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Practical Results With Sweet Clover.

FOUR years ago, Mr. Samuel Willis was in danger of being arrested by indignant fellow townsmen who wished the law enforced: To secure this ill will he had done nothing more than sow sweet clover seed. But sweet clover is called a noxious weed, and the township highway commissioner was severely criticised for not cutting down the clover which Mr. Willis had induced to grow in his field.

The highway commissioner made a special ruling in this case, however, thereby justifying the well-known definition of a weed as "a plant for which no use has been found," for certain it is that uses have been found for sweet clover in this part of the state. "If Willis wants to plant sweet clover and harvest it as a feed for his stock, I certainly shall not cut it down, even though it is on the list of noxious weeds," said the commissioner.

Today the man in Mr. Willis' neighborhood who knocks sweet clover as a weed, unfit for stock feeding, is a back number; his critics are all converted. Instead of having to defend himself against officers of the law for sowing weed seed, he now conducts a big business in selling that same sweet clover seed, and during his spare time is asked to address as august a body as the Michigan Experiment Association, or as practical a one as the Michigan State Farmers' Institute at its annual round-up, on the ways of handling, and merits of sweet clover.

The talk of the season in Mr. Willis' neighborhood is sweet clover seed. Think of getting more money for sweet clover seed than for alfalfa seed, so that whereas in 1912 alfalfa was adulterated with sweet clover, in 1915 sweet clover is adulterated with alfalfa! Think, too, of getting \$1,200 for a single wagon load of farm produce, the seed output from twenty acres of blow sand! That was wholesale price, though the greater part of Mr. Willis' seed crop was sold at retail, at \$15 a bushel, rather than \$12 as in the case of the load above mentioned.

As an example of the way in which

the farmers are beginning to tumble to the idea of sweet clover as having an interesting correlation to the bank account, a story of a horse deal is interesting. A party came into Mr. Willis' office one day and made inquiries as to where he could obtain a good drafter. He was referred to the owner of a suitable animal which could be bought at a real bargain, for cash in full. Now it was a sad fact that the would-be purchaser, although honest as the day is long, had never been able to make both ends meet; it was therefore a pleasant surprise to both the owner of the horse and the office man who sent him around a purchas-

season; it gives a greater yield of seed per acre than alfalfa, also the seed sells at a higher price; the chances for failure in getting stands of sweet clover are slight, as it does not require a soil rich in humus or lime, as does alfalfa, although, of course, the more favorable the environment the better the crop, of sweet clover or anything else.

To refute the idea that stock will not eat sweet clover, which idea is the invariable conclusion of those feeders who do not have the foresight or patience to accustom animals in their care to the feed in question, Mr. Willis tells of a trial which he con-

crop. As yet he has used nothing but a grain binder for cutting the stalks, although Michigan Circular 23 on sweet clover recommends a self-rake reaper, or mower with side delivery attachment, for this purpose. One lesson learned this season was to cut the seed stalks fairly early. That part of a field which he so cut out-yielded another part in which he waited for the many unfruited blossoms present to form seed—probably for the reason that these blossoms failed to set seed, while the seed already formed shattered in handling.

An interesting by-product of sweet clover seed under Mr. Willis' system of farm management is mules. He operates a livery and feed stable and winters about thirty head of horses, and a like number of mules. A large part of the feed which these mules get during the winter consists of sweet clover haulm—the stalks and leaves delivered from the blower of the separator when the seed is threshed. This material has been found on analysis to have about the same feeding value as timothy hay, and while the mules reject the coarse stems which are the product of the seed year in sweet clover growing, yet they eat the stuff fairly clean, and the refuse is worked up into bedding and fertilizer.

From 55 acres of sweet clover, Mr. Willis obtained in 1914 an average of five bushels of seed per acre; that he is satisfied with the results may be judged by the fact that he intends to seed a hundred acres next spring. For handling large amounts of seed, a clover huller is essential, as the ordinary grain threshing outfit will not remove the hulls from the seed.

While Mr. Willis is not losing money by his sweet clover industry, he is at the same time a practical exponent of better farming and soil conservation to all the owners of sandy land, which is the prevailing soil type in much of western Michigan. Potatoes and corn are the cash crops, but when the soil is depleted of humus it must revert back to the state as not worth the taxes, unless some legume is employed in the rotation as a soil



This Load of Sweet Clover Seed Sold to a Chicago Seedsman for \$1,200.

er, when the latter announced he had come to buy the horse. He had eight bushels of sweet clover seed as an asset, however, and the deal was made.

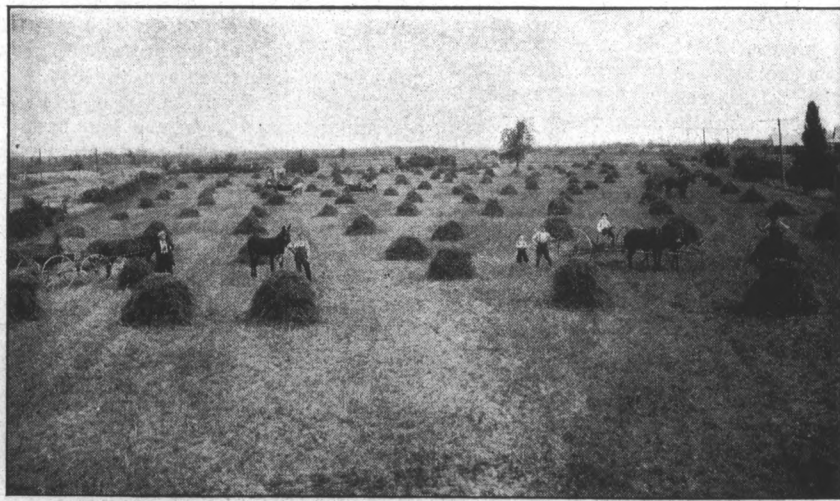
Mr. Willis gave all the other legumes worthy of trial on his soil a thorough testing out before he decided on sweet clover as a better money maker and soil builder than any other. Sweet clover has proven itself possessed of a long list of virtues and few faults. It is absolutely hardy; it resists drought and wet feet with equal facility; it has no insect or fungous enemies; it has a nutritive value similar to that of alfalfa, but out-yields the latter; it endures close pasturing, and furnishes pasture in a dry

ducted a few years ago with pastured mules, horses, and cattle. He had four fields accessible to the stock, one containing alfalfa, another red clover, a third June grass, and a fourth sweet clover. Invariably, when the boys went for the stock at night, they would find them in the sweet clover plot, and although as a consequence the field was eaten down closely, it went through the winter in good shape and produced a good crop of second year growth. Sweet clover, by the way, is only a biennial, and goes to seed the second year, unless cut for hay.

Mr. Willis has not entirely perfected his method in handling the seed



A Good Growth of Sweet Clover on Farm of Samuel Willis, Benzie Co.



Second Cutting of Alfalfa from Seeding on Land Previously in Sweet Clover.

builder. Anyone who wishes evidence of the fertilizing value of sweet clover sod in such an emergency need but examine corn grown on sweet clovered land as compared to corn on uncloved land near by.

Here, again, we have another example of the fact that there are no trade secrets in agriculture; when a farmer finds something in the way of a new crop or field practice, he has, unlike the inventor with his patents, no hesitation in passing his ideas along for the benefit of others.

Benzie Co. E. H. BROWN.

FARM NOTES.

Barley vs. Oats.

In planting oats and barley in sandy loam, good hard-wood land, which will give the largest amount of grain by weight?

Houghton Co. J. S.

On soils adapted to barley the yield per acre by weight is generally equal to or somewhat higher than that of oats. This rule, of course, varies and would not obtain in anywhere near every case. In the northern latitudes of the state, particularly in the Upper Peninsula, barley should be given the preference as a grain for general farm feeding, since it may be used largely to take the place of corn in the ration and grows luxuriantly on the good soils in that section of the state. There is no doubt but that barley could become a greater factor in farm production in that section of Michigan than has been the case up to the present time.

Applying Air-Slaked Lime to Alfalfa.

I have about 1,400 lbs. of air-slaked lime which I would like to sow on my alfalfa field, seeded two years ago. I intend to disk and then sow the lime, would this lime injure the foliage or crowns of the plants if sown early? If not, how much could I sow per acre?

St. Joseph Co. SUBSCRIBER.

If this lime is applied to the alfalfa before it makes any growth, and at a time when the surface is dry, it will not injure the plants. The writer used caustic lime on an alfalfa field, sowing it after the first crop was harvested, without any ill results. A better plan, in the writer's opinion, would be to use some other implement in preference to a disk in working up this alfalfa field. Disking was formerly quite generally advocated for alfalfa seeding, but is advocated by few good growers at the present time. A spring tooth harrow, if you have no more suitable implement, would be better to dig over the surface of the ground and incorporate the lime with it. Special implements are now manufactured for this purpose which are said to give very good satisfaction, but fair results can be obtained by using a good sharp spring-tooth harrow. A disk will cut off more or less plants, especially on a comparatively young stand of alfalfa.

Sowing Hydrated Lime on Wheat.

Will you please tell me if hydrated lime, say 300 lbs. sown per acre this spring and dragged in with clover seed would injure the wheat? The ground is acid and thought perhaps it would benefit the clover.

Barry Co. O. C. J.

Hydrated lime could, in the writer's opinion, be sown on wheat in the amount suggested, without injury to the plants, provided it were applied when the surface is dry. The benefit which might result from its use is, however, doubtful, as lime for best results in neutralizing acidity should be mixed with the surface soil so it will come in direct contact with the soil moisture and soil grains. It would be a better plan to apply the lime to the surface and work it into the soil when this field is again plowed up.

Beans After Potatoes.

How will beans do after potatoes? I have 4½ acres that was in potatoes last year; it is black loamy land.

Newaygo Co. C. J. U.

While beans may be planted after potatoes with fair success, yet this gives two cultivated crops in the rotation, and is not a good practice to follow up. Besides, beans are generally

of better quality as well as better in yield when grown on clover sod land. On good black loam ground, however, it might be profitable to give beans a second place in the crop rotation under present price conditions.

Some Observations on Beans.

ONE of the paradoxes of plants is that while beans are a legume it is conceded that they deplete the soil of fertility. Alfalfa, clover and vetch, for example, are legumes and as soil builders occupy much space in the vocabulary of soil advisers, while the bean family, like other poor relations, are not over much mentioned by those who agriculturally modivate as to soils. This latter word, and latest, modivate, in reality needs an introduction into the agricultural vocabulary for it has scarcely taken root so late has been its transplanting from the educators' nursery of highbrow words. Whether the word withers and dies from lack of use or thrives from usage, modivate has had its introduction, and means the manner or mode of performance.

Our legal friends have an expression that "time is the essence of the contract." So in growing beans, to get them in when the ground is warmed up sufficiently safe for good germination, and to get them harvested and cured before cool weather and fall rains, makes time considerably of an essence or essential in growing beans. So the bean crop, with its short period of growth and heavy yield just naturally has not much time to get nitrogen from the air through the nodules belonging to the bean family intended for that purpose, hence has become a sort of degenerate legume and demands its nitrogen largely from the soil like non-leguminous crops. Hence, to the farmer, beans contest for that plowed down clover sod, which originally was unquestioned and conceded as belonging to corn.

Varieties.

Varieties of wheat like the Diehl, Mediterranean, Blue Alein, et. al., have had their day of productivity and yielded to newer and more virile varieties and these old names are now but memories of the time when wheat was king in Michigan. These varieties cherished at the time ceased to yield and were not longer planted. Beans as a field crop of importance starting in Washtenaw and Livingston counties have been grown longer than many excellent varieties of wheat that have degenerated and passed out of existence.

Bean growers have reminded me of the greater virility and disease-resistant powers twenty years ago, of the white bean as compared to the black wax fields, grown under contract for seedsmen on their farms in adjoining fields. The black wax beans were sad looking and devitalized with what was then called rust, now known as anthracnose, while the white beans were clean of disease, comparatively, and strong growers and produced good crops.

The merits of the white bean as a crop were somewhat dimmed by the low price of the product while the price of the contract beans was quite alluring. Many a farmer who wanted a "sure thing," as he supposed, grew contract stock, unaware that it was sadly devitalized and in the end it was a disappointment. There has been a lot of waste time and expense in telling the farmer what to grow and how to grow when he has always been a lap or two ahead of his advisers in adjusting himself to the crop or strain that gave him the most profit. This is seen in the exit and entrance of strains and crops. It was the increased vitality of the white bean and freedom from disease that compelled seedsmen to withdraw from the field with weakened stock and compelled them to seek to revitalize garden beans. It is the lowered vitality of the white bean now that compels him to look for stronger seed stock from

the newer soils of the northern counties. It is of interest to remember that the bean seed from the north comes of parent stock from the more southerly counties. The northern grower has never claimed superior skill or knowing beans better than the farmers farther south. So it would look as though the newer soils with less of mineral depletion had been the greater agency in revitalization.

Soil Conditions.

The pea growers have had a somewhat similar experience and they, too, have gone north and west for their seed, for the canning crop and to marked advantage. Field peas have too, "come back" in some places, for example in Ogemaw county there has been quite a return to peas in 1913 and 1914. My guess is that it is quite largely a matter of lime and the soil depletion in that element in the older sections for these legumes is not unlike "clover sickness" or failure to get a growth of clover as in the days of old, this goes quite a ways in explanation. While the northern counties now have a decided advantage in this respect their endurance, unless soil conditions are met, is only a matter of time. That vetch, clover, etc., thrive on these lands is only saying that they have favorable soil conditions for the legumes, including beans.

"Sports are sports," but at least one reason for sports in the bean crop is nature's tenacity in seeking a stronger vine at the expense of seed crop and a longer period of growth to secure the nitrogen through the bacterial nodules from the air, because the depleted soil fertility compelled a reversion. The long green vines that pod so poorly and keep green so long are the evidences of reversion. Lime for clover and lime for alfalfa have been the most common prescriptions written by the soil doctors for the above named legumes; why not lime for beans? Plant diseases do not come from nature's malevolence but because some of the conditions to plant life have been denied. In order to not make conditions impossible I am going to suggest on a seed plot, some hydrated lime be applied. The hydrated lime can be had at any warehouse where building material is sold.

Shiawassee Co. J. N. McBRIDE.

SOIL AND FERTILIZER QUESTIONS.

Fertilizer for Beans.

How can I sow fertilizer for beans? What kind of land needs fertilizing for beans, and how much per acre?

Tuscola Co. SUBSCRIBER.

Any land that is somewhat run down needs fertilizer for beans, or any land that originally lacked sufficient fertility to produce a paying crop of beans. Put it this way: If you would apply stable manure on any field intended for beans—providing you had the manure—then that field should be fertilized. If you don't think stable manure would improve the chances for a better crop, in other words, if you think the field fertile enough, then I would not use fertilizer; otherwise I would.

The best way to apply fertilizer for beans especially, is to drill the fertilizer broadcast two weeks before time to plant the beans, and harrow the land, mixing the fertilizer thoroughly with the soil.

A very good way is to plant the beans with a corn planter with fertilizer attachment, taking care to have the fertilizer drop on top of the ground or near the surface and not come in contact with the seed. Or plant the beans with a grain fertilizer drill, applying the fertilizer at the same time. If you use a heavy application of fer-

tilizer, stop up the hole so no fertilizer will go in with the seed, for the germinating power of the seed may be injured by the fertilizer. Use a 1:8:2 fertilizer and from 100 to 500 pounds per acre, depending on condition of land.

Handling and Applying Liquid Manure.

I wish to ask your opinion as to the best way to use liquid manure to the best advantage. I put in a large cistern for the drainage of the cow barn gutter and am at a loss as to the best way to remove the liquid manure from the cistern and in what way to distribute it on the soil, also how much to put on an acre. I want to put it on my corn ground. Would you put it on before plowing or just before planting time, or would it be more profitable to put it over wheat ground, or on an alfalfa stand? I have used the liquid manure to some extent but to my loss, as my experience has been that where you put it on anything green it will burn it. I have thought it to be as good a way as any to put it on your ground just before planting time. Of course, it may be just as good to put it on the crops in the winter with the snow. Would be pleased to have you publish something about it in the Michigan Farmer so we all can read it.

Muskegon Co. H. C. W.

The only practical and satisfactory way to handle liquid manure is to have a wagon sprinkler. Put a pump in the cistern and pump the liquid into the sprinkler. If you attempt to handle it in any other way you can not get an even distribution. The cistern, the sprinkler, etc., are so costly most people prefer to have large, tight gutters and use plenty of straw and other absorbents for bedding and remove it with the solid manure.

Usually people who handle the liquid manure separately apply it as a top-dressing to meadows. It is highly satisfactory for this purpose. Of course, it will benefit any crop, but it is best always to use it as a top-dressing, rather than plow it under. It would be fine to top-dress wheat in the early spring, but don't put it on too liberally, say five or six wagon tanks full to the acre. If you apply it to the corn ground do so after the land is plowed and harrow it in before planting.

It would not be desirable to apply on frozen ground when covered with snow, as it might be washed away when the snow melted.

Spring Vetch as a Green Manure Crop.

I have a field upon which corn has been grown for the past two years. I wish to sow vetch for early pasture and then plow under for wheat in the fall. When should I sow and how much to the acre? Is the above good policy?

Oakland Co. H. A. C.

It would have been a much better policy to have sown this field to rye and winter vetch at the last cultivation last year, then it would have attained a good growth and could have been plowed down early and the ground well fitted for the wheat crop. We do not know of many trials of spring vetch having been made in Michigan, and its value as a green manure crop to be used for this purpose has not been sufficiently well demonstrated so that we can advise you intelligently. It would be better to try it on a small scale and use crops the value of which have been well demonstrated for the major portion of the field. Peas and oats, for instance, would be a good combination to sow for early pasture to be plowed down for wheat later in the season. Peas can be sown early, and on good soil will make as vigorous growth as anything which could be used for this purpose.

COLON C. LILLIE.

A GOLDEN HARVEST.

The land may be good and the season favorable, "But, if you plant poor seeds there is no golden harvest for you!" Our seeds are dependable. If you cannot secure them from your local dealer, send direct to the Brown Seed Company, Grand Rapids, Mich. —Adv.

The Clover Seeding Problem.

IN the line of successful agriculture there is no other problem of such importance to the average farmer as the unsuccessful attempts to get a good stand of alfalfa or June clover, which furnish the "building up" material for our farms. This too common experience not only discourages farmers but is of material interest to all consumers of food. Nature has taught us that the land must be replenished after being cultivated for a time and organic matter restored, which is only accomplished through the growth of deep rooted plants. It seems that the problem of making these plants grow has at times puzzled most farmers and the difficulty is, in nearly all cases, the lack of moisture at the proper time, when the delicate seed is getting rooted.

Plant the Clover Seed.

After many years of farming, and generally seeding upon the surface with no cover of earth for the seed, I have "woke up" to the fact that in order to get a decent stand of grass the seed must be covered as for any other crop. When following the old method \$5,000 would not pay the losses I have had in failures of seeding. And I am only one out of thousands who have suffered such losses, resulting not only in the loss of the hay crop but depleting the soil by continual cropping. This will eventually result in bankruptcy if not overcome. Not many farms today are producing what they should and more are not producing half a maximum crop. The barnyard manure will serve to enrich only a small portion of the farm. But a bushel of clover seed, if it grows properly, will restore ten acres of land in good shape, and at small expense.

When we expect a good yield of wheat or corn we fit the field in the best of form, and are careful to use a good machine and see that every grain is covered with earth. But we sow the clover upon the surface only to be destroyed by the burning sun when it comes on hot and dry. This is not logic or "horse sense" and must be stopped if we ever expect to acquire the benefits and results we should. Any crop which tends to build up our depleted soil is worthy of care and attention and there is as much, or more, justice in well fitting a field for a seeding of clover and employing a suitable machine for planting the seed in the ground as with any other crop. The custom of seeding with other crops is, on a good share of the soil, generally a failure, and the "open field" method must take its place. I have invested \$70 in a clover drill, and think it is the best implement I have on the farm. This is a 20-disk drill, suitable for sowing all kinds of grass seed.

Late Fall Seeding.

I have made quite an experiment in the nature of seeding, but am not able to tell just how it is coming out at this writing. At least I had the nerve to seed 50 acres to June clover and timothy just before the ground froze up last fall. I have tested this seed several times and find it is in prime condition as yet. We have had some very moderate weather for this early in the season and this clover seed is all sprouted but not through the ground. If it will remain cold enough to keep it back until April, or after danger of hard freezing is over, this experiment is safe; but should the plants appear above the surface and freeze hard it will ruin them. No matter how hard it freezes it does not seem to affect the sprout as long as it is under the surface, as I have tested this thoroughly. I can see now where I made a mistake in not operating the drill at a deeper level. I believe that had I placed the seed down say two inches it would have lessened the chances of its coming up above the surface before the end of freez-

ing weather. This field in question was rye stubble which I plowed shallow and fitted in level shape before seeding. But by the use of the disk clover drill which can be set at any required depth it is desirable to sow the seed and do a good job in stubble without plowing, which I think would be just as good and much less expensive. In fact, the stubble would help hold the snow and shade the ground from the hot sun.

