina cares

more for the good of her people than for the splendor of court life. From the rulers she passed to other women of note and referred to Florence Nightingale, who died in 1910, aged 90 years, as the pioneer nurse; Clara Barton, whose work with the Red Cross was well known, and who has just answered the final summons; Francis Willard, who spent her life in the cause of temperance; Julia Ward Howe as the author of the Battle Hymn of the Republic; Margaret E. Sangster and Fanny G. Crosby, who have won praise for their songs, and then asked what about the great army of women who do not seek or ask for publicity. A prize was offered for the best definition of the greatest woman in the world and the following answer won the prize: "The greatest woman in the world is the wife and mother who cares for her home, doing the work of cook, laundress, seamstress and nurse, training her children to be noble men and women, a companion and helpmate to her husband, and doing all this for love's sake."

GRANGE

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

THE AUGUST PROGRAMS.

State Lecturer's Suggestions for First Meeting.

Song, by Grange.
Are our local laws being enforced as they should be? If not, what can the Grange do to help?

Old time music.
Three reasons for rotation of crops, by three men in three-minute talks.

Progress in fighting flies, reports on success or failure, by five women and two men.

How to keep butter hard without ice.
Song, "Help it On," No. 108 in Grange Melodies.

Roll call, "Objections to Woman's Suffrage," responded to by the lecturer calling upon a member, who, after naming objection, asks another member to answer it, until all have been called out.

Song, "Polly put the kettle on and we'll all take tea."

Refreshments, tea and wafers, (with fortune telling).

Suggestions for Second Meeting.

Opening song.
The duty of party enrollment.

"Picnic Song," No. 48, in Grange Melodies.

Pointers on picnics.
Recitation, "A Farmer's Judicial Opinion."

"Harvest Song," No. 86, in Grange Melodies.

A tribute to Ceres (each member to bring a contribution of grasses or grains to present to Ceres with a fitting sentiment or quotation).

THE GRANGE AND THE TEACHERS' INSTITUTE.

I received a letter from Bro. D. E. McClure some time ago requesting me to write The Farmer, urging the co-operation of the Grange with the teachers' institutes to be held in August. No one knows better than Bro. McClure the value of such co-operation, for he long ago made a name for himself, and for the schools of Oceana county, by securing a closer union of the Grange, the school and the public generally.

There are a great many schemes for the betterment of the country school, but I have felt for a long time that the greatest need is a closer union of the teacher and the patron. Our country schools are taught, for the most part, by young people who, while they have a general knowledge of books and are among the most promising of those to whom we older ones must shortly turn over the unfinished work of life, still need a broader knowledge of practical things about them. They need to know the patrons better, and it is quite as necessary that the patrons know the teachers.

There is a "great gulf fixed" between the teacher and the patrons in many a district, and no one is trying to cross it. This is all wrong. The average teacher is doing as well as she knows, and the majority of those who so bitterly criticize the school do not do so to find fault, but rather with an honest intention to do good. If the teacher and patron could only be brought closer together, so that they could understand each other, a great work might be done. With one day of the institute devoted to a union meeting of the teachers and the Grange in the vicinity, much might be accomplished to this end.

There is much talk about the teaching of agriculture in our rural schools, and if this is to mean anything to the people on the farms the teachers must keep in closest touch with them at all times. At this union meeting, the program should be such as to interest and profit both the teacher and the patron. The matter of the importance of agriculture

should be kept well to the front, and the necessity of a broad knowledge of the ordinary branches taught in the school should not be overlooked.

Neither the teaching profession, nor the Grange, need waste any time booming themselves. We can all demonstrate our worth best by our works. There should be some good music at this meeting, and choice bits of literature should be rendered. These young people, "the brightest and best" in our land, should keep close to the "great army of toil, from whence they came," and the patron of the school who does his full duty will ever feel an interest in these daughters of the country and not let them forget that, in him, they have always a friend in need. I am glad for this suggestion from Bro. McClure, and trust the plan may be tried out in some counties at least.