Two-year Clover Meadows.

If I am not successful in this new method of seeding I can go over the 50 acres again in three days with the drill and reseed in spring. I know the timothy is all right as I have tried the same method on a field in Illinois that I could seed in no other way and get a good stand. My theory was that clover seems to always grow when self-seeded and even if I make a failure this season I shall try it again next year and sow it deeper. If this method of seeding in the late fall just before the ground freezes can be made successful, it will be a source of great profit for all farmers as it will insure a very early start for the seed in spring so that it will get a "deep root" before the severe dry weather, should it come. And there is no reason why, if it gets such an early start, we can not cut a fairly good crop of hay or seed the first season and have a splendid meadow for the following year.

If this method can not be made to work out I will seed in spring as I did last spring, in the "open field." On 50 acres I have a good stand of clover plants. Michigan land is all adapted to June clover and can be built up in the best state of cultivation at a very small cost, providing we can devise methods to resist the severe dry spells in the spring time.

Alfalfa with Clover.

I believe that the proper method to get alfalfa started is to sow a quart or two with the June clover. I am doing this and have a pretty good stand. By doing this for a few years the land will become self inoculated with no material expense, and perhaps we can then grow it at some profit. Yet the June clover is a very valuable crop. We should reseed the land oftener and not try to rush the "cash crop" question but leave a little "cash" on the land. I am looking forward to the time that I can produce my own "clover seed," which will not be carted off to market and leave the farm destitute. A good big barn full of well matured June clover and enough stock to consume same, especially breeding ewes, means a good bank account as well as a good paying farm besides. The success of all creation depends upon the ability of the farmer to supply humus and organic matter from deep rooted plants, especially June clover, sweet clover and alfalfa, to replenish our depleted soils for a bountiful thanksgiving.

Washtenaw Co. B. F. WASHBURN.

EXPERIENCE WITH SWEET CLOVER HAY.

In answer to inquiries in regard to sweet clover, I would say that I do not consider that I am very much of an authority on sweet clover, although what experience I have had with it has been very satisfactory to me.

In answer to the question, how I like it for hay, I would say I don't think there is any kind of hay that horses and cattle would eat more readily than they will sweet clover hay, unless it would be alfalfa, and that is something I have never had any experience with. I don't know how sheep would like it, as I don't keep any sheep, but if I had the sheep and sweet clover hay, I would readily take my chances on them eating it. And my hogs did certainly do fine on it as

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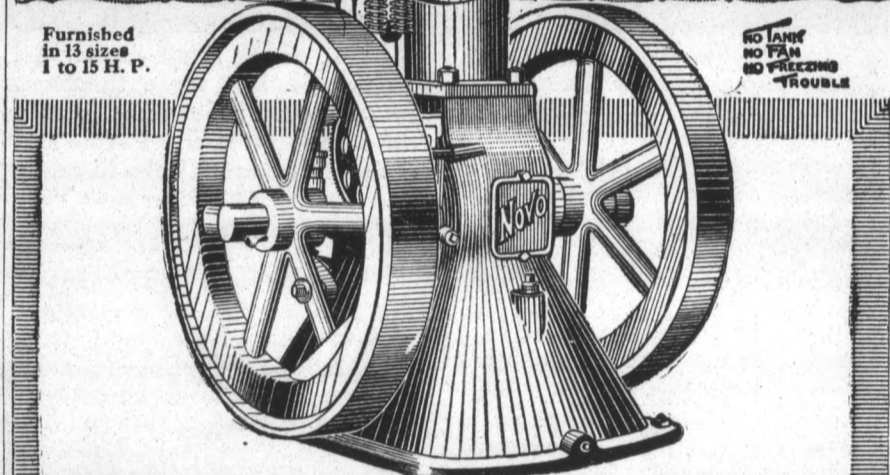
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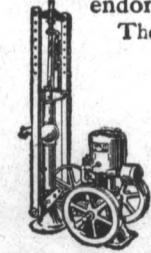


Fig. 1456 — Novo Jr., (1 H. P.) or 1 1/2 H. P. — Engine attached to windmill pump. An inexpensive outfit every farmer should have. You want it. Engine can be detached and used elsewhere.

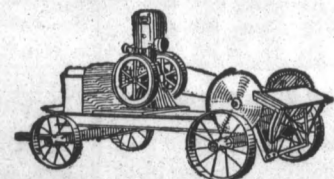


Fig. 15144 — Novo Portable Buzz Saw, built for heavy work. Engine and saw mounted on trucks together. Engine may be detached for separate work. A very handy outfit that a team can draw anywhere.

The Publisher of this paper urges you to make a study of engines before you buy. We ask you to investigate Novo Engines. Write to us for the name of a man in your neighborhood who can show and explain Novo Engines a lot more satisfactorily than any book could. Take the advice of your paper and write us today.

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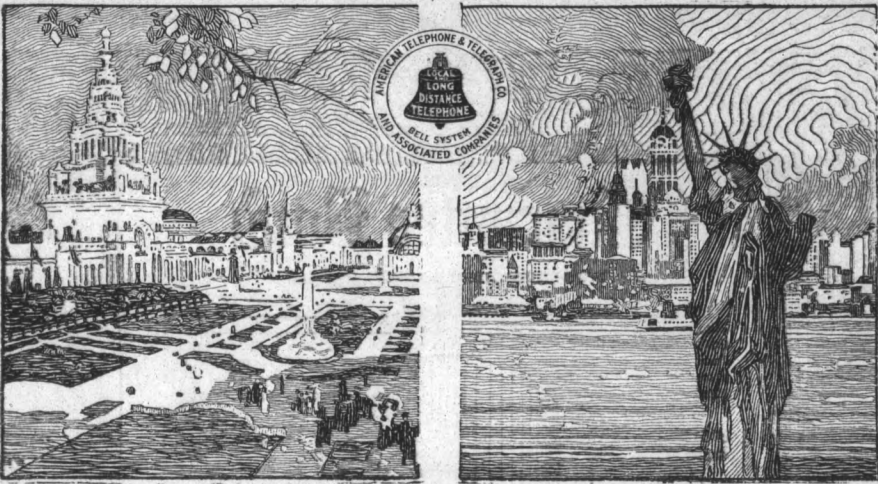
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Creating a New Art

At the Centennial Exhibition at Philadelphia, the exhibit of the Bell System consisted of two telephones capable of talking from one part of the room to another.

Faint as the transmission of speech then was, it became at once the marvel of all the world, causing scientists, as well as laymen, to exclaim with wonder.

Starting with only these feeble instruments, the Bell Company, by persistent study, incessant experimentation and the expenditure of immense sums of money, has created a new art, inventing, developing and perfecting; making improvements great and small in telephones, transmitter, lines, cables, switchboards and every other piece of apparatus and plant required for the transmission of speech.

As the culmination of all this, the Bell exhibit at the Panama-Pacific Exposition marks the completion of a Trans-continental Telephone line three thousand four hundred miles long, joining the Atlantic and the Pacific and carrying the human voice instantly and distinctly between New York and San Francisco.

This telephone line is part of the Bell System of twenty-one million miles of wire connecting nine million telephone stations located everywhere throughout the United States.

Composing this System, are the American Telephone and Telegraph Company and Associated Companies, and connecting companies, giving to one hundred million people Universal Service unparalleled among the nations of the earth.

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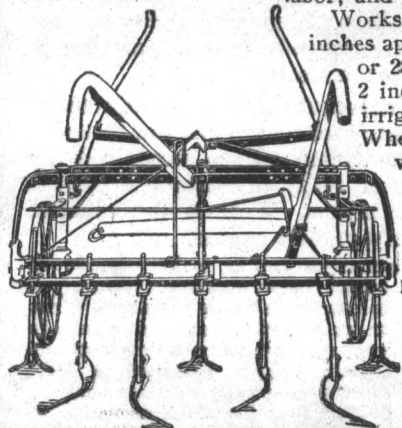
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green pasture. I don't mean to say that they ate it any more readily than they would any other clover, but as you know, hogs are very hard on pasture and there is where sweet clover comes in ahead of other clover; it don't seem to hurt it, no matter how much they tramp it, as the crown is much lower in the ground than that of alfalfa. And another thing I would say in favor of sweet clover, if you have a patch of it near by you will be surprised to see how the chickens will feed on it after the first cutting when the young shoots begin to come.

In regard to cutting the hay, will say I think it ought to be cut quite high, as you will find that the young shoots start along up on the side of the stubble and not from the root or crown, as other clover does. I realize this from the fact that a part of my patch was cut very low and I noticed that part didn't do as well as that which was cut higher, so I called our county agent, Mr. Blandford, and he informed me that was the cause of some of it not doing as well as the rest, so I would advise cutting it considerably higher than other clover.

Newaygo Co. DAN ROUSE.

SOY BEAN QUESTIONS.

As there is so much said about soy beans in *The Farmer*, I would like to know which would be the best to sow broadcast or in row. To grow for seed one would certainly sow in rows but which would pay best, and what variety is best adapted for mixed soil, clay and sand? Also, can I get them threshed with a grain thresher as there is no bean thresher in our vicinity?

Ottawa Co. L. L.

Sometimes soy beans are sown broadcast like oats or wheat, especially if intended to be harvested for hay, but the common opinion is that they do enough better if intertilled, to well pay for the cost of intertillage. I think it safe to say that it is best to plant them in rows 28 to 30 inches apart and give them good thorough cultivation, whether they are intended for hay or to be harvested for seed. The Ito San, or the Early Brown or the Early Yellow are about the safest varieties for Michigan.

Soy beans may be harvested with a common bean puller or cut with a mowing machine. I like the bean puller best. They can be threshed with a common threshing machine by removing the concave teeth or the greater part of them at least. If the beans are good and dry the concave can be removed entirely and a wooden plank substituted in its place. A bean thresher is best if you can get one.

Soy Beans on Muck Land.

Will cowpeas or soy beans grow to make a good crop of hay on muck or low land?

Indiana. J. A. K.

Neither soy beans nor cowpeas are adapted to low, wet land. They thrive best on high, well-drained land. If the muck land is thoroughly drained, however, the soy bean can be grown there. It is safe to say that any land that will grow corn will grow soy beans.

Soy Bean Seed.

Will you tell me how much soy bean seed to use per acre in rows 21 to 23 inches apart? What does the seed weigh per bushel; also sweet clover seed? Am intending to try both on rather run-down clay loam and sandy soil.

St. Clair Co. SUBSCRIBER.

The seed of the soy bean looks more nearly like field peas than like field beans, and they are of almost all colors, varying with the variety. Cowpeas look more like field beans than they do like peas, and from the standpoint of the seed one would say that the plants were misnamed, but according to their habits of growth they are correctly named, for the soy bean grows with an erect upright stalk like field beans, only much taller, while the cowpeas have a reclining stem more like field peas.

Soy beans weigh 60 pounds to the bushel, and so does sweet clover seed.

Both of these plants are well adapted to run-down sandy land, compared with other plants, but both should have the soil inoculated for the best results.

Soy Beans for Green Manure.

I have a field of high sandy land in a rather poor condition. It has grown rye for many years in succession at the rate of about six bushels per acre, but I did not sow it to rye last fall. Would like to know if I can raise some leguminous crop on it next summer to plow under next fall for rye. Do you think I could raise soy beans on this kind of soil? If so, could I sow them broadcast or with drill? How much seed would be required per acre? This field is about five miles from my home.

Ottawa Co. SUBSCRIBER.

There is nothing better for green manure than soy beans. On poor sand you may need lime to get a good growth, and the soil should be inoculated for best results. If you would apply 200 to 300 pounds of a phosphate and potash fertilizer it will help the plant very much on this land.

For a green manure crop it would be perfectly proper to drill broadcast, but the beans would not grow as large as if drilled and cultivated. If drilled you will need a bushel per acre, but if broadcasted it will require about two bushels. As your field is so far from home and you intend to plow the crop under this would be an instance where it might be more practical to sow broadcast.

Soy Bean Hay.

What do you think of soy beans for hay? Will they take the place of clover or alfalfa for feed for dairy cows? Which is the best way to sow seed, with drill like other small grain, or sow in rows, say 28 inches apart, and cultivate? Would it be better to plant them in the hill with corn, by going over the field twice with planter and then cut them with the corn and put in silo together? Would you plant them later than corn or about the same time? What variety is best for western Michigan, both as to the quality of hay and amount produced per acre? I have filled silos with corn and soy beans, running them through the machine together but have never found out what results were obtained.

Ottawa Co. G. R.

Soy bean hay, cut when the pods are nicely formed and well cured, will take the place of either clover or alfalfa hay. It is as rich in protein, as digestible and also as palatable. It is best to sow in drills and cultivate for hay or grain.

If planted with corn for silage, go over the rows twice with planter as you suggest. They should be planted at time of planting corn.

The Ito San is considered as good a variety as any for Michigan by most growers. The Early Brown or Early Yellow are good, in fact, most any early variety.

COLON C. LILLIE.

SOY BEANS IN OAKLAND COUNTY.

I would like to tell D. A. Jessop, of Ingham county, that I have had soy beans ripen in Oakland county, Mich., for two years. I had them cut last fall as soon as the corn was cut and threshed them this winter with a flail. The weather was damp so they did not all thresh out clean. I had ten bushels. I planted about 14 pounds of seed, but the ground was rough and lots of the seed was not covered so it was lost. I bought one-half pound of seed one year ago last spring and planted it in the garden to see if it would ripen here, and that gave me the seed that I used last spring. I have forgotten the name of the variety. The beans are about half the size of a field pea and of yellow color.

Oakland Co. J. DECOUR.

AN OBSERVATION.

We have the same cows we had last year, but never before such heavy cream. Soy beans is the cause. Too much can not be said of the value of soy beans in feeding dairy cattle. It is to be hoped more people will plant them this season.

Van Buren Co. G. E. SHEPARD.

Alfalfa in the Dairy Ration.

A FEW years ago a prominent dairyman read a paper before the round-up institute at East Lansing, in which he stated that he fed no grain to his cows except a little cottonseed meal for the first two months after freshening. He told us that he was able to produce much cheaper milk in this way, and cited the results of experiments elsewhere to prove that cows fed on alfalfa hay and corn ensilage, gave the cheapest milk obtainable.

I recall that there was some discussion following this talk, and that no one present seemed to think that a good cow could eat enough alfalfa and ensilage to keep her doing her best. I think the author of the paper admitted this, but contended that gains secured by feeding grain in addition to the alfalfa, were gotten at too great expense. In other words, the thought seemed to be that it is better to get a little less from the cow and feed her much cheaper, than to add materially to the expense of her ration for the small increase in her production.

Little Grain Fed with Alfalfa.

It happens this winter, that several parties in this locality are feeding alfalfa hay and ensilage to their cows with very little grain, and the results of their practice throw some light on this question, and seem to justify the claim made by the dairyman in the paper referred to above.

In one of the herds where alfalfa is fed, one cow is producing an average of 2.1 pounds of butter daily, and eating but five pounds of grain beside the corn in her roughage.

Another herd has been tested out during the week, and the cows are producing from 1.1 to 1.88 per cent of fat per day, and eating less than four pounds of grain daily. Another herd is doing as well as they have ever done, and are eating alfalfa, corn ensilage, and two pounds of cottonseed meal per day. All of these cows are holding their own. They are going through the winter in nearly every case, in as good flesh as formerly, and producing as much milk.

The Value of Alfalfa.

If we value alfalfa hay at \$15 per ton, we have a very cheap feed in these days of high prices for nearly all kinds of grain. Fifteen dollars per ton gives a splendid annual return from the acre of land that yields four tons of this kind of hay, when the labor of harvesting the crop is considered. Indeed, it is doubtful whether any other crop ordinarily grown will compare with it one year with another.

Any man whose soil is adapted to the growing of this crop is fortunate, to say the least. I would not say a word to induce the man whose land is not fitted for alfalfa, to try to grow it until conditions are right, but surely everyone who is rightly situated should get a field of alfalfa started as soon as possible.

Clover and Alfalfa Compared.

Comparing red clover with alfalfa, we find very little difference when the fertilizing value is considered. When, however, we consider alfalfa as a feed for the dairy cow, the difference is marked. Alfalfa has 11 per cent of digestible protein, while clover contains but eight per cent. In the content of carbohydrates and fat there is but little difference. Alfalfa is more digestible because it contains less crude fiber. It has often been said that alfalfa is as good as bran, and experience seems to demonstrate that it is nearly, if not quite, as good.

The man who wishes to dairy in connection with mixed farming, will find a ration of alfalfa and ensilage adapted to his plan. The demand for grain on his farm will be small, and thus, with a field of alfalfa, corn enough to fill his silo, and the necessary land for pasture, if he plans to

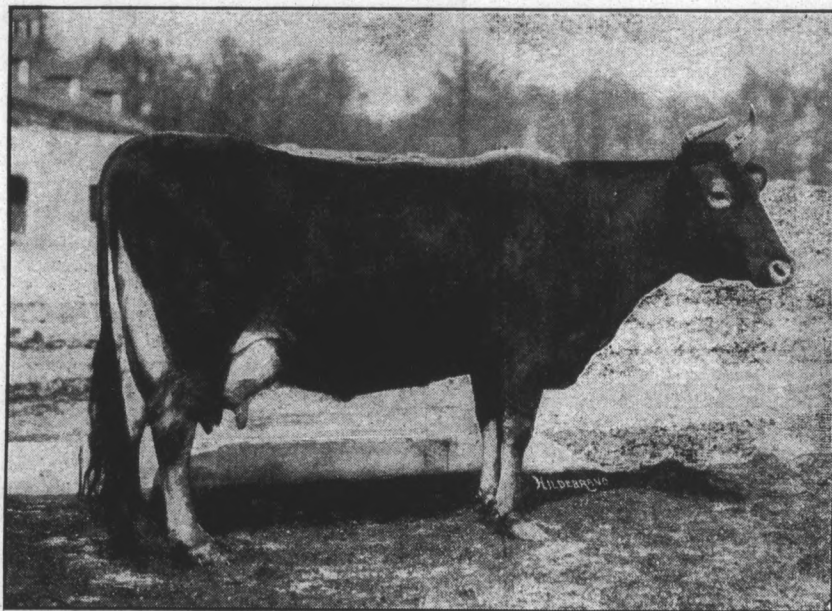
keep his cows in pasture during the summer months, will leave the balance of his farm for other crops.

It seems to me that one should either keep a large dairy so as to employ fully the labor kept on the farm, or keep just cows enough to furnish work for the family during the winter months. The thing that discourages one, is to have too many cows to be taken care of by the help that one must keep, and not enough to pay for additional labor on the farm. The intensive dairyman can use alfalfa in the ration with equal advantage. He can supplement it with grain and keep a larger number of cows on the same area.

Soil Fertility.

The problem of fertility seldom bothers the intensive dairyman. He has found that the cheapest fertilizer purchased is that which he obtains by feeding good grain to the cows and making the right use of the manure. The writer never hesitates to buy feed and sell it again to a good cow, if he can obtain it at the right price.

We have seen this system practiced for a number of years. We have seen



The World's Best Cow.

A new world's butter-fat record for one year was made on February 20 by Murn Cowan, a nine-year-old Guernsey cow owned by O. C. Barber, Barberton, Ohio. May Rilma, a Pennsylvania cow, but also a Guernsey, held the world's yearly butter-fat record when she was replaced by Murn Cowan, whose record is indeed remarkable. In 365 days she produced 24,008 lbs. of milk which contained 4.57 per cent, or 1098.18 lbs. of butter-fat. Her highest record for one day during the year was 82 lbs., or approximately 10

the soil improve under it, have seen the clover coming back to fields where it often failed, and we do not hesitate to say that it is a safe and business-like thing to do. But if the man wishes to keep only a few cows on a large farm, then he can rely upon alfalfa and ensilage for the most part, and place the emphasis on some other line of agriculture.

Big Farming Pays Best.

So far, the farm surveys seem to demonstrate that the man on a large farm, who does a number of things well, is more prosperous than the one who undertakes but one thing and farms a small area.

Alfalfa is just the feed that will help out the man who does not want to invest all his energy in dairying, and still does want to keep a few cows at the smallest expense and make them pay a profit. Alfalfa, too, is just the feed for the intensive dairyman for it will increase the possibilities of his small farm, and in connection with grain, will enable him to realize a very much larger return

from his business than he otherwise could.

Now it is not the intent of the writer to induce any man to try to grow alfalfa on soil not adapted to its production. Such land should not be sown to alfalfa, until it is properly prepared. There are other ways of handling such soils that will return a profit and at the same time improve them and lead up to a time when alfalfa may be successfully produced. But those whose soil is right, or can be made right with a reasonable outlay of labor and money should certainly grow alfalfa.

Oceana Co. W. F. TAYLOR.

A FARMER WHO MAKES BUTTER.

In these days when nearly every farmer patronizes a creamery, a condensary or a cheese factory, unusual interest attaches to any enterprise which has for its aim the making of good dairy butter. For a number of years past, consumers in the writer's section have found it difficult, and very often impossible, to procure dairy butter of a quality fit for table use. Many people prefer such butter to that put out by the creameries, and the scramble on the part of consumers in cities and villages, to find some farmer's wife who will promise to fur-



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—Farmer Onswon.

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—Farmer Onswon.

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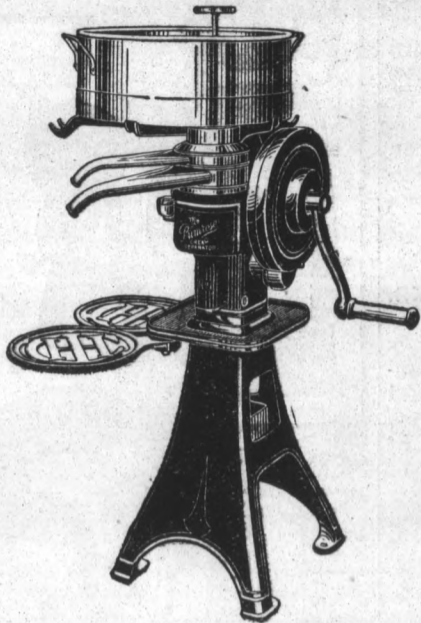
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At the Maplehurst Farm, which is as yet, in its infancy, twenty-one Jersey cows are being utilized at present, for the purpose of butter making. The big cream separator and the big barrel churn which holds ten gallons at a churning, are run by a gasoline engine. Two big siloes are already in use on the farm and another will be constructed during the coming summer. Following the changing and improving of barns which will occur soon, a milking machine will be installed. It is the plan to install up-to-

date equipment throughout the place.

In establishing this butter-making plant, Mr. Dicken has broken away from the custom so common among farmers, of growing the same crops and engaging in the same industries as those of their neighbors. Because creameries and cheese factories afford a profitable outlet for dairy products, and because nearly all farmers patronize these or similar concerns, need not necessarily prove that more profit may not be reaped by returning to the abandoned business of butter making. The almost universal tendency to quit making butter, has created a demand unknown in former years. Doubtless in some sections, the making of butter on an extensive scale is not new; but it is new to the writer's locality, and the innovation promises to work out satisfactorily both to producer and consumer. It is sometimes a good and a profitable thing to get out of the rut, especially when it is apparent that a better and easier road is accessible.

J. A. KAISER.

Co-operative Breeders' Associations

THERE was need in Michigan, as well as in other states, of some systematic method of live stock improvement, especially in cattle. Farmers generally throughout the state were using grade and scrub sires or cross breeding and using whatever pure-bred sire was most convenient. Up to the year 1906 the average Michigan farmer was not willing to pay much more than meat prices for pure-bred sires and when purchased they were, in most cases, used two years and sold, usually to the butcher, before their value as a sire was known. Many valuable sires were thus lost to Michigan farmers. The excuse the farmers gave was that their herds were small and they could not afford to purchase a pure-bred sire just for their own use and when they offered his service to others they would not use it, or if they did, they would not pay the service fee, so that the purchase of a sire to them was unprofitable.

pleted the full six years' service with the original sires.

Michigan has many of these associations but not near as many as she ought to have. No longer does the sale of pure-bred sires go begging. I believe I am safe in saying that more than four times the number of pure-bred sires are in service in Michigan today than there were in 1906.

Wherever these associations have been organized and have purchased good sires there has been a great improvement in the cattle in the community. I noticed in the transfers of registered cattle a few months ago, the transfer of several head of pure-bred females from a member of one of these associations. When this particular association was organized there was not one head of pure-bred cattle in that township or in the vicinity of it. Today you can see hundreds of good grades of the breed they chose.

What Others Think of the System.

"I think it is the best method for the systematic improvement of cattle in existence in America."—Prof. C. S. Plumb, Professor of Animal Husbandry, Ohio State College, in a speech before the South Carolina Breeders' Association.

"Our breeders should encourage in every way the formation of associations like that in Michigan, and should never forget that the improvement of the productive capacity of the dairy herds of the country is the real reason for our existence as an association."—Malcolm Gardner in official records of Holstein-Friesian cows, February 11-19, page 96.

Marquette Co. W. F. RAVEN.

This is the twenty-first of 52 special articles to be published in consecutive issues. Its author has been engaged in the work of organizing these breeders' associations in every section of the state where interest has been shown in the proposition by dairy farmers since the inception of the work. At present he is doing similar work in the Upper Peninsula. One or more of these co-operative breeders' associations is now to be found in nearly every well developed agricultural county in the state, and the work is now being extended to the newer counties. This is a kind of co-operative work which should appeal to the farmers in every community of the state where dairying is a common development of farm production. The farmers of any such section will find an object lesson of the benefits to be derived from such an organization close at hand in one of these numerous organizations. It will pay them to investigate and emulate the work which is being done by them, and this is a good time to make this investigation.—Eds.

In September, 1906, the Michigan Agricultural College published a bulletin entitled, "Methods for Live Stock Improvement." Dean R. S. Shaw was its author. This bulletin seemed to create a desire on the part of the farmer for better live stock. The State Board of Agriculture recognizing the desire of the farmer, in December, 1907, appointed a live stock field agent whose duties were to place before the farmer with a small herd of common cows, a plan by which he could have the continued use of pure-bred sires of one breed for the purpose of improving his herd by a system of up-grading or by which, if he had a pure-bred cow, he might be sure of the service of a pure-bred bull of the same breed at small cost. Carrying out the plan outlined in Dean Shaw's bulletin the Community Breeding Association was adopted as one of the best methods for the improvement of live stock.

A Community Breeding Association, as worked out in this state, is a co-operative association in which the owners of 120 or more cows agree to breed only one breed of cattle. When the required number of cows are secured the owners meet and decide on the breed. The association is organized and incorporated under state law. A pure-bred sire is purchased for every 40 cows and placed in the hands of a caretaker as near the center of this group of 40 cows as may be. This sire is kept in this group for two years and then is exchanged to another group. At the end of four years the sire is again exchanged. Barring death or accident to a sire, the plan provides for the service for the cows of the association for six years, with no in-breeding. This is no guess work for some of the associations have com-

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WHAT IS A PROFITABLE HEIFER?

How much milk ought a Holstein heifer, two to three years of age, properly fed, give per day at her best, to warrant one to keep her for the dairy? What would be the minimum per year one ought to require of cows (Holstein) for profitable keeping at present feed conditions? I sell to the condenser at \$1.55 net, this month.

Jackson Co. L. B. B.

This matter of production is so closely associated with the individual peculiarities of an animal, and there is such a variation in the behavior of animals, that it is impossible to lay down a rule and have it prove true in every instance. In a general way, however, it may be said that the performance of a two-year-old heifer that has been well grown and is well cared for, will not be far from two-thirds of her performance as a mature cow.

In the case which your correspondent has cited, the heifer gave 25 lbs. of milk per day. If she was a fairly persistent milker she probably produced in the first year about 5,000 lbs. of milk. This is not a large yield, but 6,000 lbs. would be a very creditable yield for a two-year-old heifer of this type. On such a production for a two-year-old a farmer might expect between 7,000 to 8,000 lbs. in a year when the animal has reached her prime.

It is further stated that the heifer did not show very much improvement in her three-year-old form. This being the case he was, no doubt, justified in disposing of her for beef. However, it ought to be remembered that a heifer frequently shows up about as poorly in her three-year-old form as she does in any year of her life. This is really not the regular rule but is met with so frequently that one might call it the first exception under the rule.

Nothing is said as to the ration which the animal received, so we have no way of knowing whether liberal feeding was practiced or not; further, no information is given as to the fleshing tendencies of the animal. The heifer may have returned in the form of milk all that could logically be expected from the amount of feed given, but if she showed a strong tendency to convert her food into meat and increase in body weight rather than to convert it into milk she had probably better be disposed of for beef than to be retained as a member of the herd.

A. C. ANDERSON.

SPOILED ENSILAGE AT END OF STAVES.

I put up a stave silo last fall; when I came to feed the ensilage this winter it had kept good as far down as the point where the ends of staves come together; there was mold about a foot above and below joint. After I got below that it has been all right again; would like to know if there is anything I can do or anything I can put on to keep out the air. The ensilage spoiled on sides about a foot in and three feet down from where it was good on top. Would like to know what to put on top to keep it best.

Clare Co. J. A.

It is quite a nice job to fit the ends of the staves in a stave silo onto the cement foundation so no air can get through; this is one of the great faults to be found with a stave silo. The staves should come just even with the wall so there will be no projection to prevent the silage from settling. Then if the bottom is tight a heavy coat of coal tar will usually make a tight joint. But if the stave part does not fit the cement part it is much more difficult. The "jog" should be filled with cement, or better still with roofing cement which will stick tight to the staves.

To keep ensilage from spoiling on the top of the silo, level it off after filling, and tramp thoroughly. This must be done two or three times. Wet the top and put on lots of water every time you tramp it. If this is thoroughly done, not over six inches will spoil. If after the top is thoroughly wet and tramped you will put on common salt

two inches deep you can preserve the whole of it. If you use salt on top, when you come to feed the silage dig down two or three feet deep next the door and allow only a little of the salty top to be used at a feed. You won't have to salt the cows, and can save the whole business.

BEEF PULP WOULD HELP THE RATION.

My cows are not doing well. Isn't the feed balanced right? It is mixed as follows: 150 lbs. of bran, 200 lbs. of oats, corn-and-cob meal, and 100 lbs. oil and cottonseed meal mixed. I feed twice a day cornstalks, and for the rest mixed hay, all they will eat. Would it be better to feed some dried beet pulp?

H. W.

This is not a bad ration, in fact, it is a pretty good one, and the cows ought to do pretty well if they are well-bred dairy cows, provided, of course, that you feed enough grain. Large cows should have one pound of grain for every four pounds of milk they give. If a cow is giving, say 30 pounds of milk per day she should be fed seven and one-half pounds of grain per day. If 40 pounds of milk, then she is entitled to 10 pounds of grain per day. There is a good selection of grains in this ration and I don't see why the cows do not do fairly well.

There is no succulent food in the ration, and dried beet pulp, moistened several hours before being fed, will furnish some succulency, and be a benefit in that way, besides its food value.

JUST A "HAPPEN-SO."

I have a two-year-old heifer from a Holstein cow and a seven-eighths Guernsey bull. She is good size and in good health as far as I can see. I bred her to a thoroughbred Holstein bull. About four weeks ago she had a nice heifer calf. She only showed signs of bag in two quarters and that was very small. She only gave about a teacup of milk and we could not get her to do any better. I will feed her until spring and sell her as I don't think she would ever be any good for milking purposes. Will her calf be safe to chance for a milch cow? Do you know of any such cases? Is it in the breeding or just a "happen so?" I would like to hear from other farmer readers having similar experiences.

A. W.

I think A. W. has expressed the facts just right. It is just a "Happen-so." It was not good breeding to breed a Holstein cow to a grade Guernsey bull. These breeds do not cross well, but now the grade Holstein heifer is bred back to a Holstein bull which makes her a grade therefore, and a pretty high grade also. Holsteins do not usually produce heifers with no udders or with udders that do not develop. This breed is considered long on this characteristic of good udders. As a matter of fact, this happens sometimes with all breeds. It is simply a sport or mutant. While we would all rather have a heifer calf out of a good producing cow, this calf may make an excellent cow. Breeding is not an exact science. Two times two don't always equal four in breeding.

HOW TO IMPROVE THE RATION.

I am feeding ground speltz, oats and cottonseed meal. How does speltz compare with corn meal, and how can I better this feed? For roughage I feed cornstalks, clover and timothy hay. The cows run to the straw and oats and speltz and bean straw. M. T.

The analysis of speltz is something like corn and barley, but it is a little richer in protein. With the hulls off, speltz will be worth more, pound for pound, than corn meal. Speltz, oats and cottonseed meal may be a good combination for grain if fed in right proportions.

The roughage is also composed of good foods, but the part of the ration could be improved if silage could be added, or if beets or some other form of roots, even potatoes—and they are cheap enough to feed this year—would greatly improve the ration by furnishing a succulent food.

**The survival of the fittest**

TRIED in the furnace of competition and subjected to the test of years of practical use on nearly 2,000,000 farms the world over, the De Laval has proved its overwhelming superiority to all other cream separators.

Twenty years ago there were as many makes of factory as of farm separators, but for the past ten years the De Laval has had this field almost to itself, 98 per cent of the cream separators in use by creamerymen and market milk dealers to-day being of the De Laval make.

It has taken the inexperienced farmer a little longer to sort the true from the untrue, the wheat from the chaff, in the maze of confictory catalog and local dealer separator claims, but year by year the ever-increasing proportion of farm separator buyers is reaching the same conclusion as the creameryman—that the De Laval is the only cream separator they can afford to buy or use.

Many other cream separators have come into the lime-light of publicity for a few short months or a few short years, claiming to be "as good as" or "cheaper" than the De Laval, but their users have sooner or later found them lacking in some one respect or another, and even where a few have seemingly done well their users have come to learn that the De Laval was a still better machine.

The unfit or the less fit cannot possibly survive for long in separators or anything else. Think of all the separators you used to see advertised so extravagantly in your favorite farm papers. Where are they now? Why do you seldom, if at all, see their names mentioned? Simply because the fittest must survive and the others must fall out of the race.

The De Laval has triumphed over all other separators, and its supremacy is now almost as firmly established in farm as in factory separators because its separating system, design and construction are essentially different from and superior to other separators.

A De Laval catalog to be had for the asking explains and illustrates these differences. A De Laval machine, to be had on test or trial from the nearest local De Laval agent, does so better still. If you don't know the nearest local agent, simply write the nearest De Laval main office as below.

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I want to ship you as many "CAN'T-SAG" Gates as you need and let you use them 30 days on your farm. I want to prove to you they are better, cheaper than any other gate made—cheaper than all wood gates you make yourself. I want you to put up my "CAN'T-SAG" Gates—use them thirty days and if they don't prove all I claim, I'll take them back—pay the freight both ways and you won't be out one penny.

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Send for my New Gate Book—get my Freight Prepaid offer—pick out the sizes you want and I'll ship them at once. "CAN'T-SAG" Gates never sag or drag—they can't. 3 angle irons, double bolted to each board, with six triangular truss braces and all steel hinges—hold gate stiff and firm. Patent re-enforced self-locking hinge makes it swing free and easy always. To make the cost still less I'll gladly send you the Gate Stakes—everything but the boards—so you can make your own gates and Save Big Money. Most farmers prefer to buy just the Gate Stakes—it's cheaper. You can make your own gates in a few minutes spare time. Send for New FREE Catalog and low 1915 prices TODAY.

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A Standardized coal-tar disinfectant, insecticide, animal dip; always the same.

Use Zenoleum; get more milk from your cows; more pork from your hogs; more wool from your sheep; more eggs from your hens; more work from your horses. In short, make more money in the Live Stock business by using this great preventative.

Used and Endorsed by 50 Agricultural Colleges

Our guarantee: If Zenoleum is not all that YOU think it ought to be, you can have your money back; no letters, no talk, just money back.

Prices: postpaid—8 oz. 25c; qt. 50c; gal. \$1.50. Ask for our free 1915 Live Stock Life Insurance Policy.

The Zenner Disinfectant Company
316 Lafayette Ave., Detroit, Mich.
Use Zenoleum Lice Powder for Poultry.



Pure-Bred Vs. Common Stock

THERE was a time not so very far distant when we considered pure-bred stock as something beyond and set apart from the average farmer and the breeder was considered something of a fanatic. But that time is past and pure-bred live stock has become very popular as well as profitable. Nearly every large farmer and many of the smaller ones have one or more breeds of pure-bred animals on his farm. Yet we used to wonder if the business was really profitable or if it was just a hobby with men of means. And there are some who still wonder and still think that this business is only for the select few and not for the many. I want to present a few facts in order to dispel this too prevalent belief.

and ask to see his stock? If he has pure-bred stock he will nearly break his neck to show them to you and will tell you all the good points about them. But if he has only scrub stock he usually says he has only common stock and reluctantly shows them to you. He is ashamed of his stock and when a man is ashamed of his work he is not going to succeed nearly so quickly as if he is proud of it. Personal satisfaction cannot be measured in dollars and cents because it is too valuable to be measured by such a standard. A man has to be satisfied with his work if he is to do his best.

A Broadening Influence.

The breeder of pure-bred live stock has to keep up with the times in his particular line and this necessity will tend to broaden his horizon. He attends the breeders' associations and the institutes and every progressive meeting which pertains to his work and in doing so he rubs elbows with the best men in the business and learns of their methods and experiences. He perhaps takes his herd to the fairs to compete with better herds. He sees where he is making mistakes and corrects his errors. He mixes with his fellows and he feels that he is one of them and the friends that he meets all help him to get out of any rut that he may have fallen into. One of the main drawbacks to the farmer's life is that it is too secluded. The breeder of pure-bred live stock gets away from the narrowing influence of the farm and studies all his problems with a broader view than does his neighbor.

The raising of pure-bred live stock seems to reflect upon the man himself. He is doing good work and it makes him a better man. There are pure-bred men just the same as there are scrub men just the same as there are scrub live stock. The pure-bred man is the man who sticks by you when you are down and out and helps you when you need it most. The pure-bred man gives you a square deal and you can trust him to do the right thing. Pure-bred stock have similar qualities. They will give you something in return for the feed and the time and trouble expended on them.

Keeping the Boys on the Farm.

And pure-bred live stock will help you to solve the problem of keeping the boys on the farm. A man came to me the other day and bought a pure-bred bull. He said that he intended to buy a pure-bred heifer in a short time. He explained that he was buying them for his boy because the boy had read that pure-bred animals were the best. He said that he had a good boy and that he wanted to stay on the farm. That father was a wise father and he knew that the boy had to have something to interest him, something that he could take pride in and show to his neighbors as the best of its kind. It is no wonder that so many boys do not stay on the farm any longer than is absolutely necessary. There is nothing to hold them there, nothing to interest them. Pure-bred live stock is one of the greatest agents in working out the problem for keeping the boy on the farm, and it would be worth trying if it were only for this one reason.

Therefore, since producing pure-bred live stock in its many forms is a profitable business, since it tends to broaden the individual who is engaged into it if you start in a small way, since it is not expensive to since it has a tendency to reflect favorably upon the individual by making him a better man in his community, and since it will help you to keep your boy on the farm where he ought to stay and where you need him, is it not worth the small effort and expense that it takes to get into the business?

Genesee Co. L. S. BRUMM.

A Comparison of Profits.

The financial side always comes first so we'll take a look at that side of this question first. Suppose we take for example, the dairy cow, for the pure-bred dairy cow has in some cases reached enormous values and prices. A pure-bred dairy cow will produce more milk than a scrub or a grade cow. How much more milk depends altogether on the individuals, the care, feed, etc. But suppose that the pure-bred will produce only 1,000 pounds more milk per year than the grade or the scrub, and anybody who is acquainted with the dairy industry will have to concede that to be a very conservative supposition. And then there is the calf. A calf from a scrub is worth about \$5. A calf from a pure-bred cow is worth from \$50 up, depending upon its ancestors and their performance. So you can readily see why such large prices are demanded for some of the pure-bred cattle. A good pure-bred cow will make her owner \$60 more per year than will a common cow. Some of them will make much more than that. That is the reason that pure-bred dairy stock demands high prices. What is true of the dairy cow is more or less true of all pure-bred animals.

Of course, I do not mean to say that all pure-bred animals are so much better than grades, but it is the general rule. There are some poor pure-breds, but the failures in the individual pure-bred animals are the exceptions rather than the rule. It is the general run or the average that makes the rule, and the average run of pure-bred animals are far ahead of grades and incomparably ahead of scrubs.

A grade animal is one whose dam or sire is a pure-bred animal and so the grade is better than the scrub and in many cases the performance of a high-grade animal is nearly as good as a pure-bred, but the progeny of a grade animal will not bring nearly as high a market price as will the pure-bred.

Getting Into the Business.