We should all unite to make the Grange a live force in the betterment of rural community life, and it may well begin by uniting with the leaders in education in their efforts for a better and more practical country school.

W. F. TAYLOR.

PATRONS OF MANISTEE HAVE GOOD TWO-DAY MEETING.

Manistee Pomona was royally entertained by Cleon Grange, June 25 and 26. I. J. Hatch gave the visitors a hearty welcome to which Ludwig Larsen, of Tanner Grange, responded. Music was furnished by Tanner and Bear Lake Granges, followed by a very efficient talk by J. H. Read on "The Boy and the Farm," showing the boy to be a necessity to the farm as well as the farm to the boy. He advocated making the boy a partner, not only in name, but in reality, showing that from a financial standpoint it is better than hiring help and is far better for the boy. He said, "I would rather my boy would be a good farmer than the best politician in the state. Study the characteristics of the boy and treat him accordingly. The subject was thoroughly discussed, all agreeing that the boy should be given more privileges and the home and the farm made so attractive and pleasant that the boys will not wish to leave it. Wm. Wood gave a talk on "Alfalfa," exhibiting samples from his own field and explaining the preparation of the soil, sowing and harvesting, also the feeding value of the hay, which he believes to be double that of clover or mixed hay. Many questions were asked which were answered by Mr. Wood and Mr. Read who are successful growers.

The State Lecturer was present and in an address on "Equal Suffrage" Miss Buell stated the reasons for State Grange advocating it so strongly, why subordinate Granges should work for it, and why the voters should support it.

The second day opened with a brief business session, after which the subject of "Sanitation in the Rural School" was presented by Miss Belle Hoffman and was well discussed by the members. Disinfection, elimination of the common water pail and drinking cup, and the plan and care of out-buildings were the principal points brought out. Miss Buell emphasized the need of sanitary improvements and the fact that this is work for the Grange.

Mrs. Eliza Cole, of Bear Lake Grange, gave a talk on "Sanitation in the Rural Home," concluding with an illustrated song, "Swat that Fly." The Sanitation Question Box, in charge of Miss Buell, brought out many helpful suggestions.

Dinner was then served, immediately after which Miss Buell opened the lecturers' conference with a talk on lecture work, showing the duties of the master in arranging to give ample time for the lecture hour; of the members in supporting the lecturer in her work; of the benefits derived individually by taking an active part in Grange work, and giving the lecturers valuable suggestions on plans and methods. The lecturers of the six subordinate Granges represented at the meeting then reported the condition of the lecture work in their respective Granges.

An August Picnic will be held by the members of Ironton Grange, of Charlevoix county. This Grange obligated two candidates in the first and second degrees at its last meeting and is alive and pushing.

COMING EVENTS.

Pomona Meetings.

Lenawee Co., with Fruit Ridge Grange, Thursday, Aug. 1. J. C. Ketchan, state speaker.

Allegan Co., with Gun Plains Grange, Thursday, July 28.

Kent Co., at John Ball park, Wednesday, Aug. 14. Picnic dinner, address by National Grange speaker, and athletic program.

Charlevoix Co., with Bay Shore Grange, Thursday, Aug. 22.

Ingham Co., with Leroy Grange, at farm home of Mr. and Mrs. Clyde Putnam, Friday, Aug. 23.

NOTICE TO GRANGES AND FARMERS' CLUBS.

We will be pleased to publish in the Michigan Farmer the dates of picnics and gatherings held. Secretaries will kindly advise with date and place at least 10 days in advance.

Only One Question To decide



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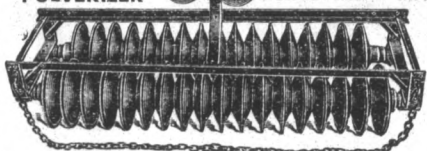


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Woman and Her Needs At Home and Elsewhere

IS SELFISHNESS ITS OWN PUNISHMENT?

IF it be true that virtue is its own reward, it is not equally true that selfishness is its own punishment?