The first argument against the pure-bred animal, if there is any such argument, is the high price of foundation stock. It is expensive to purchase a herd of pure-breds. The cheaper way to get into the pure-bred business is to purchase one or more females and raise a herd for yourself. Then get a pure-bred sire and start grading up the stock that you already have. I think it is better to buy young animals because it is nearly impossible to purchase a mature pure-bred without paying an exorbitant price. And if you can buy a mature pure-bred for a normal price it very often happens that you do not get a very good one. Men who have the best mature pure-breds are not selling them at marked down prices for two reasons. First, because they want to keep the best for themselves and second because they can get the top price for a good animal.

Aside from the financial side of the question, there is a whole lot of satisfaction in owning a herd of pure-bred animals. Did you ever visit a farmer

"Best dividend payer we own"

That's what thousands of well satisfied users say. They know how much good it has done their horses and mules to clip them before the spring work begins, with



"Yes, but don't forget this great money getter"

It also gets much well-deserved praise.



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has done wonders for the farmer in saving labor and increasing the quantity and quality of wool he gets from his sheep. It gets 15 to 20% more from every sheep. You know the size of your flock, so figure your profit and you'll find the machine will more than pay for itself the first season. A boy can run it all day. All joints ball bearing with ball bearing shearing head. The equipment includes four sets of knives fully guaranteed. Ask your dealer or send \$2.00 and pay balance C. O. D.

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Farmers and breeders this is your opportunity to buy a heavy boned **PERCHERON STALLION** at a price that will make you money.



WE HAVE ON HAND

10 Black 2-3-4-year-olds,

ready for service and guaranteed. We bred and raised these colts and can make prices and terms below competition. They must be sold in next ten days. Also a few young mares. Write your wants.

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Registered Clydesdale Stallions For Sale.
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FEEDERS' PROBLEMS.

Millet as a Roughage for Horses.

We have a heavy work team; one a mare with foal. What grain would you feed with Japanese millet to make a balanced ration? I fed four quarts of oats three times a day. Millet, some corn fodder, and oat straw. They were lazy, coats rough, scoured badly and sweat profusely when worked. We reduced oats one-half, they appeared better but not right.

Ogemaw Co. F. C.

Millet hay is not generally considered a suitable roughage for horses where fed as an exclusive roughage ration. In some experiments conducted several years ago at the North Dakota Experiment Station, it was definitely determined that millet caused an injurious effect on the system, which was in some cases fatal and in others caused more or less serious symptoms. The chemical analysis of millet hay is similar to that of timothy hay, except that it contains more protein. Oats would make as desirable a grain to feed with it as could be used. It would be far better to use some other roughage for the horses if available, and a much safer plan, especially where it is being fed to brood mares to use it only in limited quantities, if at all.

No injuries have ever been observed from feeding millet hay to other domestic animals, but it is a quite general experience among those who have used it for horses, that it is quite an unsatisfactory roughage ration.

Cottonseed Meal for Horses.

Is cottonseed meal good for horses, and about how much would it do to feed them morning and evening?

Branch Co. F. P. E.

Cottonseed Meal has been fed to horses doing heavy work with splen-

grain ration should not contain too much corn, and the corn fed should be supplemented with middlings, oats or bran or a combination of these grains in the slop. Provision should be made for plenty of exercise, which is quite as important as judicious feeding. It is impossible to state the quantity which should be fed without knowing more definitely the size and condition of the brood sows. They should be kept in just a good thrifty condition, not thin and not too fat.

LIVE STOCK NEWS.

The movement of hogs to market since the close of last October has been extremely lively, resulting in a heavy manufacture of provisions, and they have been piling up to a remarkable extent. Stocks of provisions held in the five leading western packing centers underwent an increase during February of 66,524,000 lbs., while for that month last year the increase was only 21,144,000 lbs. On March 1 such stocks aggregated 365,547,000 lbs., comparing with 243,604,000 lbs. on that date last year. These liberal holdings are easily accounted for when it is stated that the western packing points large and small, have slaughtered, in round numbers, since the first of last November more than 13,000,000 hogs, an increase of over 2,000,000 hogs on the number packed for the same period a year ago. With these showings, it is not strange that pork in the Chicago market should have declined within the last 12 months as much as \$4.50 a barrel. Other hog meats also have suffered marked declines, with lard the strongest article in the provision line, as that is the only product that is in smaller supply at packing points than a year ago. Packers are disposed to complain because of the lower prices for their products, but they neglect to speak of the fact that liberal stocks of provisions were de-



Mule Colts Fed on Sweet Clover Haulm by Sam Willis, Benzie County.

did success. This food being rich in protein is very sustaining when the horses undergo severe muscular exertion. There is no danger only in overfeeding. It is a heavy feed, that is, a very concentrated feed. Horses should not have over two or three pounds per day for 1,000 pounds live weight, and the balance of the ration should be corn or oats or some food of that nature. Begin with one-half pound at a feed and gradually increase to the desired amount. Idle horses should be fed very sparingly of this rich food.

Ration for Brood Sows.

Would like information of a balanced ration for brood sows. Have two registered Poland China sows that I am expecting to farrow some time in April that have raised two litters and did not raise many of their pigs. Each had seven pigs and lost them after they became two or three days old. So would like to know what is the best feed and how much they should have from now until pigs are well started. They seem very easy keepers so thought perhaps they were overfed.

Eaton Co. O. B.

The ration for brood sows should be bulky as well as well balanced. It is an excellent practice to feed some well cured alfalfa or clover hay in addition to the grain ration. It is not a difficult matter to accustom the hogs to this feed, provided it is given them regularly once each day in small quantities which they will consume. The

rived from hogs costing them but \$6.50@6.75 per 100 lbs., while they have carried on an enormous and highly lucrative business in selling fresh pork products, thereby materially lowering the cost of provisions in their cellars. Of late the discrepancy between corn and hog prices has been lessened considerably, although hogs are much cheaper than in recent years, while corn is higher than a year ago. When hogs sell on the farm for \$6 per 100 lbs. and corn for 60c a bushel, it is customary to regard feeding corn to swine as a profitable venture. Recently corn has sold in Iowa and Illinois at 63@65c on the farm, whereas several weeks ago the ruling price stood around 73c. As the last pig crop has been moved earlier to market than usual, it is safe to count on correspondingly smaller marketings later on.

Horses were marketed less freely than usual last week, and an active demand made firm prices, with army horses the most wanted. The British and French agents bought as many horses as in recent weeks, with mounts selling at \$145 and artillery horses at \$175@185. Farm workers went at \$100@160, few selling below \$125 or over \$150, with mares of quality wanted at around \$160. Commercial horses weighing around 1,500 were in excellent demand at \$190@250, a few of the better class selling at \$230@250.

Apparently, there is hardly any limit to the upward movement in prices for lambs and sheep of the better class, it being purely a matter of supply and demand, with not half enough to go around. Now, if ever, every sheepman should study to do his best in producing fat, marketable live mut-

The Goodrich Tire, like the trained athlete, is all brawn and muscle—no fat

THE old Olympic Game promoters were great for what we call "form."

Symmetry, proportion, soundness and proper balance out-bid bulging muscles for favor—yes, and out-won, too, just as they will today.

Mere bulk never was synonymous with endurance—and the truth of this statement drives home with a bang, when you apply it to tires.

IF thick, heavy tires were the last word in tire construction, we could wipe out of existence a Goodrich Research and Test Department employing seventy people. We would take off the road a battalion of ten automobiles that run twenty-four hours a day and every day in the year, grinding tires of all makes to pieces, just for the sake of information to us and eventual economy to the user of Goodrich Tires.

There is where we learn to cut out of a tire the material which gets the user nothing.

Of course, when we stripped tire price lists of their padding—fictitious values—we expected rivals to say we had stripped our tires.

IT was their only "come-back." They had to say that, in stripping down prices to the point

where they were fair to dealer and consumer and left no room for injurious price-cutting tactics, we had stripped our tires of some quality, too.

THE Goodrich Tire, like the trained athlete, is all brawn and muscle—no fat. It represents an achievement—the ability to cut out the extra costs of manufacture, the extra costs of labor, of extra, needless material, and to give you the best, long-mileage, high-standard tire in the world.

There are padded tires as well as padded price lists.

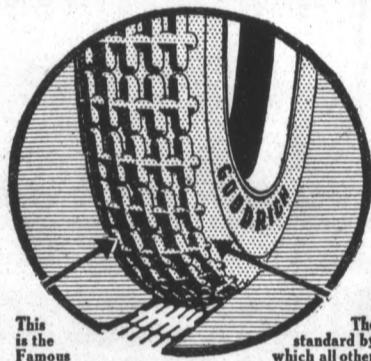
Don't pay for padding.

Now don't forget this—we are talking in the main about Goodrich Safety Tread Tires, for they represent ninety per cent of our factory output for resale.

Furthermore, while we have put the padded prices on smooth tread tires on the run, the evil of padded prices on non-skid tires still is in evidence, as shown in table below:

Note the following table of comparative prices on non-skid tires. Columns headed "A," "B," "C" and "D" represent four highly-advertised tires:

Size	Goodrich Safety Tread	OTHER MAKES			
		"A"	"B"	"C"	"D"
30x3	\$ 9.45	\$10.55	\$10.95	\$16.35	\$18.10
30x3½	12.20	13.35	14.20	21.70	23.60
32x3½	14.00	15.40	16.30	22.85	25.30
34x4	20.35	22.30	23.80	31.15	33.55
36x4½	28.70	32.15	33.60	41.85	41.40
37x5	33.90	39.80	41.80	49.85	52.05



This is the Famous Goodrich Safety Tread standard by which all other non-skids are judged

If you are charged less for any other make than Goodrich, they are taking it out of the tire; if you are charged more, they are taking it out of you.

The B. F. Goodrich Co., Akron, O.

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Hayes Four Wheels—Bigger Yields



YOU CAN have the benefits of better planting and vastly better crops with the Hayes Four-Wheel. Every kernel planted exactly the same depth—every hill in perfect check—an even stand—surer germination and quicker growth—no missing hills, no bare spots in your fields; such conditions will mean more corn for you, better corn, more money.

28 Years the Leader

fraction of an inch. Corn all comes up at the same time, allows earlier cultivation, an earlier harvest, a better quality and bigger quantity.

Hayes Four-Wheels guarantee surer germination and quicker growth. Wheels pack the dirt around the corn to hold the moisture and leave a ridge of loose soil on top. Ridge over corn prevents washouts in hilly fields and gives greater surface for sun's heat.

This planter is guaranteed. It must be all we claim and all you expect. 180,000 users verify that Hayes Four-Wheels regulate depth of planting to the fraction of an inch.

The Hayes Drop never misses a hill. Simple, reliable and most efficient. Fewer parts, less breakage and delays. Has no clutch to miss and give trouble. Never cracks or grinds the seed. Will drop accurately any size or shape kernel. No bare spots in Hayes planted fields. No replanting necessary. Increased yields soon pay for it.

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POTATO Michigan's Standard, Sir Walter Raleigh. Pure and well grown 90 cents bushel.

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Worthy, Alexander, and other varieties. Bred and tested by the Agricultural College. Best of hundreds of varieties tested. Grown in Michigan and adapted to Michigan conditions. Also improved varieties of Barley, Corn, Soy Beans and other crops. Michigan Grown Sweet Clover Seed. Write to
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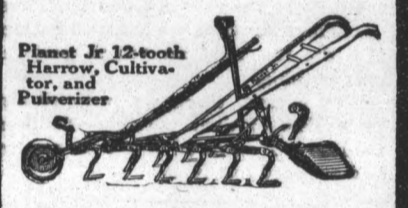
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Maintaining Pressure in the Sprayer.

A MATTER of considerable interest and importance in spraying is the amount of pressure carried with the pump. This is not so great a matter in applying the funnel-shaped sprays as with nozzles that have a greater carrying capacity, but is important with all nozzles. In spraying large apple trees it is necessary to use nozzles that will carry to all parts of the trees. Such nozzles produce coarse sprays unless considerable force is used to break up the stream. And in some instances, too, it is necessary to drive the spray through the trees with considerable force. So that it is important to provide rigs capable of producing considerable pressure.

High Pressure Outfits.
Some concerns putting out spray rigs advertise that their outfits will carry a very high pressure and supply a number of nozzles. While there is no doubt true, yet purchasers are liable to be disappointed in such rigs. Others are frequently disappointed or dissatisfied with their machines because they do not produce so high a pressure as they wish. Now, there are a very few simple principles that may be easily observed in maintaining the pressure at the pump, and by having reference to these the users will find much greater satisfaction in their work.

In the first place it is necessary to have a pump that is built strong enough to carry a high pressure and a power sufficient to produce it. Probably the greater part of the power spray pumps now on the market, and perhaps all of them, are sufficiently strong to carry any pressure that may be required. And a two and a half to three-horse engine should furnish ample power. We have one rig with a horse and a half engine which has been in use a number of years, but it requires too near the limit of its capacity to do really satisfactory work. When the necessary equipment for producing a high degree of pressure is provided it is necessary to restrict the flow of the spray liquid in order to produce it. The relief valve must be screwed down to a point which will not permit of any discharge below the point desired, and then the nozzles must be reduced to a limit of capacity that will allow the pumps to raise the gauge to the point desired. With the relief valve set at too low a point or with too large nozzle capacity no pump will produce a high pressure.

Nozzle Capacity.
And it is important to have something of a knowledge of nozzle capacity. To speak of a pump supplying a certain number of nozzles is as indefinite as to speak of hauling a given number of loads of grain. One may have in mind a one-horse load or a four-horse load, and there is quite a great difference in nozzles. A square described on a two-inch line is four times as large as one described on a one-inch line. In the same way a nozzle with a certain sized opening has four times the capacity of delivery as one with an opening only one-half the diameter, perhaps more than that, as the matter of friction cuts some figure. A nozzle, therefore, with two openings, such as is quite generally used around here, may easily carry eight times as much spray liquid as a nozzle with a single opening of half the diameter. Moreover, there is considerable wear to these nozzles and the openings soon become enlarged so that the delivering capacity is largely increased. To state the number of nozzles that a pump will supply is therefore meaningless.

One Man Does Early Spraying.
Another thing of some importance in efficient spraying is the fact that there is quite a difference in the pressure at the nozzle and that shown by the gauge at the pump. It is our practice during the early or dormant

spraying to put on nozzles enough to take the pump's delivery and do the work with one man. A single man can then cover all of the surface, and it seems useless to employ two men in doing the work that one can do equally well. But in the later sprayings, when the trees are in foliage, we want a man on the ground to spray the inside of the trees. Last spring we used three nozzles on a single line of hose during the first application. When we came to the next we put on a second line of hose, taking one of the nozzles off from the other and putting it onto this. During the first spraying the gauge indicated a pressure of 185, but as soon as one of the nozzles was put onto another line of hose the pressure dropped to 150, although the only difference was the liquid was run through two lines of hose instead of one. And the longer was 30 or more feet long, while the first was only 12. The friction of the liquid passing through the hose and extension rods reduces the pressure very materially by the time it reaches the nozzles, and one would perhaps be surprised at the difference if a gauge were put on next to the nozzle. In this case, by allowing a little freer flow of the liquid, although it was through 30 feet of half-inch hose, the pressure at the pump was reduced 35 pounds.
EDW. HUTCHINS.

THE CURE-ALL AGAIN.

Will you kindly inquire of the readers of the Michigan Farmer if they have heard of, or have used, Tree-vax, a new scale and insect exterminator? I will enclose a circular containing information on the subject.
Macomb Co. F. M.

About once in every fifteen or twenty years, or long enough apart so that the people will have forgotten about the last occurrence, there appears upon the market a cure for most all the troubles the fruit tree is heir to.

The last time this bonanza for fruit growers appeared in our midst it was called the Owens Process. The plan was to bore a hole about an inch in diameter and an inch deep, put in the dope, which consisted chiefly of charcoal, sulphur and soda, plug up the hole and let nature do the rest. The dope might be of value to give to the purchaser, but to put it in the tree is a waste of money, and does the tree neither good nor harm.

The circular enclosed does not state the price of the treatment, but the Owens Process sold for 50 cents per treatment, one treatment being sufficient for a tree. Twenty-five cents was paid at time of treatment, and the balance was to be paid when the treatment proved its value. The agent never came around for the other 25 cents.

It may be noticed that literature of treatments of this kind never contain endorsements from experiment stations or fruit authorities of the state and national institutions. These authorities recognized this method of operation as one of the most common frauds foisted upon the fruit growing public.

The Tree-vax treatment operates upon the same plan as suggested above. Its circular states few facts, but makes many claims and contains one testimonial claiming a cure for pear blight. While the writer has had no experience with the remedy under this name, the records of the past with remedies of this kind make him absolutely sure in advising against the use of this particular treatment.

Our readers are urged to let absolutely alone, regardless of the strong claims made, any remedy which is supposed to cure tree troubles through the sap until such time as it is sanctioned and recommended generally by experiment station authorities. The present indications are that that time will be a long time coming.

METHODS OF GROWING STRAWBERRIES.

Those who have had experience in strawberry culture will admit that the hill culture of strawberries, i. e., growing each plant so that it stands alone and is allowed to set no runner plants, is ideal. The following advantages are very evident. The varieties that produce the largest berries of highest quality, as Marshall, Wm. Belt, Jessie, etc., will not do their best except by the hill culture method. A plantation cannot be maintained profitably for several years except by this method. Wide rows of plants are often unprofitable after two fruitings because they are so weedy it does not pay to clean them out. The varieties adapted to hill culture make a larger tap root that goes to a lower depth of soil for water and plant food and consequently makes a larger growth of fruit and foliage, and also do better during drouths. The strawberries color better and more evenly, and can be picked more rapidly. The berries sell for about one-third more than those that grow in matted rows. When the market is glutted the large berries will be the ones readily sold.

Hill System an Intensive One.

For the hill system, to obtain a full crop, plants should be set in thick rows not more than two feet apart, if the soil is very rich, twenty, or even eighteen inches will do. This requires twice as many plants per acre as the wide row system and also doubles the labor of transplanting. It necessitates more horse cultivation in field culture, more frequent hand-hoeing, as no weeds must be allowed to germinate around the plants to make the system a complete success, and all runners should be cut as soon as they start to

the plants until strong ones are made some time in July, when one or two runners are bedded from each mother plant, in the row so all the plants in the rows stand about one foot apart.

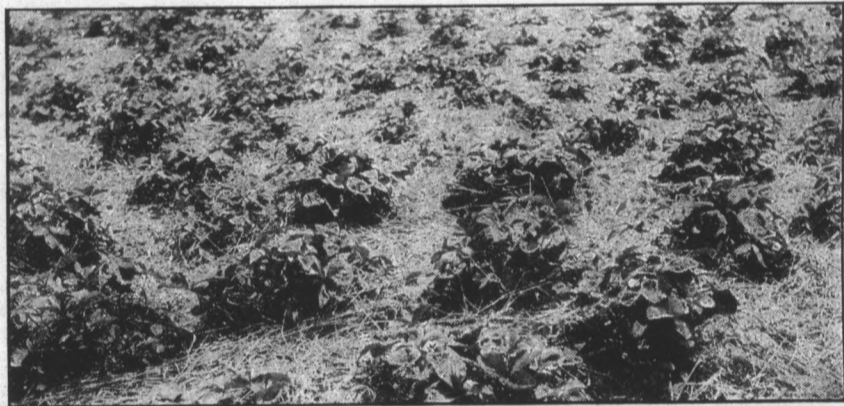
The Advantages of the Matted Row.

While the writer practices only the hill and hedge row system and grows two acres in this way, yet there are some things to say in favor of the so-called matted row system that may appeal to the busy man who wants the most of only fairly good berries at the smallest labor cost. Varieties of the old Crescent type of strawberries, as the Edgar Queen and Senator Dunlap, will thrive under more adverse conditions than berries of the Marshall type. If these are planted in soil that will grow good corn in rows three and one-half feet apart and 18 inches in the rows, the most of the work can be done with horse and cultivator. All the hand work strictly necessary is to take a little pains in spreading out the runners on either side, and as the row of plants is gradually widened to keep down the weeds in it, and thinning the strawberry plants in the fall before mulching for winter.

The varieties that produce good crops by such culture are the sourer hardier kinds. The busy farmer who has plenty of horses, cultivators, and land, who does not wish to cultivate strawberries and cut runners once a week, to make sure of a large supply of the fruit had better use the wide row method. **W. H. JENKINS.**

PLANT TREES FIRMLY.

Few people realize the necessity of planting trees firmly. If the soil is at all loose in texture you can hardly plant them too firmly. Tree roots are



Strawberries Grown by the Hill Culture Method.

grow. White grubs will do more injury to a plantation by the hill system, than with matted rows, and may completely destroy whole rows of plants. When the soil is not well drained there is more danger of heaving than in matted rows. So the system demands good drainage and heavy mulching to prevent freezing and thawing of the ground in early spring.

The Hedge Row Method.