There's the case of a young woman married ten years ago. Clothes and more clothes was her one thought. She lived only to buy the swellest clothes of the season and flaunt them before the eyes of other women whose husbands could not afford to dress them so well. Some were mean enough to say that her husband could not afford to buy the costly array for her, his shoes were usually shabby and run down at the heel and one suit lasted him for two years, but anyway, he bought the toggery for his wife. When one, bolder than the rest, ventured to caution her about her extravagance she pertly replied:

"If Bob didn't want to buy me fine clothes he had no business to marry me. Why, all I live for is to dress fashionably. I'd never be happy if I wasn't getting something new to wear, and Bob wants to see me happy above all things."

And, indeed, all she did live for was to dress smartly. She absolutely refused to assume the duties of a wife. Her husband wanted a home and children, but she insisted on boarding in a family hotel and declared that she couldn't and wouldn't be bothered with bringing up children. Her husband's salary doubled and trebled in three years' time, but still they boarded and she spent the surplus on clothes.

Of course, the inevitable happened. Husband's affinity appeared on the scene, and before the wife had aroused sufficiently from buying more new clothes to realize what had happened she found herself divorced and the other woman, who wanted a home and family, was leading "Bob" to the altar. It was a dreadful blow to the wife, for in her selfish way she really loved her husband. Her alimony is ample enough to provide

her with all the fine clothes she needs, but she has found that they can not quite take the place of the man who was lost because of her selfishness.

There's another woman whose mania was self. It was not only clothes with her, it was everything. She wanted a home and had children, but her home must be the best furnished in town, her table set with the most expensive foods and herself and children dressed better than anyone else in town. Her husband carried the burden uncomplainingly for years, then quietly and unexpectedly gave up the struggle and died, leaving the family without sufficient means to live. Mother and children had to go to work, the mother to washing for the women she used to triumph over.

There had not been enough money even to pay insurance, say nothing about a bank account. Every cent the husband had earned had gone to buy strawberries in February and to pay summer resort bills in July, because the wife must have these luxuries for herself and the children. There were numberless half-worn gowns which had cost from \$75 to \$150 each, and been discarded because they were out of date. But they would not bring enough if sold to pay a month's rent. There were numerous articles of furniture which had cost large sums when new because they were a fad, but which were now useless because their period had passed. Altogether, about the house, there were articles which had cost perhaps \$2,000 when new, but there was nothing on which money could be realized.

However, the woman had had her way. She had been the best fed, best dressed, best cared for, but least liked, woman in town so long as her husband lived. She had had every whim gratified, but selfishness had been its own punishment.

DEBORAH.

FRESH AIR FOR THE YOUNG FARMER.

BY MRS. W. K. LAMB.

Much has been said about school room ventilation, sand piles and gardens for little folks but we hear little as to how the wee farmer, whose tiny feet can not yet carry him out into the sunny wonderland of out doors, is going to get his just portion of these great vitilizers, sunshine and fresh air. It is all very well to advise a walk or a ride each day for mother and babe but, well, to say the least, either are impractical for many a rural mother.

We have so much of these great blessings, sunshine and fresh air, that we forget their necessity to the little one whom we leave indoors as we hurry out and in about our many daily tasks. It is possible that the city mothers of the upper and middle classes make greater efforts to give their children out door air than do we. Tommy is tucked into his go-cart and taken to the butcher shop and to the corner grocery. If there is an older sister large enough she is sure to be trusted to give him an airing each day.

Farther up the social ladder are bright, well informed mothers who realize that a short outing in the country or at the shore is not going to keep their children supplied with oxygen for the whole year. They know that their children sleep more soundly, are better natured and, in winter, "take cold" less easily if they are taken out door each day. And the rich man's heir? A highly paid physician arranges his regime and fresh air is an important factor.

Fresh air is one of the best as well as one of the least advertised of soothing syrups. Many times a fretful, restless baby may be quieted by simply taking it out doors. A short airing, even in cold weather, will only benefit the young babe if it be well wrapped and not kept out long enough to become chilled. It is not distance that counts. Tuck him into his carriage and wheel him back and forth on the porch for a little while. If snow and storms make out of doors an impos-

sibility, cover the child warmly in bed while he is sleeping, carefully shield him from direct draughts and open the windows. A common fly screen covered with cheesecloth will be found useful for keeping the snow from blowing into the room.