The hedge row system, or single line of plants in the rows with rows two or two and one-half feet apart and the plants one foot or eighteen inches apart in the rows, is much like the strictly hill system as each plant stands alone, with plenty of feeding ground, and room to fully develop. The roots of strawberries do not go far for their food so narrow rows are very practical. If a plant has one foot of pasture, so to speak, on two sides of it, and six inches on the other two, and the ground kept well covered by a dust or straw mulch, the plant has a very good opportunity to do its best work for us. One advantage of the hill and hedge row systems is that during the first year while growing the plants it is easy during dry weather to keep a dust mulch around the plants all the time, and thus enable them to grow well without rainfall. The hedge row system requires about half as many plants for setting as the strictly hill system. The runners are all kept off

usually strong and wiry, and not easily injured by pressure, though they should not be bruised.

Prepare the hole for the tree with plenty of room, and spread the roots well. It is a good idea to have a little mound of soil in the center to spread them over. Cover and work the soil down well among the roots. Tamp it until it is firm and add more. Repeat until the hole is two-thirds full. If the soil is dry you can now fill the hole up with water and let it settle away at its leisure. When it is all gone you can fill the hole up with soil, but do not press it or you will make a brick of the wet soil. Let it stand as it is.

Shrub, roses and all such plants should be planted in the same manner. Evergreens should be handled carefully to prevent the roots drying for a moment and then treated as any other tree in planting, though it is best to give them water, even if the soil is not very dry, as it will cause them to take hold better, settling the soil among their fibrous roots more perfectly than can be done in any other manner. **L. H. COBB.**

"How to Grow Bigger and Better Crops earlier than you have ever had them before, or Money Makers for the Modern Market Grower, Pleasure and Profit for the Private Grower" is the caption of an illustrated booklet mailed upon request by the Ball Mfg. Co., Glenside, Pa., manufacturer of Ball seed and plant forcers and other similar accessories.



Canada is Calling You to her Rich Wheat Lands

She extends to Americans a hearty invitation to settle on her FREE Homestead lands of 160 acres each or secure some of the low priced lands in Manitoba, Saskatchewan and Alberta.

This year wheat is higher but Canadian land just as cheap, so the opportunity is more attractive than ever. Canada wants you to help to feed the world by tilling some of her soil—land similar to that which during many years has averaged 20 to 45 bushels of wheat to the acre. Think what you can make with wheat around \$1 a bushel and land so easy to get. Wonderful yields also of Oats, Barley and Flax. Mixed farming is fully as profitable an industry as grain growing.

The Government this year is asking farmers to put increased acreage into grain. Military service is not compulsory in Canada but there is a great demand for farm labor to replace the many young men who have volunteered for service. The climate is healthful and agreeable, railway facilities excellent, good schools and churches convenient. Write for literature and particulars as to reduced railway rates to Superintendent Immigration, Ottawa, Canada, or to

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Mem Standard Farm Papers Association and Audit Bureau of Circulation.

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DETROIT, MARCH 27, 1915.

CURRENT COMMENT.

A bill just passed by the Legislature and approved by the Governor amends the State Live Stock Sanitary Commission law and adds four new sections thereto relating to the control of hog cholera. Briefly, the amended section provides for the appointment by the board of supervisors of some resident of each county to be known as the "Live stock sanitary agent" for such county. As it will be the duty of this special agent to co-operate with the state live stock sanitary commission, that body is given power to nominate a list of not less than three men for this position in each county, the appointment to be made from this list. This county agent will hold office until the appointment of his successor and is vested with the necessary power to carry out the provisions of the act under the direction of the state live stock sanitary commission. A per diem of not less than \$3.00 per day for time actually spent in the performance of official duties, together with all necessary traveling expenses incurred in connection therewith is prescribed by the law, same to be paid from county funds. By a provision of this section, in any counties having a county agricultural agent this official shall perform the duties of live stock sanitary agent without additional compensation. The law makes it the duty of this agent to notify the state live stock sanitary commission immediately in case of an outbreak of hog cholera in his county. The agent shall also file a duplicate report with the state live stock sanitary commission and the county board of supervisors, giving in detail all matters connected with his work for the preceding year.

New section 29 of the law provides for the regulation of the use of hog cholera serum, making it unlawful to use any such serum except that made by the state experiment station, agricultural college or some serum manufacturing plant licensed by the United States Bureau of Animal Industry. Such serum can be administered by any competent person authorized by the state live stock sanitary commission, but the use of hog cholera virus is prohibited except when used under the direction of the state veterinarian or a regular qualified veterinarian authorized by the state live stock sanitary commission or state veterinarian. The expense of purchasing and using serum or virus is to be borne by the owner of the infected animals.

Section 30 provides that in case of an outbreak of hog cholera in any county, the state live stock sanitary commission, or the county agent may

remove any infected or exposed herd or herds by loading them in a tight bottom rack, conveying them to the nearest railroad station and shipping to some abattoir where inspection is maintained, there to be slaughtered and disposed of as determined by the inspecting authorities. The funds realized from such disposal revert to the owner or owners of the herds and freight charges on such shipments are borne by the state. Further provision prevents the mingling of such exposed animals with other live stock, and prohibits their entrance into any loading yards maintained for shipment of live stock at the loading station.

Section 31 provides that in case such shipment is not deemed expedient, then all infected or exposed hogs shall be subject to the provisions of the act relative to the powers and duties of the state live stock sanitary commission in connection with other infectious diseases of live stock.

Section 32 is perhaps the most important of all, in that it provides for adequate disinfection. This section makes it the duty of owners of infected premises to thoroughly clean all pens and enclosures in which hogs have been kept and place same in proper condition for disinfection by the aforementioned authorities, after which it shall be the duty of the state live stock sanitary commission or the county agent to thoroughly disinfect the premises at state expense.

While this is perhaps not an ideal law, it is in line with modern thought upon this important question of the control and eradication of hog cholera and should enlist the attention, interest and co-operation of the hog owners of Michigan to that end.

The Potato Situation. The trend of the potato market continues to hold interest for the considerable percentage of potato growers who still have stock in hand. A number of these have asked us to comment on the situation and advise with regard to the future disposition of the crop. It is, of course, entirely impossible to make anything like an accurate prediction with regard to the probable future trend of the spring market. The market itself is an index of what the dealers who make a specialty of that line think of the near future as well as the present condition of supply and demand. Present prices are not attractive, and would seem to offer no inducement for the grower who has held to some of his crop until this time to move them now. There is little possibility of the market getting worse. There is a chance that toward the end of the marketing season for old stock it may do much better, but this is a chance and not a certainty. It is possible that those who wait for that time may be disappointed.

But there is one factor in the problem which should be taken into consideration by every farmer at the present time, and that is the selection of the best available seed for this year's planting. If the variety grown last year did not produce well and potatoes of a good type, then it would be the part of wisdom to discard them and secure seed of a better variety at this time when same can be purchased at a low cost. In that event the disposition of the crop, or that portion of it still in hand, will have to be made in the open market in accordance with the judgment of the grower. But if the potatoes still in hand are good stock of a good variety, there would seem to be no reason why as much or more could not be secured for them for seed purposes as the market will afford, even at considerably improved prices, and it would be worth while to solicit this sort of patronage from the farmers of the neighborhood.

Also, in picking out the seed for home planting, it will pay to exercise greater care than in seasons when po-

tatoes are higher in price than is the case at present. Two comparatively new and damaging potato diseases have been found to be very common in Michigan, although not generally recognized by potato growers. One of these is called Fusarium Wilt. In the seed potato this disease is indicated by a dark ring in the meat of the potato, which is very apparent when a thin slice is cut from the stem end. The presence of this disease is sometimes indicated by the tapering shape of the stem end of the potato, which is also a symptom of degeneracy of the variety, consequently in selecting potatoes for planting, this shape should be avoided, and where the potatoes are cut for seed careful watch should be kept for this symptom of what is perhaps the most serious potato trouble to be commonly found in Michigan fields, from the standpoint of decreased yields.

Another quite common and more easily distinguished disease is rhizoctonia. This is also a common fungous disease, which forms many hard, dark specks which are really colonies of germs on the outer surface of the potato. These germs grow with the potato when planted and the disease attacks the new tubers as they set, thus reducing the yield greatly.

Then there is the common potato scab, which should preferably be avoided in the selection of seed even where treated. If potato growers in Michigan generally selected seed stock of the best varieties, and if they are careful in the matter of selection to avoid these diseases, if the seed is treated for scab and proper cultural methods are followed, the low market for the season's crop may be a blessing in disguise.

State Dairy and Organize Co-operative Creameries. Food Commissioner Helme is authority for the statement that creamery promoters are now especially active in Michigan. The method by which it is stated that these operations are being carried on is to form a stock company in some section where there may not be sufficient cows to operate a creamery, often donating stock to influential parties to get the proposition started, and after the stock subscription has been completed, a cheap outfit is bought and turned over to the new company at a figure which leaves a very substantial profit for the promoter. The commissioner states that in the northern part of the lower peninsula a creamery was recently promoted for which the farmers paid \$4,500 but which expert creamerymen claim could be duplicated for less than \$2,000. The same promoters are said to be now operating in the upper peninsula.

A better plan where the farmers of any community desire to promote the growth of the dairy business is to organize a creamery on a co-operative basis. The state stands ready to aid the farmers of any locality to this end through the Dairy and Food Department, which is charged under the law with the duty of fostering the dairy industry. Expert advice as to the advisability of organizing a co-operative creamery in any community can be had from experienced men on the commission force for the asking, as well as upon the quantity and kind of equipment required. It is far better to seek advice from an official source than to accept the statements of a smooth salesman who has a pecuniary interest in the sale of equipment rather than in the ultimate success of the venture.

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HAPPENINGS OF THE WEEK.

Foreign.

The European War.—The positions of the armies in both the eastern and western theaters of war have changed but little during the past week. Following the capture of Neuve Chapelle by the British troops a fortnight ago there have been several attempts to retake the ground lost by the Germans and also to gain further positions by the Allied forces, but neither seems to have met with any degree of success. On the eastern war front the Russians report the capture of Memel, a German seaport on the Baltic Sea in East Prussia. Further advances have been made in this section by the Russians. To the south, however, no changes of importance are noted. In the Carpathian district losses have resulted to both sides but former lines remain intact. In the effort to force the passage of the Dardanelles by the Allied fleets of Great Britain and France several vessels have already been lost. Regarding the condition of some of the ships reports are conflicting. At least six of the larger boats are temporarily out of commission, some having been sunk. On the other hand, a few of the important ports have already been reduced and many of the large guns upon which the Turks are relying for their defense are already badly worn. The Allied forces are adding new ships to take the place of those out of commission, and seem determined to continue the campaign until a passage is forced. Late last week the Russian Black Sea fleet was reported near the entrance of the Bosphorus.

While on several occasions since hostilities began last August, it appeared that Italy was about to enter the great European war, indications at the present time lead to the belief that that country will soon be participating in the conflict. Communications with Austria have been suspended and Germans are leaving her territory. She has called upon Spain to act in her behalf regarding matters concerning Austria, Germany and Turkey. Her army is practically mobilized and it is said that her fleet is already moving under sealed orders.

The Mexican situation is unchanged. So confused have been reports that it is difficult to know the status of affairs in any part of the country. It seems, however, that the inhabitants of Mexico City are in dire need of food and that under present circumstances it will be difficult to provide the necessary provisions. Foreigners are leaving the country as rapidly as they can secure transportation. In Yucatan the conflict is preventing the exportation of sisal hemp, which is used in the United States for the manufacture of binder twine. Fully 90 per cent of the twine used here being made of this material. If these exports continue to be interrupted, there is likely to be a shortage of twine for the coming harvest.

The food factor is playing an important part in the European war. Dieting clubs are being formed in Germany and people are urged to use less meat and more milk, and to discontinue the second breakfast so commonly enjoyed by the German people. In England prices are going down because of confidence that the German submarine blockade will not work. Lord Kitchener has urged restriction in the use of liquor, especially near camps, and fashionable night clubs, which are said to be ruining young officers are being raided.

Arrangement has been made through Stockholm, by Russia and Germany for the exchange of 200,000 war prisoners.

Statistics on the foreign trade of France indicate a revival of trade for that country.

German Zeppelins attacked Paris Sunday morning. Some damage resulted from bombs dropped from the airships.

National.

Without fighting, General Scott, of the United States army has succeeded in capturing the Piute Indians who recently resisted arrest in Utah. The Indians are now on their way to Salt Lake City.

Food and clothing to the value of \$150,000 is being sent to Palestine by American Jews for the relief of the needy of the Holy Land.

The total appropriations made by the sixty-third Congress amount to \$2,231,000,000, which is \$113,000,000 greater than the total of the sixty-second Congress.

The United States will probably raise no further objection to the Anglo-French blockade of Germany. The blockade is to be confined to European waters, including the Mediterranean.

Fire which for a time threatened the entire business district of Champaign, Ill., destroyed property valued at \$500,000.

Mount Lassen of northern California, is again in eruption.

Magazine Section

LITERATURE
POETRY
HISTORY and
INFORMATION

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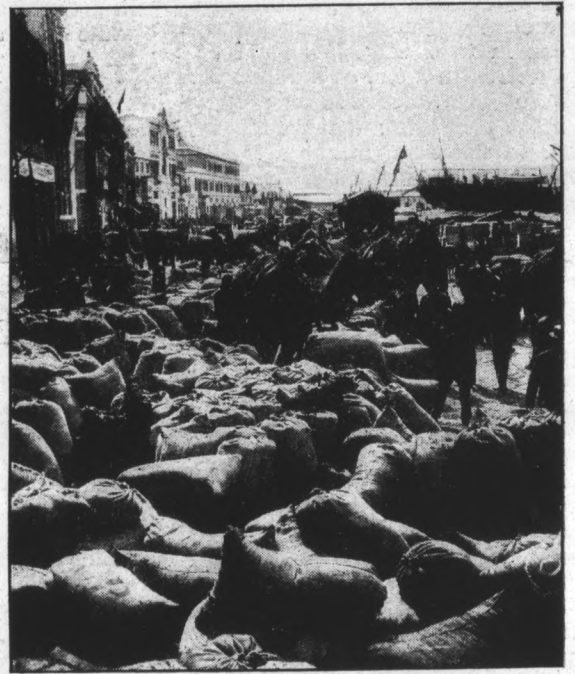
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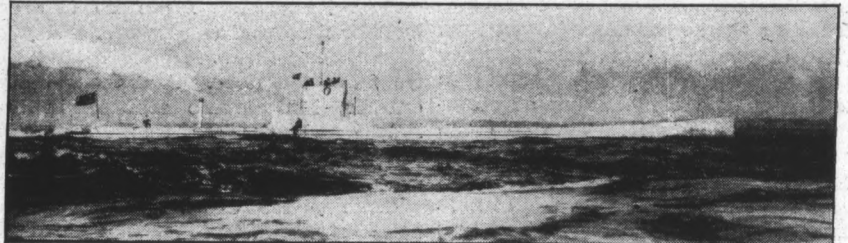
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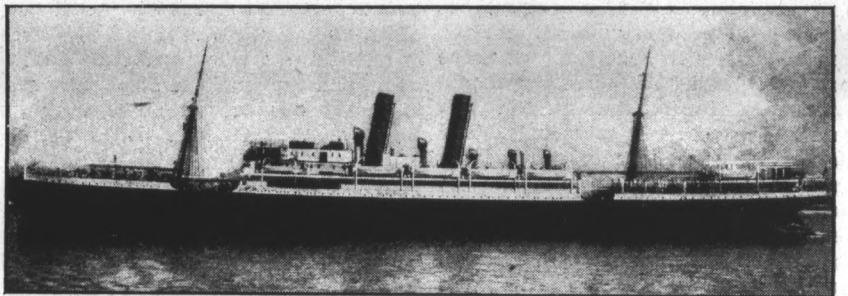
Harbor of Smyrna Bombarded by Allied Fleet.



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Constantinople as Seen from Galata on Opposite Bank of the Bosphorus.



German Submarine U-8 which was Sent to the Bottom on March 4.



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Prinz Eitel Friedrich, German Sea Raider, at Newport News, Va.



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Children of men at Front Being Fed by Organizations of Berlin.



Champion Breadmakers and Corn Growers of West Visit New York City.

A Study of Co-operation in Russia.

By Wm. B. Hatch, Michigan Member of American Commission.

We visited a country Zemstov bank at Volschansk. It occupied three rather small rooms in the basement of a fireproof building. A small safe sufficiently large for keeping the funds securely, a simple set of books and a considerable volume of business seemed unobtrusively in evidence. A general supply station was maintained where all kinds of agricultural needs were carried on a strictly business basis but at a lower price to the farmer than is found where such organization is not found. Sewing machines, for example, were selling for half the price prevailing in America. This co-operative organization had cut the price in two. And it should be remembered that one of the largest American companies has a factory in Russia employing ten thousand people, so the tariff is not a legitimate item in the cost price of its machines in Russia.

The Zemstov organizations do a large educational work. Public education as now being carried out contemplates a better rural school than obtains in the rural districts in many sections of our country. It comprises two rooms and quarters for the teachers. If the district is too sparsely populated to justify such a school, the children of that district are educated at public expense in the nearest district having adequate facilities. This publicly owned telephones every morning and tuition. In the health department of the county you can see a map showing just how many cases of any contagious or infectious disease there are in each subdivision of the county every day—the data coming in over publicly owned telephones every morning. And the Zemstov organization encourages the breeding of better cattle by the purchase and lease of purebred sires where peasants cannot buy.

The state banks are doing another great service to agriculture and the country by the establishing of elevators and warehouses. To these elevators farmers may bring their products, such as rye, wheat, oats, etc., place the same in storage, where it is insured for the producer who receives a written warehouse receipt. On these receipts the state bank will loan up to 60 per cent of the current market value of the products stored. At the time of our visit about forty of these warehouses had been constructed and it was anticipated that within two years 200 would be in active use. The value of this in times of peace is to permit the producer to sell on the best market and not be compelled to turn his season's earnings over to speculators. The nation's balance, moreover, is thereby kept on the right side of the ledger. And in times of war—well, the food problem for the army is a serious question for all the countries except Russia. It can requisition the food of its own people in their own elevators, and the price, however high, goes to the Russian people who produced the food.

Russia is dividing into smaller holdings its large estates and scattering the group-community of old into a system of individual farms owned and occupied by individual farmers. Yet, of course, such a process takes time. We visited a farm in southern Russia comprising 45,000 acres.

Four hundred and fifty cows, 1,200 oxen, a chemical laboratory where are produced the serums for preventing and detecting disease in farm animals; a brick factory with a million a year capacity; a sugar beet factory with an annual output of 100,000 tons; a narrow gauge railroad for carrying fertilizer and supplies from one part of the farm to another; a hospital and a surgeon at \$6,000 a year; a school providing four years' elementary and two years' high school; a club and a theatre, a church and a pastor; 1,500

peasants continually employed, and 7,000 on the pay roll during the busy sugar beet season, briefly touches the high places.

The beet sugar industry is an extensive one in Russia and they were then watching with keen interest to see if sugar went on the free list in America. We had a "blow out" adjoining a large sugar beet field. While the tire was being repaired we interviewed, through an interpreter, some of the women beet growers—for the women do most of this work. Mothers bring their babies and leave them in a crude shelter with older children while they are at work. We learned that these women were getting 17½ cents a day and they boarded themselves. And yet they were the picture

of health and seemed happy. But America must needs take notice of such economies as are involved here, especially when coupled with the wealth-conservation principles represented in co-operative organization. Here is our chief competitor in the world's food supply.

A Russian official speaking of the organization of agricultural co-operative societies, said: "The Russian legislation of recent years is visibly tending to favor their development in every way, especially in the hope that these co-operative societies may become important factors in the export trade in cereals and other agriculture produce."

A nation as an individual becomes prosperous in proportion as it sells more than it buys, and in proportion as it does this it becomes and continues our competitor. Can we afford to tolerate any inferior economic organization of agriculture?

Winston of the Prairie

BY HAROLD BINDLOSS.

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The girl could not analyze her feelings, but through them all a vague relief was uppermost, for whatever he had been it was evident the man had done one wrong only, and daringly, and that was a good deal easier to forgive than several incidents in Courthorne's past would have been. Then she was conscious that Miss Barrington's eyes were upon her.

"Aunt," she said, with a little tremor in her voice, "it is almost bewildering. Still, one seemed to feel that what that man has done could never have been the work of Lance Courthorne."

Miss Barrington made no answer, but her face was very grave, and just then those nearest it drew back a little from the door. A trooper stood outside, his carbine glinting in the light, and another was silhouetted against the sky, sitting motionless in his saddle further back on the prairie. "The police are still here," said somebody.