When the milder days of spring come, it is a fine thing to let the baby take his naps on the porch in his carriage. Carefully shield his eyes from the light and if the wind is blowing throw a blanket over the side of the cab. In fly time a netting that will cover the carriage and come down well over the sides is an absolute necessity. In the sultry, breathless days of late summer, just take the baby out under the trees or on the shady side of the house and let him take his nap where he may get a breath of cool air if any be stirring. He will sleep for hours instead of tossing restlessly about as he would in a close, darkened room.

Authorities claim the foundation of a person's health is laid during the first three years of life. What can be better than giving the little one all the out door air possible, if we use care and common sense in doing it? Of course it takes time but it is more than made up by the increased health and good nature of the rosy youngster.

A vine-covered porch makes an ideal nursery during the summer months; and not the least of the benefits derived is the fact that its use takes the mother and much of her work into the open air.

HUMAN WELFARE QUERIES.

Household Editor:—Can someone furnish me a recipe for making a gallon of ice cream, like you get in the ice cream parlor?—S. T.

Every ice cream parlor has its own way of making ice cream. The best way is simply to scald a gallon of cream, let it get cold, then sweeten and flavor to suit your own taste. Crush the ice fine and pack with one part salt to three of ice while freezing. When frozen, remove the paddle, let the water run off and pack, using one part salt to four of ice. If you can not afford to use clear cream

make a custard, using four eggs to one quart of milk. You can freeze without cooking, or cook and chill before freezing. Cooked ice cream is smoother than uncooked.

Household Editor:—I wish to have a young folks' gathering at my home in a couple of weeks. Would you kindly suggest some games for about 15 girls and boys, ranging from 14 to 16 years of age?—G. E. M.

Any sport that can be enjoyed out of doors would be preferable at this time of year. If your party is an evening affair have a hayrack ride with a watermelon feast at the close. If an afternoon gathering, croquet, tennis, outdoor basket ball or some similar game would be good. Few people enjoy cards, finch or other indoor games in July weather.

IMPORTANT PURE FOOD RULING.

Hereafter when you buy a can of corn or peas or tomatoes, you will get what the label calls for and not a whole lot of water. The Pure Food Board has declared that the can should be as full of food as practicable for packing and processing without injuring the quality or appearance of the contents. Some food products may be canned without the addition of any other substances whatsoever—for example, tomatoes. If water is added the product will be considered as being adulterated. Under the ruling canned foods will be deemed to be adulterated if they are found to contain water, brine, syrup, sauce or similar substances in excess of the amount necessary for their proper preparation and sterilization.

The board has also decided that apple pulp may not be added to canned tomatoes and that the addition of tomato juice in excess of the amount present in the tomatoes used is adulteration—that is, if in the canning of a lot of tomatoes more juice be added than is present in that lot, the same will be considered an adulteration.

MICHIGAN FARMER PATTERNS.

These patterns may be obtained from the Michigan Farmer office at the prices named. Be sure to give pattern number and the size wanted.



No. 4,721, Ladies' Combination Corset and Underskirt in One. Seven sizes, 32 to 44 inches bust measure. For 36 bust it requires 3½ yards of 36-inch material. Price, 10 cents.

No. 5,630, Ladies' Apron or House Dress Closed at Left Side of Front. Cut in 6 sizes, 32 to 42 inches, bust measure. Size 36 requires 6½ yards 27, or 5½ yards of 36-inch goods. Price, 10 cents.

No. 5,812, Girls' Dress with Applied Yoke. Cut in sizes 6, 8, 10 and 12 years. Age 8 requires 2½ yards of 36-inch goods, ¾ yard of 27-inch contrasting goods. Price, 10 cents.

No. 1,160, Ladies' Open Drawers. Nine sizes, 20 to 36 inches, waist measure. For 24 waist it requires 1½ yards 36 inches wide with 2½ yards of edging 5 inches wide. Price, 10 cents.