One by one they passed out under the trooper's gaze, but there was the usual delay in harnessing and saddling, and the first vehicle had scarcely rolled away, when again the beat of hoofs and the jingle of steel came portentously out of the silence. Maud Barrington shivered a little as she heard it.

In the meanwhile, the few who remained had seated themselves about Colonel Barrington. When there was quietness again, he glanced at Winston, who still sat at the foot of the table.

"Have you anything more to tell us?" he asked. "These gentlemen are here to advise me if necessary."

"Yes," said Winston quietly. "I shall probably leave Silverdale before morning and have now to hand you a statement of my agreement with Courthorne and the result of my farming here, drawn up by a Winnipeg accountant. Here is also a document in which I have taken the liberty of making you and Dane my assigns. You will, as authorized by it, pay to Courthorne the sum due to him, and with your consent, which you have power to withhold, I purpose taking one thousand dollars only of the balance that remains to me. I have it here now, and in the meanwhile surrender it to you. Of the rest, you will make whatever use that appears desirable for the general benefit of Silverdale. Courthorne has absolutely no claim upon it."

He laid a wallet on the table, and Dane glanced at Colonel Barrington, who nodded when he returned it unopened.

"We will pass it without counting.

You accept the charge, sir?" he said. "Yes," said Barrington. "It seems it is forced on me. Well, we will glance through the statement."

For at least ten minutes nobody spoke, and then Dane said: "There are prairie farmers who would consider what he is leaving behind him a competence."

"If this agreement, which was apparently verbal, is confirmed by Courthorne, the entire sum rightfully belongs to the man he made his tenant," said Barrington, and Macdonald smiled gravely as he glanced at Winston.

"I think we can accept the statement that it was made, without question, sir," he said.

Winston shook his head. "I claim one thousand dollars as the fee of my services, and they should be worth that much, but I will take no more."

"Are we not progressing a little too rapidly, sir?" said Dane. "It seems to me we have yet to decide whether it is necessary that the man who has done so much for us should leave Silverdale."

Winston smiled a trifle grimly. "I think," he said, "that question will very shortly be answered for you."

Macdonald held his hand up, and a rapid thud of hoofs became audible through the silence.

"Troopers! They are coming here," he said.

"Yes," said Winston. "I fancy they will relieve you from any further difficulty."

Dane strode to one of the windows, and glanced at Colonel Barrington as he pulled back the catch. Winston, however, shook his head, and a little flush crept into Dane's bronzed face.

"Sorry. Of course you are right," he said. "It will be better that they should acquit you."

No one moved for a few more minutes, and then with a trooper behind him Sergeant Stimson came in, and laid his hand on Winston's shoulder.

"I have a warrant for your apprehension, Farmer Winston," he said. "You probably know the charge against you?"

"Yes," said Winston. "I hope to refute it. I will come with you."

He went out, and Barrington stared at the men about him. "I did not catch the name before. That was the man who shot the police trooper in Alberta?"

"No, sir," said Dane, very quietly. "Nothing would induce me to believe it of him!"

Barrington looked at him in bewilderment. "But he must have done—unless," he said, and ended with a little gasp. "Good Lord! There was the faint resemblance, and they chang-

ed horses—it is horrible."

Dane's eyes were very compassionate as he laid his hand gently on his leader's shoulder.

"Sir," he said, "you have our sympathy, and I am sorry that to offer it is all we can do. Now, I think we have stayed too long already."

They went out, and left Colonel Barrington sitting alone with a gray face at the head of the table.

It was a minute or two later when Winston swung himself into the saddle at the door of the Grange. All the vehicles had not left as yet, and there was a little murmur of sympathy when the troopers closed in about him. Still, before they rode away one of the men wheeled his horse aside, and Winston saw Maud Barrington standing bare-headed by his stirrup. The moonlight showed that her face was impassive but curiously pale.

"We could not let you go without a word, and you will come back to us with your innocence made clear," she said.

Her voice had a little ring in it that carried far, and her companions heard her. What Winston said they could not hear, and he did not remember it, but he swung his hat off, and those who saw the girl at his stirrup recognized with confusion that she alone proclaimed her faith, while they had stood aside from him. Then the Sergeant raised his hand and the troopers rode forward with their prisoner.

In the meanwhile Courthorne was pressing south for the American frontier, and daylight was just creeping across the prairie when the pursuers, who had found his trail and the ranch he obtained a fresh horse at, had sight of him. There were three of them, riding wearily, grimed with dust, when a lonely mounted figure showed of a moment on the crest of a rise. In another minute it dipped into a hollow, and Corporal Payne smiled grimly.

"I think we have him now. The creek can't be far away, and he's west of the bridge," he said. "While we try to head him off you'll follow behind him, Hilton."

One trooper sent the spurs in, and, while the others swung off, rode straight on. Courthorne was at least a mile from them, but they were nearer the bridge, and Payne surmised that his jaded horse would fail him if he essayed to ford the creek and climb the farther side of the deep ravine it flowed through. They saw nothing of him when they swept across the rise, for here and there a grove of willows stretched out across the prairie from the sinuous band of trees in front of them. These marked the river hollow, and Payne, knowing that the chase might be ended in a few more minutes, did not spare the spur. He also remembered, as he tightened his grip on the bridle, the white face of Trooper Shannon flecked with the drifting snow.

The bluff that rose steadily higher came back to them, willow and straggling birch flashed by, and at last Payne drew bridle where a rutted trail wound down between the trees to the bridge in the hollow. A swift glance showed him that a mounted man could scarcely make his way between them, and he smiled dryly as he signed to his companion.

"Back your horse clear of the trail," he said, and there was a rattle as he flung his carbine across the saddle. "With Hilton behind him, he'll ride straight into our hands."

He wheeled his horse in among the birches, and then sat still, with fingers that quivered a little on the carbine-stock, until a faint drumming rose from the prairie.

"He's coming!" said the trooper. "Hilton's hanging on to him."

Payne made no answer, and the sound that rang more loudly every moment through the grayness of the early daylight was not pleasant to hear. Man's vitality is near its low-

(Continued on page 392).

Land O' Nod Stories.

By HOWARD T. KNAPP.

Billy Suffers for His Carelessness.

BILLY BE BO BY BUM wanted a new pair of hockey skates, but there was only about twenty cents in his bank, and of course that was not nearly enough. Now, Billy had set his heart on those skates, and he made up his mind he would earn the money to buy them, or know the reason why. But although he put on his thinking cap and thought and thought until his head ached, he could not figure out any way of earning the money.

Then one day while he was playing out in the barn he found an old rat trap, and that gave him a bright idea, he would become a trapper and catch Sly old Sharpnose the Mink, for he remembered Tinker Teedle Tee, the merry little elf, had told him the furry coat of Mr. Mink was worth at least five dollars, and five dollars, you know, is more than enough to buy the finest pair of skates a fellow could wish.

So, bright and early the next morning Billy Be Bo By Bum started out for the White Forest, the trap over his shoulder, and in his pocket the head of a chicken for bait. For nearly a mile he trudged through the big woods, scanning the snow for tracks of the Little People, but nary a track did he see. And then, as he reached the bank of the Dried-up Creek, he spied the double row of neat little footmarks that Tinker Teedle Tee had told him were made by Sharpnose the Mink. This discovery caused Billy to forget his long tramp and renewed his hope of getting money to buy the skates.

Billy followed the tracks until he came to a hollow log, and here he decided to set his trap. So he placed the chicken head inside and put the trap in the opening, right where Mr. Mink would have to step in it to reach the bait. But the trap was in plain sight, and Billy knew Sharpnose would never come near the trap if he so much as suspected there was a trap anywhere around. So Billy brushed some snow over the trap to hide it, but he forgot that a trap is a mighty dangerous thing, for he touched the trigger and snap, the cruel jaws caught him by the hand and held him fast.

Well, sir, you can just imagine how that hurt, and although Billy was a brave little fellow, he could not keep the tears from his eyes. And the worst of it was that, although he tugged and pulled with all his might, he could not get his hand free, the jaws held him fast with the grip of a bulldog. Billy tried to press down the spring, but it was too stiff for him to bend with one hand.

"I'll have to go home with the trap

on my hand and get Father to take it off," he said, but he could not even do that, for he had fastened the chain to the log with a big staple. Then he was frightened, for he knew he would have to stay in the woods until someone found him. So you could hardly blame him for sitting down in the snow and crying as though his heart would break.

"Goodness me, Billy Boy, what is the matter," shouted a cheerly little voice, and there on Billy's knee stood Tinker Teedle Tee.

"Oh, Tinker, I'm caught in a trap I set to catch Sharpnose," sobbed Billy. "I've tried and tried, but I can't get loose, and now I will have to stay out here in the cold all night and maybe Father will never find me."

"Oh, it isn't as bad as all that," replied Tinker. "I guess I can figure out a way to set you free," and the jolly old rascal nodded his head so hard the weeny copper kettle that served him for a hat bounced up and down at a great rate.

"Have you tried to bend down the spring?" asked Tinker after he had looked the trap all over.

"It's too stiff for me to bend with one hand," replied Billy.

"Well, then, have you tried to press it down with your foot, by standing on it?"

"I never thought of that," replied Billy, and without wasting any more time he followed Tinker's advice. As soon as he stepped on the spring, the jaws flew open and he was free.

"Oh, Tinker, you don't know how that hurt," said Billy, feeling of his fingers to make sure no bones were broken.

"Did it really hurt so much or were you just frightened?"

"Of course, I was frightened, but it hurt worse than a toothache."

"Then how do you suppose Sharpnose would have felt if those cruel jaws had gripped his leg instead of your hand?" asked the elf.

"Why I—I guess it would have hurt him, too," faltered Billy.

"It sure would," declared Tinker. "And then, when he found he could not get free for all his struggling and sank down exhausted in the snow, just imagine how his little heart would thump with fear and despair, for Mr. Mink knows that when he gets caught in a trap there is no hope for him. No Father or big Brother will come out to find him. He must stay there in the snow until he dies of cold and hunger, or the trapper comes and kills him with a club."

"I never thought of that," replied Billy. "And Tinker, I guess I won't set any more traps, now that I know how it hurts."



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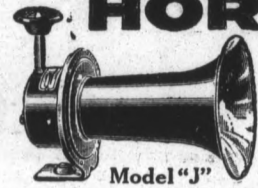
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WINSTON OF THE PRAIRIE.
(Continued from page 390).
est about that hour, and the troopers had ridden furiously the long night through, while one of them, who knew Lance Courthorne, surmised that there was grim work before him. Still, though he shivered as a little chilly wind shook the birch twigs, he set his lips, and once more remembered the comrade who had ridden far and kept many a lonely vigil with him.
Then a mounted man appeared in the space between the trees. His horse was jaded, and he rode loosely, swaying once or twice in his saddle, but he came straight on, and there was a jingle and rattle as the troopers swung out into the trail. The man saw them, for he glanced over his shoulder, as if at the rider who appeared behind, and then sent the spurs in again.
"Pull him up," cried Corporal Payne, and his voice was a little strained, "Stop right where you are before we fire on you!"
The man must have seen the carbines for he raised himself a trifle, and Payne saw his face under the flapping hat. It was drawn and gray, but there was no sign of yielding or consternation in the half-closed eyes. Then he lurched in his saddle as from exhaustion or weariness, and straightened himself again with both hands on the bridle. Payne saw his heels move and the spurs drip red, and slid his left hand further along the carbine stock. The trail was steep and narrow. A horseman could scarcely turn in it, and the stranger was coming on at a gallop.
"He will have it," said the trooper hoarsely. "If he rides one of us down he may get away."
"We have got to stop him," said Corporal Payne.
Once more the swaying man straightened himself, flung his head back, and with a little breathless laugh drove his horse furiously at Payne. He was very close now, and his face showed livid under the smearing dust, but his lips were drawn up in a little bitter smile as he rode straight upon the leveled carbines. Payne, at least, understood it, and the absence of flung-up hand or cry. Courthorne's inborn instincts were strong to the end.
There was a hoarse shout from the trooper, and no answer, and a carbine flashed. Then Courthorne loosed the bridle, reeled sideways from the saddle, rolled half round with one foot in the stirrup and his head upon the ground, and was left behind, while the riderless horse and pursuer swept past the two men, avoiding them by a hairsbreadth, sat motionless a moment in the thin drifting smoke.
Then Corporal Payne swung himself down, and while the trooper followed, stooped over the man who lay, a limp huddled object, in the trail. He blinked up at them out of eyes that were almost closed.
"I think you have done for me," he said.
Payne glanced at his comrade. "Push on to the settlement," he said. "They've a doctor there. Bring him and Harland the magistrate out."
The trooper seemed glad to mount and ride away, and Payne once more bent over the wounded man.
"Very sorry," he said. "Still, you see, you left me no other means of stopping you. Now, is there anything I can do for you?"
A little wry smile crept into Courthorne's face. "Don't worry," he said. "I had no wish to wait for the jury, and you can't get an injury that's inside me."
He said nothing more, and it seemed a very long while to Corporal Payne, and Trooper Hilton who rejoined him, before a wagon with two men in it beside the trooper came jolting up the trail. They got out, and one of them who was busy with Cour-

thorne for some minutes nodded to Payne.
"Any time in the next twelve hours. He may last that long," he said. "Nobody's going to worry him now, but I'll see if I can revive him a little when we get him to Adamson's. It can't be more than a league away."
They lifted Courthorne, who appeared insensible, into the wagon, and Payne signed to Trooper Hilton. "Take my horse, and tell Colonel Barrington. Let him understand there's no time to lose. Then you can bring Stimson."
The tired lad hoisted himself into his saddle, and groaned a little as he rode away, but he did his errand, and late that night Barrington and Dane drove up to a lonely homestead. A man led them into a room where a limp figure was lying on a bed.
"Been kind of sleeping most of the day, but the doctor has given him something that has awakened him," he said.
Barrington returned Payne's greeting, and sat down with Dane close beside him, while, when the wounded man raised his head, the doctor spoke softly to the magistrate from the settlement a league or two away.
"I fancy he can talk to you, but you had better be quick if you wish to ask him anything," he said.
Courthorne seemed to have heard him, for he smiled a little as he glanced at Barrington. "I'm afraid it will hurt you to hear what I have to tell this gentleman," he said. "Now I want you to listen carefully, and every word put down. Doctor, a little more brandy."
Barrington apparently would have spoken, but, while the doctor held a glass to the bloodless lips, the magistrate, who took up a strip of paper, signed to him.
"We'll have it in due form. Give him that book, doctor," he said. "Now, repeat after me, and then we'll take your testimony."
It was done, and a flicker of irony showed in Courthorne's half-closed eyes.
"You feel more sure of me after that?" he said, in a voice that was very faint and strained. "Still, you see, I could gain nothing by deviating from the truth now. Well, I shot Trooper Shannon. You'll have the date in the warrant. Don't know if it will seem strange to you, but I forget it. I borrowed farmer Winston's horse and rifle and without his knowledge, though I had paid him a trifle to impersonate me and draw the troopers off the whisky-runners. That was Winston's only complicity. The troopers, who fancied they were chasing him, followed me until my horse which I was riding went through the ice, but Winston was in Montana at the time, and did not know that I was alive until a very little while ago. Now, you can straighten that up and read it out to me."
The magistrate's pen scratched noisily in the stillness of the room, but, before he had finished, Sergeant Stimson, hot and dusty, came in. Then he raised his hand, and for a while his voice rose and fell monotonously until Courthorne nodded.
"That's all right," he said. "I'll sign."
The doctor raised him a trifle, and moistened his lips with brandy as he gave him the pen. It scratched for a moment or two, and then fell from his relaxing fingers, while the man who took the paper wrote across the foot of it, and then would have handed it to Colonel Barrington, but that Dane quietly laid his hand upon it.
"No," he said. "If you want another witness take me."
Barrington thanked him with a gesture, and Courthorne, looking round saw Stimson.
"You have been very patient, Sergeant, and it's rough on you that the one man you can lay your hands upon is slipping away from you," he said. "You'll see by my deposition that Win-



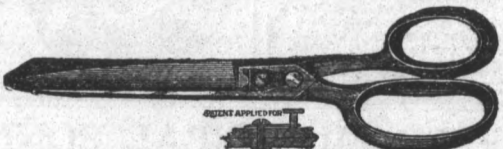
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ston thought me as dead as the rest of you did."

Stimson nodded to the magistrate. "I heard what was read, and it is confirmed by the facts I have picked up," he said.

Then Courthorne turned to Barrington. "I sympathize with you, sir," he said. "That must be horribly mortifying, but, you see, Winston once stopped my horse backing over a bridge into a gully when just to hold his hand would have rid him of me. You will not grudge me the one good turn I have probably done any man when I shall assuredly not have the chance of doing another."

Barrington winced a little, for he recognized the irony in the failing voice, but he rose and moved towards the bed.

"Lance," he said, a trifle hoarsely, "it is not that which makes what has happened horrible to me, but I am only glad that you have righted this man. Your father had many claims on me, and things might have gone differently if, when you came out to Canada, I had done my duty by his son."

Courthorne smiled a little, but without bitterness. "It would have made no difference, sir, and, after all, I led the life that suited me. By and by you will be grateful to me. I sent you a man who will bring prosperity to Silverdale."

Then he turned to Stimson, and his voice sank almost beyond hearing as he said, "Sergeant, remember, Winston fancied I was dead."

He moved his head a trifle, and the doctor stooping over him signed to the rest, who went out except Barrington.

It was some hours later, and very cold, when Barrington came softly into the room where Dane lay half-asleep in a big chair. The latter glanced at him with a question in his eyes, and the Colonel nodded very gravely.

"Yes," he said. "He has slipped out of the troopers' hands and beyond our reproaches—but I think the last thing he did will count for a little."

CHAPTER XXVI.
Winston Rides Away.

THE first snow was driving across the prairie before a bitter wind when Maud Barrington stood by a window of the Grange looking out into the night. The double casements rattled, the curtains behind her moved with the icy draughts, until, growing weary of watching the white flakes whirl past, she drew them to and walked slowly towards a mirror. Then a faint tinge of pink crept into her cheek, and a softness that became her into her eyes. They, however, grew critical as she smoothed back a tress of lustrous hair a trifle from her forehead, straightened the laces at neck and wrist, and shook into more flowing lines the long black dress. Maud Barrington was not unduly vain, but it was some time before she seemed contented, and one would have surmised that she desired to appear her best that night.

The result was beyond cavil in its artistic simplicity, for the girl, knowing the significance that trifles have at times, had laid aside every adornment that might hint at wealth, and the somber draperies alone emphasized the polished whiteness of her face and neck. Still, and she did not know whether she was pleased or otherwise at this, the mirror had shown the stamp which revealed itself even in passive pose and poise of head. It was her birthright, and would not be disguised.

Then she drew a low chair towards the stove, and once more the faint color crept into her face as she took up a note. It was laconic, and requested permission to call at the Grange, but Maud Barrington was not deceived, and recognized the consideration each word had cost the man who wrote it. Afterwards she glanced at

her watch, raised it with a little gesture of impatience to make sure it had not stopped, and sat still, listening to the moaning of the wind, until the door opened and Miss Barrington came in. She glanced at her niece, who felt that her eyes noticed each detail of her somewhat unusual dress, but said nothing until the younger woman turned to her.

"They would scarcely come tonight, aunt," she said.

Miss Barrington, listening a moment, heard the wind that whirled the snow about the lonely building, but smiled incredulously.

"I fancy you are wrong, and I wish my brother were here," she said. "We could not refuse Mr. Winston permission to call, but whatever passes between us will have more than its individual significance. Anything we tacitly promise, the others will agree to, and I feel the responsibility of deciding for Silverdale."

Miss Barrington went out; but her niece, who understood her smile and that she had received a warning, sat still with a strained expression in her eyes. The prosperity of Silverdale had been dear to her, but she knew she must let something that was dearer still slip away from her, or, since they must come from her, trample on her pride as she made the first advances. It seemed a very long while before there was a knocking at the outer door, and she rose with a little quiver when light steps came up the stairway.

In the meanwhile two men stood beside the stove in the hall until an English maid returned to the them.

"Colonel Barrington is away, but Miss Barrington and Miss Maud are at home," she said. "Will you go forward into the morning room when you have taken off your furs?"

"Did you know Barrington was not here?" asked Winston, when the maid moved away.

Dane appeared embarrassed. "The fact is, I did."

"Then," said Winston dryly, "I am a little astonished you did not think fit to tell me."

Dane's face flushed, but he laid his hand on his comrade's arm. "No," he said, "I didn't. Now, listen to me for the last time, Winston. I've not been blind, you see, and, as I told you, your comrades have decided that they wish you to stay. Could you sink your confounded pride, and take what is offered you?"

Winston shook his grasp off, and there was weariness in his face. "You need not go through it all again. I made my decision a long while ago." (To be continued).

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European Co-operative Agriculture As Seen by the American Commission

IN studying Russia it is more appropriate to compare it with all of our states than with one of them, even though this one, our Michigan, is the second largest east of the Mississippi. Russia, including Poland, Caucasasia and Finland, contains 2,355,619 square miles of territory and 142,585,400 people, while the United States of North America has 3,622,933 square miles of territory and with her outlying possessions (1910), 93,402,161 people. The conspicuous contrast between the two countries lies in the per cent of illiteracy; in the United States it is 7.7 per cent while the number of illiterate persons per 1,000 inhabitants in Russia at the last available census was, males, 707, females, 869; average for both sexes 789. While rapid strides along educational lines has since been made the disparagement between the two

By WM. B. HATCH, Michigan Member of the Commission.

co-operative credit societies are divided into two groups, those styled Loan and Savings Banks and those styled Credit Associations, the latter largely of the Raiffeisen type. In 1910 there were 4,000 Loan and Savings Banks and 3,200 Mutual Credit Associations. The average number of members in the credit associations was between 450 and 500 and the total number of members about 2,000,000.

Co-operative Societies for Production, Purchase and Sale.

These societies have generally substituted for the purchase of shares at the time of organization the payment of small annual payments fixed each year by the general meeting. Although the majority of the associations in terms of their rules, propose to "arrange for the purchase of everything

elsewhere, they would start a little neighborhood store which, with their other activities, successfully absorbed the wealth of the peasants as fast as it was created. The government of Russia soon saw that this was not well for the peasants, consequently not well for the country at large. Siberia being a great meadow country and so naturally well adapted to stock raising and dairying, the government sent a dairy specialist into this section to show them the advantage of co-operative organization. He took the initiative in organizing co-operative societies of peasant producers. This started a struggle with the speculators. But a few years sufficed for the complete triumph of co-operative organization. The organization of the Siberian Co-operative Butter factories is very simple. The members undertake by mutual contract: (1) to deliver to the co-operative society all the milk they produce; and (2) joint liability for the engagements of the society. The contract (or charter) is officially registered. At the time of the formation of the co-operative society, each of the members makes a payment to the society in proportion to the number of cows he owns. Those who have not the money available, deliver milk for an account corresponding to the payment they should have made in money. The chief management of the business of the co-operative society rests with the general meeting, in which meeting each member has only one vote, however many cows he may possess. The general meeting appoints a representative entrusted with the business management. The representative is responsible for the cash, and for the accounts of the society; he also arranges the purchase of the technical plant, the engagement of the staff, the sale of the butter, and the settlement of accounts with each member at the close of the financial year, in conformity with the decisions of the general meeting. Many co-operative societies have inserted in their contract with their manager a provision that he shall receive an increase or reduction in his pay according to the quality of butter he makes—first qual-

place. Each member also pays into a common fund to pay the salary and expenses of the expert, approximately fifty cents a year and the General Management of Agriculture is so well satisfied with the results of these associations that it is granting as an experiment a subsidy to each association of \$200 for their further encouragement.

For the collective purchase of farm requisites and for the defense of common interests many of the co-operative societies are further co-operating.

I went with the sub-section into southern Russia where lies the richest and oldest settled lands. The soil is unusually dark and equally so right over the top of the hills. Our investigations were chiefly in the sections centered by the cities of Kharkoff and Kiev.

The Kharffok Agricultural Society, founded in 1880, was interesting. It is divided into 34 principal departments. The Agricultural Bureau, one of the departments, a sort of clearing house or wholesale society for local co-operative purchasing societies, handled during 1912 about one million dollars worth of seeds, implements and fertilizers. Other departments are live stock, horticulture, agricultural science, plant breeding, refrigeration, alcohol production, experimentation in potatoes, technical chemistry, agricultural implements, for supplying farmers with household needs, railroad tariff bureau, publications, agricultural co-operation.

This association maintains an agricultural bureau in the United States, with offices at Minneapolis. It arranges for the purchase of seeds and sample machinery, gathers information from the experiment stations and translates into Russian such as is of interest at home. There are now in Russia 20,000 agricultural societies, about 10,000 of which are co-operative banks and 10,000 interested in distribution—purchasing and selling such as farmers need or produce.

Both the Schulze-Delitzsch and Raiffeisen forms of banks are in active operation. There are also a system of what are known as Zemstov banks. These correspond in some particulars to what are known in the Uni-



Russia is not Troubled with the "Race Suicide" Question.

countries is very marked. But in comparing Russian agricultural accomplishments with ours should we not, in justice to ourselves, ask "if Russia, with all this handicap has accomplished what she has have we done anything like what we can and ought to do?"

It is of interest to note that the reform in agricultural methods followed the peasants' revolt and in Russia 771 out of every thousand are peasants. The query for other countries might well be, "is it wise to wait until there is an agrarian revolution before the great fundamental industry is properly promoted?"

The increase in the expenses of the Russian Ministry of Agriculture has been more in the last ten years than in the sixty years preceding. There is an agricultural specialist residing in each of the 1,100 divisions into which the empire is divided. These specialists come wholly from Russian schools and colleges. The policy of the government is to start agricultural activities and then transfer them to the local governments. Inspectors are sent out to show individuals how to farm and the main factor in the improvement of agriculture is the experiment work. The expenditure of the government in this line in 1912 was \$3,000,000. There are nearly four thousand agricultural societies in Russia and they have grown largely in the past six years. Most of these are small selling organizations and they are the centers of the educational work. Health, education, good roads, etc., are being fostered by the government through these societies.

At first the mass of agricultural population was more or less opposed to the co-operative movement. Co-operative credit started first as early as 1866, in a co-operative loan and savings association. These have grown largely in number and influence. The general management of the service of popular credit institutions is entrusted to an office dependent on the state bank and bearing the title of General Administration of Small Credit. The

which may be required in agriculture," and for the sale of "every kind of agricultural produce," in practice their activity is limited to operations of a certain class. The great Esthonian Co-operative Society, formed in 1897 at Reval, is almost exclusively concerned with the providing of fertilizers, machines and agricultural implements, dairy plants, iron and steel goods, and building material. The Federation of the Siberian Butter-making Societies devotes itself to the exportation of butter, while the Pomiestchik (landed property) Association at St. Petersburg was founded for the sole purpose of selling in the capital and other towns the produce of the butter making establishments and dairies in the Baltic provinces.

A co-operative association at Warsaw concerns itself only with agricultural improvements, both on its own members' land and for third parties. The study of co-operative agriculture in far away Siberia is especially interesting. It is interesting because of its remoteness from markets. It is interesting because it reflects something of the virility of this form of organization when put to severe tests. It reflects possibilities in effective agricultural promotion in distant and sparsely settled sections, for it would be difficult to find a section more so than Siberia. Russia has set a pace in settlement work for the whole world in the case of Siberia. She transplanted, on a basis said to be similar to our homestead provisions, between 1906 and 1909, 2,841,602 peasants. The entire population of Michigan, according to the last census, is 31,429 less than this. After having persuaded this large peasant population to settle on the great expanse of agricultural land in Siberia, the government found that speculating middlemen promptly arrived and proceeded to do as they do elsewhere—buy the farmer's raw material at a price dictated by neither producer nor consumer, manufacture it themselves and get as much out of the consumer as possible. At the same time, there as



Showing Type of Sires Raised in Russia and How they Are Put to Work.

ity commanding a certain increase per pound and the same amount per pound reduction for third class.

The Federation of Siberian Butter Makers was early realized to standardize the product and extend the market. To meet the expenses of this central organization a sum representing approximately one-tenth of a cent a pound is paid by the member society.

Other associations were similar to our cow-testing organizations. These send an expert about to show the dairyman how to better care and feed for better results. The owner of the farm provides the expert with board and lodging and takes him to the next

ted States as state banks. The state government establishes a central state bank. This state bank establishes branches in each of the counties, and each of the county banks establishes local societies among the people in the smaller communities. The county Zemstov acts as intermediary between the local and state banks. The local Zemstov as well as county Zemstov and state banks deal not only in credit, but also maintain stores, warehouses, supply depots, etc. They also receive deposits from all classes of people in the community which constitutes a large part of their working capital.

(To be continued).



Woman and Her Needs

At Home and Elsewhere



Michigan Marriage Laws.

AT what age can a girl marry in the state of Michigan?" was a query recently addressed to the home department. It led to a study of Michigan laws on marriage, said laws being many and wordy.

Any girl who has attained the age of 18 may marry without the consent of her guardians, while any girl at 16 may marry with the written consent of either parent. There are only a few limitations as to whom she may marry, and these are mostly cases of consanguinity. Of course, no idiot nor insane person may marry, but marriage between blacks and whites is permitted.

Of course, no woman could marry her own father or son. But the law goes farther and says that she shall not marry grandfather, grandson, her mother's husband, grandmother's husband, daughter's husband, grand-daughter's husband, husband's father, husband's grandfather, husband's son, husband's grandson, brother or sister's son, father or mother's brother, nor first cousin.

Before the ceremony can be performed in Michigan one of the contracting parties must go to the county clerk of the county in which one of them lives and procure a license. In most counties a list of those procuring licenses is published at least weekly in the county paper, but the names may be omitted so far as the law is concerned. There has been talk of legislation compelling the publishing of the names of those procuring licenses at least three weeks before the marriage, but so far no such law has been passed. The license must be delivered to the minister or justice of the peace performing the ceremony, who must enter the time and place of the marriage, and return to the county clerk within ten days.

The marriage ceremony may be either civil or religious, that is, it may be performed either by a justice of the peace or a minister. But if a minister is selected he must be regularly ordained in his denomination. There is no special form of ceremony required by law, but two witnesses besides the officiating clergyman or justice of the peace are necessary. So little does the formal wording of the ceremony matter that a simple agreement between a man and woman to take each other as husband and wife, followed by the marriage relation, is binding without ceremony. But if in this contract it is agreed that each shall retain absolute control of his and her own property the law will not consider it a valid marriage.

Marriages made outside the state are considered valid in Michigan if they were valid where made, even though they do not conform to the laws of this state. If the marriage was illegal in the state or country where performed, of course it would be illegal here.

Girls are sometimes deceived by unscrupulous men who procure persons not qualified to perform the ceremony. In case the justice or minister performing the ceremony was not qualified the marriage is considered binding if one or both parties fully believed it to be legal. Enticing a girl under 16 to marry is a state's prison offense, as is detaining a woman of any

age with the intent of forcing or compelling her to marry any person.

In case of a marriage where one of the contracting parties is under age the marriage may be annulled by mutual consent or the election of the one under age. It can not be annulled, however, by the one of legal age.

Marriages made on Sunday are le-

The Spring Suits and Coats.

THE woman who plans to make a suit do for two seasons and bought a new one last spring, will have a hard time if she attempts to alter her old suit to even faintly imitate the 1915 models. For there is absolutely no faint, family resemblance between the suit that was de-rigueur last spring and the new styles.

If the coats weren't entirely different the skirts would spoil everything, for how is one going to cut over a 1914 skirt into the present flare style, measuring two and a half or three yards around bottom? Even if that could be done the sleeves would spoil everything, for the proper thing this spring is a simple set-in sleeve like the sleeve of a man's coat. The kimona, or raglan, sleeve so long in vogue, is one of the surest signs that your coat is at least a year old.

Most of the suit coats are in short lengths, just covering the hips. A few are shown which come only to the waist line, but these do not meet with popular favor, though some modistes predict they will grow in popularity later in the season. A few coats are shorter in the front than in the back, some shorter in back than in front, and still others are long on the sides and short both front and back. Belted coats are much worn, but there are many without the belt, hanging in straight lengths from shoulder to hip. Detachable vests, which may be worn or taken out as desired, come with some of the dressiest suits. The best collar is the simple mannish one, notched and with revers, but the high collar, to be worn either open or closed, is seen on many models.

Medium width skirts prevail in the medium priced suits, extreme widths being shown only in high priced suits for the woman who can afford a half-dozen suits a season. The woman who has to make one suit do for a year or two is taking no chances on freak styles which may last only a month or so. Circular skirts are good, but instead of being cut after the old patterns they are being cut in four or five gores, which gives the correct flare at the bottom, and prevents sagging. Yokes are much used and pleated skirts are in great demand, as well as skirts with the fullness at the sides and plain fronts and backs.

The separate coat for utility wear is a simple tailored, three-quarter length affair, with regulation armholes of ample size to permit the garment to be slipped off easily. A few raglan sleeves are shown, but the best sleeve this season is the set-in sleeve. The collars of these coats are legion, ranging from the notched collar to hood and cape collars. There are many military effects, to be worn either open or closed.

Flare cuffs are shown in some cas-

gal, though many other civil contracts are not.

Illegitimate children are made legitimate by the later marriage of the parents. This may also be accomplished by the acknowledgement of the father in writing, the acknowledgement to be executed and acknowledged the same as deeds of real estate and recorded with the judge of probate in the county where the father resides.

DEBORAH.

es, while in others the sleeves are cut with a flare. The flare cuff, by the way, is good on suit coats, too, and buttons and button holes make a favorite sleeve finish.

The coat may be a loose-belted affair, or a semi-fitted one, according to the taste of the wearer. Both are good. The belt in some cases is placed high, in others low, and occasionally there are half-belts, high in the back and low in front, or perhaps high in front and low in back.

Serges, gabardines, poplins, shepherd checks, coverts and homespun are good, both in suits and cloaks. The silk suits come in poplins, tafetas and Tussahs.

DEBORAH.

CLOTHING THE SCHOOL GIRL.

BY E. J. C.

No one is ever so humiliated or self-conscious as the school girl who knows that her clothes are shabby and out of style. And her wardrobe requires as much thought as the outfit of her elders. She must be suitably and neatly dressed if she is to be respected, or have respect for herself. There are a few mothers who can get anything they choose ready-made from the leading dry goods stores, but there are many others who must consider the cost of every garment. They learn to economize in buying new clothes, and to clean and make over old ones, yet they not only keep their children comfortable but as nicely dressed as those of their wealthy neighbors.

Have you noticed how many dresses for girls of all ages are made of two and sometimes three materials? This style affords a splendid opportunity for using remnants which may be bought so cheaply at this time of the year. One of the prettiest combinations seen this season was a dress for a girl of fourteen, made in jumper style. The jumper was brown broadcloth, cut low in the neck and long in the armholes, the waist long and loose with a three-piece skirt attached, the seam being covered with a shaped belt three inches wide. The neck, armholes and belt were finished with a pretty design done in brown braid—the work of the girl done at odd times. The waist was cut from a remnant of brown satin and made with long sleeves and high neck.

The new yoke skirts may be used to advantage in making over the old style plaited or circular ones. Cut a three-piece yoke of the same material as the skirt or of silk, satin or striped goods, making it straight or pointed at the lower edge. Buttons used for trimming give a pretty finish to these skirts.

If you have a tunic skirt that you

wish to make over, use the narrow drop skirt for the yoke, attach the tunic to it, and the work is accomplished. We are glad to welcome the full skirts again, and as they are made quite short they are comfortable for walking. The sleeveless velvet overblouse is another boon to the economical woman. It sometimes matches the dress in color, but is usually black and may be worn with any dress.

Before beginning the sewing, have all your materials ready. Silk is easily cleaned by washing in gasoline and should be hung out of doors until the gasoline has evaporated. A woolen dress that is to be taken apart, may be washed through two soapy waters, rinsed, and when about half dry ironed on the wrong side. If you wish to change the color, that is easily accomplished by dyeing it with diamond dye. Choose any of the rich dark shades and the result will be all that could be desired. If it is to be combined with a striped or plaid material, the plain goods should be made the same color as the one which predominates in the trimming. Select your pattern and lay each piece on the goods to see how it may be cut to the best advantage. Careful fitting is necessary, but the patterns are so nearly perfect that this is not a difficult task.

The lack of pressing is often the only thing that distinguishes the amateur from the professional. Press every seam as you go and if a seam is to be stitched on the right side, press it before the stitching is done.

Have all the little helps that are so essential to good and rapid work, such as seam binding, strips of hooks and eyes ready to sew in the waist or placket, patent fasteners, web belting, featherbone, collar stays, etc. An adjustable dress form is not a cheap article, but one that is needed in every sewing-room, since it saves time and makes the work easier.

RECIPES.

Rice Cream.

Rice cream makes an excellent dessert and it is a splendid way to use up cold cooked rice left over. Place in the upper part of a double boiler one pint of milk and a pinch of salt, bring to the boiling point, add one and one-half teacupfuls of cooked rice, boil about five minutes and then stir in the yolk of an egg that has been beaten to a cream with half a cupful of granulated sugar. Cook until well-thickened, remove from the fire, fold in the stiffly whipped white of the egg and a teaspoonful of lemon extract. Set aside to cool. Serve sometimes with plain and sometimes with whipped cream.—M. A. P.

Baked Peaches.

Cut peeled peaches in halves and arrange in overlapping rows in a baking dish. Sprinkle liberally with sugar, cover and set in a cool place for two hours. Bake slowly, until peaches are transparent. Chill, and serve with whipped cream.—Mrs. J. J. O'C.

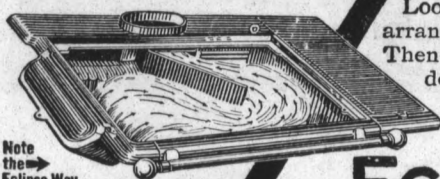
Fruit Pudding.

One-half cupful of molasses, one-fourth cupful of butter, one-half cupful sweet milk, one-half teaspoonful of soda, one cupful of chopped raisins and a little cloves, allspice and ground cinnamon. Stir the ingredients together and steam for two hours.—L. M.

Royal Grape Juice.

Take the juice of one orange and

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four lemons and mix them together. Add one cup of sugar, then one pint of grape juice and a quart of ice water. Stir well and pour into glasses. Beat the whites of two eggs, add two tablespoons of sugar and place a spoonful on each glass of juice. Put a small tip of red jelly in the center of each bit of white.

MICHIGAN'S HAPPY BABIES.

No. 13.

Household Editor:—After reading some of the articles on "Michigan's Happy Babies," I wonder if you could advise me what to do for my three-months' old son. Since birth he has been troubled with indigestion. The stools are full of white curds and mucous and are often of a coppery green color. He is a breast baby and sometimes vomits a little after nursing. I nurse him every two hours and as little as possible during the night. I give him orange juice in the afternoon and castor oil about twice a week. Until the last week there have been five or six passages of the bowels daily, but now there are about two or three. He is cross and cries frequently as if in pain. I give him as much warm, boiled water as he will take—Young Mother.

P. S.—He does not gain in flesh as he should, which, I suppose, is due to the undigested food. Would three-hour feedings be of any help?

There is a popular misconception that every mother who has sufficient milk should nurse her baby, and that human milk, no matter how poor, is better for the baby than cow's milk, no matter how good. This is hardly the truth, however. Every doctor and nurse has learned that many babies are sacrificed because the mother insists on nursing her baby when the milk is clearly injurious.

The stool of the nursing infant is an orange yellow in color and free from curds and mucous if the food is suitable. Continued curds, and mucous and a green or mixed color are sufficient indication that the mother's milk is injuring the child and should be stopped as soon as possible, unless by correcting her own diet and way of living the milk may be bettered.

There are several causes which might lead to this condition of the mother's milk. One, and a frequent cause, is the fact that she is continually taking laxatives or other medicines. In this case she should stop the laxatives and try by proper exercise and a correct diet to overcome the constipation. Plenty of vegetables, brown bread, figs, prunes and oatmeal in the diet, with two or three pints of hot water drunk daily, should help.

Again, the mother may be eating too heavily of meat, milk and eggs, thus making the milk of a bad quality for the child. Or she may be overworked, nervous, worried, or perhaps downright ill and feverish. If it is a case of overwork and she can not get help, she should wean the child at once, or rather as soon as a satisfactory food can be found. If she does get relief from the work and worry and still the stools are not right, a satisfactory food must be obtained at once.

The stool of the child fed on injurious human milk is not always like the one described above. In some cases it is yellowish or brown in color and watery in character, while in others it is of a pale yellow color, filled with mucous. These cases indicate improper milk as clearly as the stool filled with curds and of a green color. If, in addition the bowels are loose, moving three and four times a day a change should be made quickly.

Milk, as we have seen, is composed of water, fat, protein and sugar. The fat is represented by the cream and the protein by skim-milk. As fat, or cream, is laxative the new food should be skim-milk instead of a preparation of cream and skim-milk. If the infant is less than two months old give not more than three ounces daily, diluting the milk with about five times as much boiled water as milk and adding just enough sugar to make slightly sweet. At two months old the child

could probably take four to six ounces daily, and at three months, six to eight ounces.

Prepare the entire amount and give either as four separate feedings instead of nursing, or a tablespoonful at a time immediately before each nursing. With the three months old infant it is better to give as a separate feeding.