No. 4,142, Ladies' Corset Cover. Seven sizes, 32 to 44 inches, bust measure. Medium size requires 2 yards of 16-inch flouncing. Price, 10 cents.

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HOME AND YOUTH

A READJUSTED NEIGHBORHOOD.

BY JAMES W. JACKSON.

"I say, Casper, what's this? 'Taint the fashion to put advertisement jokes in a paper now, is it?"

With a long, warped forefinger that trembled a little Peter Nason pointed out an offending item in the local paper which he held up for his neighbor's inspection.

"I—I can't see 'thout my glasses," Casper declared in a weak tone, at the same time keeping his gaze averted from his old crony. "Ain't changed the date of the Middleville fair, have they?" he nervously inquired.

"Ten-room house for sale. Apply Casper Rader," Peter read in a stricken tone. "My land, Casper, you ain't going to sell out and move away. No; why we just went partnership in that new cow. It's a joke, ain't it, Casper?"

But Casper maintained an ominous silence, glancing covertly toward his ancestral white house as he plucked at a grape-vine leaf.

Even assuming it was true, Peter would have felt hurt to think he had never been consulted about such an important move. Now, however, the fact itself, if it were a fact that Casper meant to sell, surmounted all else with its terror.

Peter let his frightened eyes trace up the handsome form of his neighbor to his neighbor's white hair, which after sixty-five years had topped a tall figure. Peter was more fond of Casper than of anyone else in the world; and he was sure Casper cared too much for him ever to go away.

"The—the house is too big," Casper managed to say at last, reaching persistently for another leaf and turning his back on Peter. "Mother and I can't afford it any more."

Peter scratched his head helplessly. Himself a bachelor, and with enough of the world's goods to get along, "affording" things was a difficulty he did not have to think of.

"My boy Ben will take us out in Wisconsin," Casper continued, without much enthusiasm, "and we got a buyer for the house already."

Over at Peter's back door, across the lawns, the grocer had pulled up his team and was banging to get in the locked door with orders. Peter turned dully to see; and then, holding the newspaper clenched in one hand, he let it trail idly after him, as with bowed head, he walked thoughtfully over.

A black dog sat on one side of the back stoop and a white cat on the other. "Come in, folks," Peter's dispirited voice invited, when he had relieved the grocer. "Bess ain't here to shoo you off any more."

Peter had originally come to the house next to Casper to live with his sister and niece. That was long ago; and the sister was gone now. Bess was married and gone too. All alone Peter had been content to keep house close by Casper. But Casper was going to sell out and go away.

Inside the house Peter rummaged half-heartedly in the pantry for cooking utensils.

"Bess never liked beefsteak and onions, fried," he ruminated, while he discriminated with difficulty between a light saucepan and a regulation cast-iron frying implement. "But I'm goin' to have some right away. I need something. Get down from that table, Tab! Don't be so forward because Bess ain't here."

After a more or less shiftless supper Peter sat for some time in stockinged feet propped up on another chair. The black Mike curled beside his seat and Tin-Tab blinked cat sympathy from the corner of the cooling stove.

Peter was trying to think what he would do when Casper went. Since Bess went, life had been lonely. Without Casper it would be a blank.

"I could get married," he told Tin-Tab, somewhat fearfully, hastening then to defend himself a little: "What would I do without Casper—or a wife just as good?"

He had another sister in Vermont who had cordially invited him thither. He thought about that a while and then made ready for bed. Following the high-lifted kerosene lamp on up to the second floor he sighed for the loneliness of himself, not so much in the emptiness of the house as in Casper's going.

"Him in Wisconsin and me in Vermont. Heigh-o!"

Mike trailed on behind him as, step

by step, Peter slowly climbed, murmuring with little heart his customary prayer that he might live to come down stairs again under his own power.

Somewhere in the realm of sleep that night he made up his mind that he had best plan for Vermont. It cheered him little, however.

The doctor's carriage passed up the road once in the morning and Peter observed, "I guess I'll go call on him myself and see if he can tone me up. I don't feel's good's I ought, some'er's 'r other."

The doctor himself was of the same mind after listening to symptoms of indigestion. Peter was bidden to be less reckless with beefsteak and onions.

"I ain't so sure whether it was beefsteak and onions I cooked or what it was," Peter naively declared. "Casper's going upset me so."

In the ensuing talk anent that important move on Casper's part, Peter agreed that it was perhaps for the best. Then it came out that he himself was planning to go to Vermont.

The doctor's chair came down with a thump from two legs to four. He was not anxious to lose Peter as his tenant, but some friends of the people buying Casper's house had wanted to rent one near.

Peter assured the doctor that the house would be empty most any time and then rose to go. He didn't listen to instructions about the tablets he was to take. He didn't care. Since Casper was going away he might as well decline with indigestion as with loneliness.

"Casper goin' to sell out and move away, mind ye," he announced at supper time to Mike, whose black nose was eagerly busy in a dish of scraps. "How can ye eat with such relish when I tell ye that?" he inquired, curiously.

For himself he dejectedly fried some cheese in a pie-plate. If he knew it wasn't good for him to eat cheese that didn't matter. The fire went out for want of attention and he ate the cheese cold; or he didn't eat it at all—he didn't remember and it made no difference.

Sometime the next day the doctor called to bring Peter the pills which he had inadvertently left behind him in the office. Also the physician was able to say that the prospective tenants for Peter's house had snapped quickly at the chance offered over the telephone. The lease would be drawn up at once.

It gave Peter a lumpy feeling in his throat. The doctor had threatened to send a horse physician around to him if he didn't take the pills, so he absent-mindedly ate them now, one by one—several of them, at least, before he discovered what he was doing.

Late in the afternoon he met Casper out in the garden. Little had passed between them in regard to the proposed move; but now Peter casually asked about the progress made in disposing of the house. Casper electrified him with an announcement that the deal was off. The buyer would not give what was asked and Casper could not afford to sell any cheaper.

"He ain't goin', Mike. D'y'e mind that? Maybe he won't sell now for a year," Peter suggested, in conference with the dog. "I say he ain't goin' after all."

Something within Peter began to warm up into cheerfulness as he reflected that he and Casper might be neighbors for a long while yet, "'s long's we live, if we don't live too long," he ruminated hopefully.

But just then it came over him with a rush that he had done a fool thing. Casper was going to stay, but he himself would be obliged to go, for the house had been rented over his head. It was too late to do much tonight, but almost frantically next day Peter implored the doctor to back out of the agreement—with as much honor as possible, of course. The prospective tenants, however, were not amenable. They were satisfied with Peter's house, whether their friends secured Casper's or not.

"You're a fool, Peter," the doctor comforted, as he hung up. "Casper's a fool; you're both fools." And Peter only groaned.

But then Peter, remembering that Casper was going to stay, cheered up. "I can get another house, but there is only one Casper," he softly communed with himself.

The doctor, however, did not share in his cheer. "Now Casper'll worry because he couldn't sell," the medicine man grunted. "He'll get poorer every day he lives in that house. Like as not in the long run he'll become worked up and sell cheap, lose money."

That depressed Peter again and he had to go home and think it over. All the

rest of that day and most all of that night he thought about it. He didn't want Casper to go to Wisconsin, but Casper ought to go and he couldn't sell his house. That was all there was to it, but upon that Peter gradually built up a plan—and sighed for the pity of it.

"Would you, if you were me, Tin-Tab?" he inquired next morning of the only counsellor at hand. "Think, you furry little rascal, before it's too late."

Tin-Tab must have been definite even without knowing just what was the proposition. After breakfast Peter hied himself to the doctor's office.

Casper's house was worth anywhere around eight thousand dollars, though there was a mortgage on it to blur the shine of such a prosperous sounding sum. That was the price which the tentative buyer had backed out of.

"I'll give it," Peter declared; "I've got money. Casper's welcome to all I've got."

The doctor wiped his glasses briskly. "I know," he agreed; "and Casper would share his last crust with you," whereat Peter's face glowed.

The doctor was to be the go-between and went at once to make Casper the offer. He agreed to meet Peter again in his office.

Peter sighed as he set about some village errands. It was hard to have to help in ridding himself of a friend and neighbor he cared so much for. Once his lips twitched as the whole thing was borne in hard upon him.

But the physician's knitted forehead, when Peter joined him at last, showed that something had gone wrong. The doctor's temper lowered like an August thunder storm.

"That old loon of a Casper Rader wouldn't sell—at eighty, eighty-five or ninety. Don't believe he ever thought of selling, plague take him. I'm looking up commitment papers now to get him into an asylum. Drat him! Such sentimental bosh about the old home!" and the doctor was either truly rummaging in his desk for the commitment papers or else trying to hide his face from Peter's shining eyes.

Telling himself over and over again that Casper wouldn't go away, Peter sat by stupidly blinking in a glow of happy disappointment. The doctor turned back to him.

"Know what he said, that Casper? 'I guess, after all, mother and I been here too long to think of leaving, Doctor. Now it comes to the point, we can't face the idea of leaving the old house—and Peter over there. Thank you kindly, Doctor.' Humph!" Something like a gentle disgust wove through the doctor's humor. "That white-thatched Casper'll get himself into the poorhouse yet."

Peter nodded as if that were a cheerful enough thought. Then he hastened home to tell Mike and Tab, stopping at the butcher's for steak, the better to impress them with the great news.

And while he sat, somewhat later, a squat figure on the back stoop, feeding all the household he had, there came across the lawn, tall, straight, white of beard and head, walking slowly, neighbor Casper.

Peter upset a pan from his knees as he rose hastily and advanced to meet his friend. But with sudden thought he ran back to the house and brought out a chair, into which he forced Casper gaily.

And now Peter learned the perfidy of the doctor. When the medicine man discovered that money wouldn't move Casper out of his homestead he had blurted forth the information that Peter was behind the effort.

"Thank ye most kindly, Peter," Casper murmured; "and forgive me for ever thinking of going away from such a good friend."

Peter laughed as if it were all a good joke—laughed until he blinked suspiciously.

"We couldn't give up the old place, anyway," Casper continued, stroking Mike thoughtfully. "But mother and I have got to take care of ourselves somehow. We've decided to keep boarders, Peter. That is—ahem!—mother and me would like to have just one boarder, if you will come and live with us, Peter."

"My land, Casper," Peter hastily interrupted, with an ear turned kitchenward, like a trained housewife; "something's boiling over. 'Scuse me."

Something was boiling over; but it was not anything on the stove, for the fire was out, as it should have been on a peaceful June evening when everything everywhere was all warmth and cheer. And if the boiling was in Peter's heart Peter had mastered it when he came back and accepted Casper's invitation.

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10% Oversize

100,000 Now Sold Every Month

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No-Rim-Cut tires now far out-sell every other tire in the world.

The demand has doubled in the past six months. It is twelve times larger than three years ago.

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No-Rim-Cut tires mean immense economy. They save, on the average, one-half the tire upkeep.

They end all the worry and ruin of rim-cutting. And the 10 per cent oversize saves the blow-outs due to overloading.

These facts have now been proved by hundreds of thousands of users.

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Rim-Cutting occurs on 23 per cent of all the old-type tires. That has been proved by careful statistics.

It occurs when tires are run partly deflated. When a tire runs flat, because of a puncture, it may be wrecked in a moment. And rim-cut tires cannot be repaired.

No-Rim-Cut tires—our patent type—make rim-cutting im-

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possible. Thus they save that 23 per cent.

The 10 per cent oversize, under average conditions, adds 25 per cent to the tire mileage.

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More than one-third of all new cars this year go out with the Goodyear equipment.

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These patent tires are now being adopted just as fast as men find them out.

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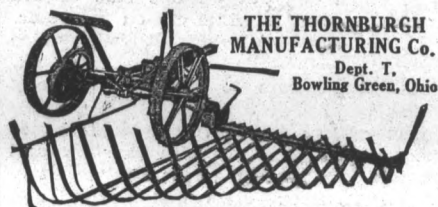
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