Watch the effect of this additional food on the stool, and if it becomes of the proper character, more skim-milk may be added and an equal amount of the water omitted from the formula. Gradually increase amount of food given daily until nursing is omitted entirely.

In babies more than three months old it is often advisable to add a starch to the skim-milk and water preparation. In case there has been a marked looseness of the bowels a baked starch, instead of a malted one, should be used.

DEBORAH.

TWO TASTY SUPPER DISHES.

BY ELLA E. ROCKWOOD.

Slice a couple of onions and fry without browning, in little butter or meat drippings. Add a sufficient quantity of canned or fresh tomatoes to make the required amount. Cook for ten minutes then drop into the mixture hamburger steak or sausage meat made into small balls. Cook another ten minutes, season with salt and cayenne and serve.

Canned tuna, a product of the Pacific, is to be had at the grocers the same as canned salmon, and furnishes a pleasing change for the table. It is useful in a variety of ways identical with salmon, in salads, scallops, loaves and so on. Here is a chowder which uses tuna as a base, excellent for dinner or for supper on a cold day.

Slice two large onions, two potatoes and boil in plenty of water until soft. Now rub through a colander, chop or mash fine and return to the water in which they were cooked. Open a small sized can of tuna, costing from 15 to 20 cents, depending on where purchased, and add it to the vegetables. Fill the dish with rich milk, to make the required amount, season with salt and pepper and serve very hot with crisp cakes. A bit of garlic adds a delicious and appetizing flavor to this dish.

Speaking of garlic in meat stews, steaks, sauces and gravies, it adds a delicious flavor, and also to vegetable and meat soups. In a roast of lamb it is indispensable in adding most appetizingly and also removes entirely that taste so unpleasantly suggestive of wool which many people find objectionable. Of course, it should be used with discretion. The merest trifle will be sufficient.

Under the name of kitchen bouquet a preparation is sold containing a number of vegetable flavorings very useful in cooking. This comes in a liquid form. A nickel's worth of bay leaves will furnish seasoning highly delectable in sauces, gravies, stews, also with tomatoes and similar dishes.

SHORT CUTS TO HOUSEKEEPING.

All cutglass toilet articles with silver tops should be cleaned a piece at a time to prevent chipping. Put them into a basin of hot water in which has been dropped a few drops of ammonia or a pinch of washing soda. Scrub with a soft brush and dry quickly. Table cutglass may be kept bright and shining by scouring with whiting wet with warm water, which, after having been allowed to remain a little while, is polished off with chamois and a small brush to get the powder from the crevices. This leaves the glass shining like diamonds.

If in a hurry to get a meal pour boiling water over potatoes. Let set on stove about five minutes. Drain and again cover with boiling water. Several minutes can be saved in this way.—Mrs. R. H. S.

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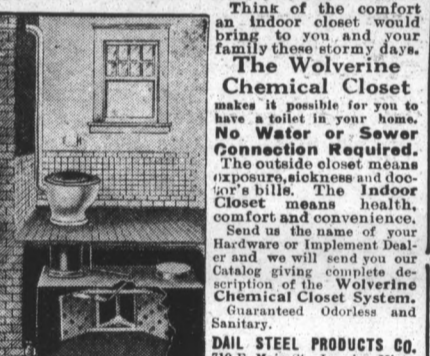
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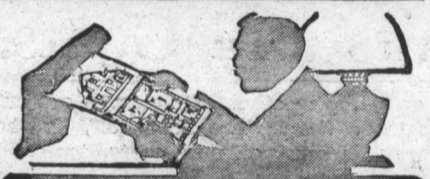
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Pere Marquette Railroad Company

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To All Farmers of Michigan:

A MEMBER of the Legislature asked us recently "why don't you tell the farmers of the State your troubles and what you are trying to do? I don't believe they fully understand that you are fighting their battle as well as your own in this passenger fare matter." We replied that we had been spending all of our time for weeks in preparing and presenting the case to the Legislature, so that every question which members might ask would be promptly answered by sworn statements taken from our books which are kept under the direct supervision of the Interstate Commerce Commission; that we had figured that if this information were furnished in a clear and conclusive form, members of the Legislature would in turn transmit it to their constituents, including the farmers, so that the whole state would understand our desperate situation.

It is, of course, clear that the main lines of a railroad operated between large cities have more business, and, therefore, earn more per mile of road than the branch lines; that the branch lines are, therefore, more unprofitable; that when unprofitable operation demands curtailment of service, branch lines must necessarily be the first to suffer. This being true, the question arises—what portions of the state and who of our people will feel this curtailment or loss of service on our branch lines the most? A glance at the map of Michigan and of its lines of road, surrounded on three sides by water, shows very plainly that the larger part of the state in area, its industries and its people, are absolutely and vitally dependent on branch lines. They run in all directions—connect one small community with another and give these small communities outlets for their business. It is

safe to say that over 80% of shipments carried by rail from and to farming communities and small villages in Michigan move, at least, a part of their way over branch lines.

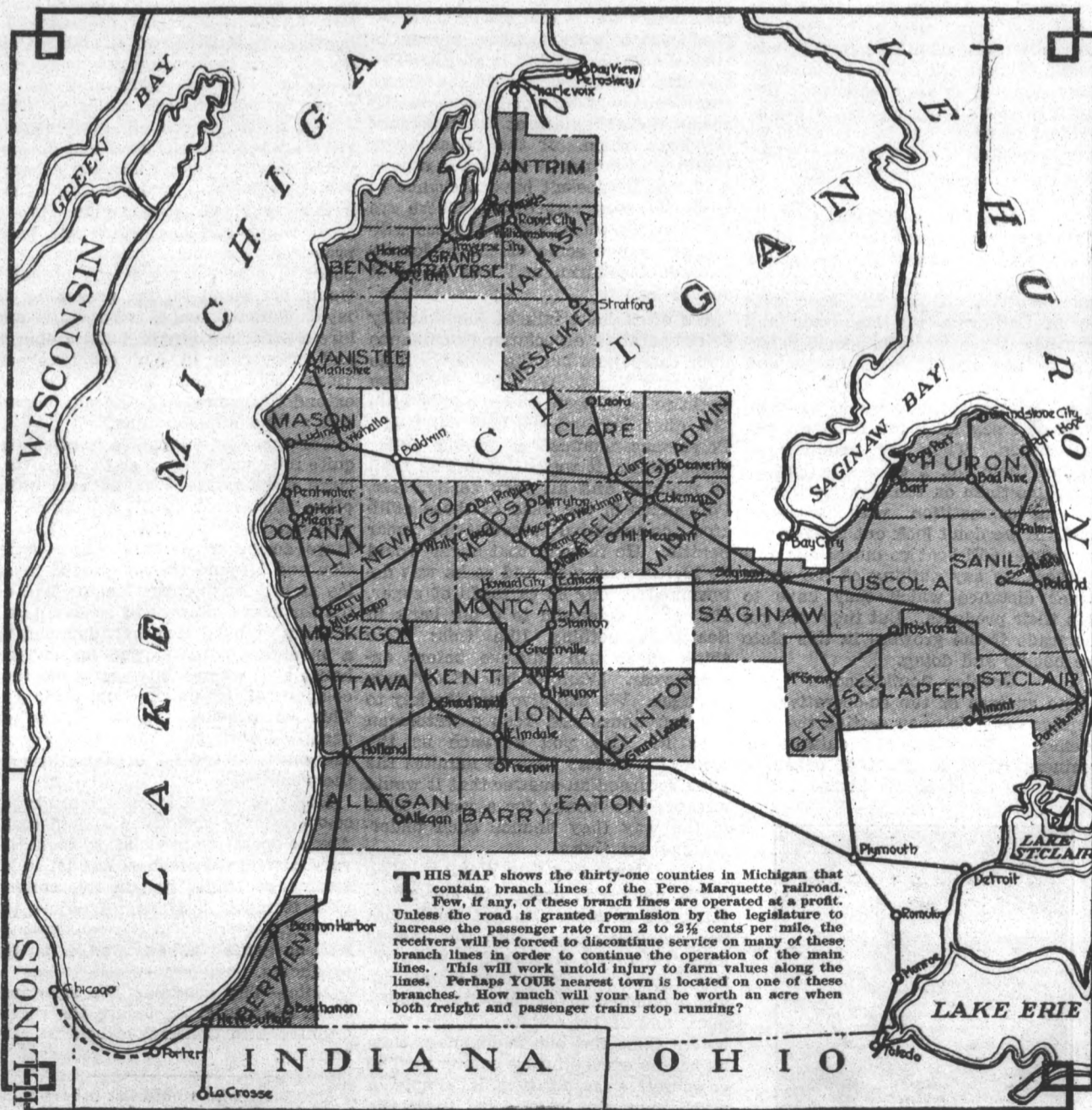
There is not the slightest doubt in the world that if passenger rates are not increased to a point where they will at least cover the cost of furnishing the service, some of the branch lines of the Pere Marquette will have to be torn up. Three-fourths of our branch lines do not even pay the cost of running the trains, to say nothing of taxes and like expenses. The system as a whole has had to borrow money for the last four years to pay its taxes, because it could not earn it, and this sort of thing cannot go on any longer. Something is going to happen and happen right away unless relief is granted at once, and that thing is foreclosure. Foreclosure means dismemberment, either partial or complete, and dismemberment means disaster, not only to the road, but to the people of Michigan generally, and the farmers of Michigan in particular. It simply means that they are going to be without service with no way to get their supplies in, or their produce out, until some other way can be devised to handle the business. Then when they do get it, it is going to cost them more than it does now, because no way can be figured out whereby they can get service locally at anywhere near present rates. The better way for all concerned is to allow the road to earn enough to keep things the way they are.

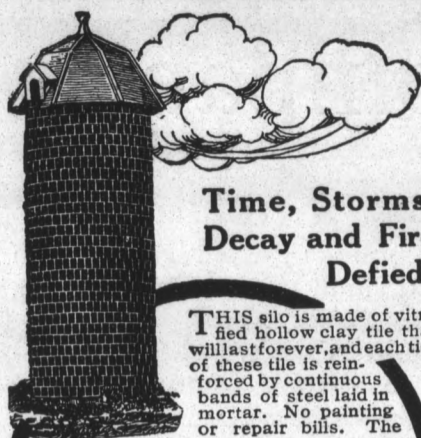
The farmers will be the first to suffer from loss of service. The present application for an increase of one-half cent per mile in passenger fares is more in their interest than in the interest of the cities on the main lines. The cities need the branch line service, but they can get along without it. The farmers cannot afford to lose it. It is not a question of securing revenue to pay interest on stocks or bonds, but simply a question of getting money enough to operate the trains and pay the taxes.

Many farmers of the state have realized the situation and are doing all they can to help us. We want you all to know about it, so that you can cooperate with us in saving to them the present service.

As officers of the United States Court we are calling this matter to your attention with an earnest request that you assist us. You can help by writing at once to your members of the Legislature and tell them that as a farmer and one of their constituents you want them to vote for a bill which will give us relief immediately. Such a letter will be a good investment. Perhaps your nearest town is located on one of these branches. How much will land in your vicinity be worth an acre if the tracks are pulled out and service discontinued? Please write today. Our interests are mutual. Let us work together.

PAUL H. KING,
DUDLEY E. WATERS,
Receivers.





**Time, Storms,
Decay and Fire
Defied!**

THIS silo is made of vitrified hollow clay tile that will last forever, and each tier of these tiles is reinforced by continuous bands of steel laid in mortar. No painting or repair bills. The

Natco Imperishable Silo

"The Silo That Lasts for Generations"

is weatherproof, decayproof, verminproof and fireproof. The vitrified tile walls are impervious to either air or moisture and their dead air compartments prevent freezing. Don't take our word for these claims—write to our nearest branch for a list of Natco owners in your State—ask what they have to say. Also write for our catalog.

National Fire Proofing Company
Organized 1889 Pittsburgh, Pa.

Syracuse, N. Y. Philadelphia, Pa.
Huntington, Ind. Bloomington, Ill.
Madison, Wis. Lansing, Mich.

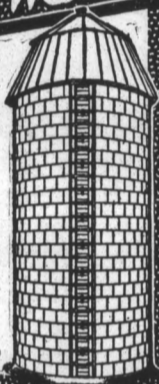
Build Stronger Walls

Our ship-lap block lets you brace the wall against tile-joints set solid—permanent—less mortar exposed to feed inside—a better looking wall outside

LANSING Vitrified Tile Silo

defies age—fire—storms—winter frost and summer heat. First cost is only cost. Reinforced with twisted steel—continuous doorway—easily climbed ladder. Write for catalog and low price offer on our superior "ship-lap" block.

J. M. PRESTON COMPANY
Dept. 309 Lansing, Mich.
Also get offer on Olmstead Silage Cutters and Bidwell Thrashers



ZYRO Metal Silos

are made of pure-galvanized-iron, valued for its rust resistance. They are durable, easy to erect and absolutely air-tight. Experience has proven that they

Preserve Silage Perfectly

ZYRO Silos are fire, storm and trouble-proof, with many unique patented features. They are practical, lasting and ornamental. All superior "ZYRO" points are fully explained in our illustrated catalog. Let us send you your FREE copy. Please write today.



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BOX 20 CANTON, OHIO



REASONS why the ROSS SILO is the BEST

We use Guaranteed Long Leaf Yellow Pine that will last longer than any other wood, except cypress. The highest possible grade of Oregon Fir is used.

The Ross Silo has features that are exclusive, and absolutely necessary to make a good silo.

FULLY GUARANTEED

to be as represented. Our 63 years of manufacturing experience is valuable to you. FREE catalog explains all. Write for it today. Agents Wanted.

The E. W. Ross Co., Box 14 Springfield, O.

Bigger better book for Silo owners

If you are thinking of buying an ensilage cutter, write for this new book—"Making Silage Pay Better." Full of dollar-saving, dollar-making ideas. Tells all about the Blizzard Ensilage Cutter—the original "blower" cutter. Simple and safe—a work eater—small engine runs it—unlimited elevating capacity—lasts for years. Write today for the book.

THE JOS. DICK MFG. CO.
Box 24 Canton, Ohio

Blizzard Ensilage Cutters

The Guernsey Silo
Glazed Tile-Steel Reinforced

New Book-Face or smooth glaze. Proof against wind, sun, frost, fire and time. No repainting, painting nor adjusting. Scientifically correct. Absolutely guaranteed. Everlasting. Write for

FREE GUERNSEY BOOK

Profusely illustrated containing valuable information on practical silo building. Agents wanted.

Guernsey Clay Co., 908 Fletcher Bldg Indianapolis, Ind.

Just Say—Saw your ad in the Michigan Farmer—when writing advertisers.

Farm Commerce.

Helping the Farmer to Sell Products.

By CHAS. E. BASSETT.

THE office of Markets was established only 18 months ago and as yet the work has not been fully organized. According to the law, the work of the Bureau of Markets is to investigate the various phases of marketing and disseminate such useful information as they may find. The Bureau of Markets essentially deals with marketing organizations and co-operative associations. There is not sufficient force to deal with the problems of individuals as there would be no end to the work if we did.

The Bureau of Markets must deal largely with the larger groups of men. It is not the purpose to actually do the work for the growers but to make suggestions which will help the growers to apply business principles to the profession of farming. At present there is a lack of business ability and successful marketing depends largely upon the application of pure business principles to the marketing of farm products.

Studying Successful Organizations.

It is my particular business to make surveys of co-operative organizations and on the information gathered we will try to base the work of the future. These surveys give an index to the most successful methods to pursue in this work and after we have determined the most satisfactory ways of handling products, facts will be given the public. In America there are some 8,500 co-operative associations. Some of them are failures, while others are successful, and from the latter it is hoped that plans may be evolved for the furtherance of others just as successful. The work of co-operative organizations is a very important one and it involves the problems of the individual farmer. But in our work we must consider those problems which affect large groups rather than individuals.

Michigan is Behind.

Michigan has been way behind in this work of co-operative marketing organizations and now she must get under motion. If you had been with me in California the last year and seen how these western people calculate to use the Panama Canal and compete with Michigan apples in the New York market, you would not wonder that I say Michigan must get under motion. They are planning on putting their No. 2 apples in barrels and place them on the New York market in competition with Michigan fruit. If we don't look out those western people will beat us out at our own business, to say nothing of the much larger distance which they have to ship their products. But they will get the trade if the growers in this state are not up and doing.

Develop Confidence.

The success of the co-operative enterprise depends upon getting the confidence of the trade. It should be the business of a co-operative organization to so build up its business that

benefits accrue to both consumers and producers. Trade is built on confidence and if consumers buy the products of the association and find that they are not packed properly there is little future for that association. The success of the business depends upon standardizing the products, and this gets the confidence of the trade. I know of many fruit buyers who would rather buy their oranges of the California Fruit Exchange because they know that the products put out by this organization are all standard, the fruit is packed in a standard package and is sure to reach the market in good condition. On the other hand, there are many consumers who would rather buy of an association for they may rest assured that as long as the firm calculates to do a future business they will insist upon it that the product is put up right and is of good quality.

Financing the Marketing of Products.

Farmers usually lack the ability to finance their own undertakings. This is a great drawback, for if the farmer could finance his own undertakings, he would not have to "dump" his produce on the market when the supply is already too large. It is to be hoped that farming will be so developed that the individuals can do their own financing. Speculators come in because the farmers indirectly invites them to. Farmers want money to pay help and other bills and instead of putting their beans or potatoes on the market when the market wants them, they take the products to market when money is needed and the market is glutted. The speculator simply bets with the farmer that beans will be worth more in the spring than they are at the time that he buys them. If the farmer gets the bet, he thinks he has made a good deal, but he doesn't have a chance to think this way very often. There are some places where the banks are willing to finance some of the undertakings of the farm, and this is as it should be.

We often hear talk of the inability of co-operative associations to finance their campaigns but the banks will do this many times. Why, bless you, you ought to have been with me in Seattle the other day and see how quick Mr. Polyhemus financed a million dollar proposition. It was done in less than 18 minutes and all very easily. Mr. Polyhemus is the head of those affiliated co-operative associations near Seattle. He thought that sugar would be higher next year and so he was determined to buy 48 carloads of sugar. He sent a telegram to a big bank in Seattle something like this: "We think sugar will advance before another year. Want to buy 48 carloads of sugar. We will give you the key to the warehouse and keep a watchman over it. Can you advance us the money?" In less than 18 minutes the bank returned an answer that it would advance the money for a year. That is the way they finance such undertakings out there.

Must Pay Our Way.

We must not expect to get something for nothing. Do not think that you are doing away with the middleman when you organized a co-operative enterprise. You have simply added a middleman—a collective middleman, and if he cannot do the work better than the old middleman, then he has no excuse for an existence. The co-operative association is simply a middleman who is expected to do the work better than the commercial middleman who handled the work former-

MICHIGAN'S GREAT FOOD CROP.

BY DORA H. STOCKMAN.

(Music, the Chorus of Tipperary).

Beans for breakfast and beans for dinner,
Beans for lunch and supper, too
Beans for picnics, and beans for battle
Food for everything you do
Oh, we envy not Alaska,
California's sunny stand
For our beans are better than a gold mine
In old Michigan.

From Detroit's great Auto city to the Straits of Mackinac
We can line our automobiles, nose to rear, a solid track,
Down the scenic western pike line, a thousand miles of gasolines.
We might circle Michigan with autos Bought with one crop of beans.

A pound of beans will do a day's work
It will win a game of ball,
We can serve it in soup or salad
Boston Baked the best of all
Six million bushels of power and muscle
Beans in bags or soldered can
Health and wealth in Michigan we're growing
For every man.

With our beans, the powerful navy,
We'll defend old U. S. A.
Furnish good brawn for the toiler,
Muscle for our boys to play,
High brow food for proud old Boston
Beans for starving Belgian spare
Michigan is slated with a future
For we know beans right there.
(For fifth verse repeat first verse).

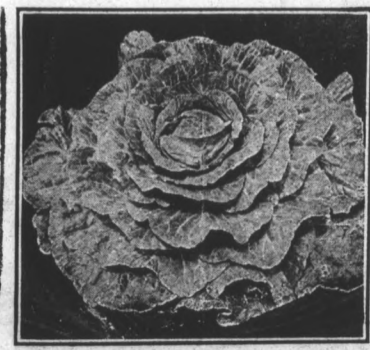
ly. Do not think that you can hire a middleman for nothing. We farmers are quite prone to want to get something for nothing. We like the benefits to be derived but we do not want to pay the price. It seems funny that we have had such hard work to co-operate in the matter of selling when we co-operate in nearly everything else. The school is a co-operative scheme for educating our children. I am able, in a degree, to give instruction to my children but it would not be wise nor efficient for me to do this, although I do try to guide the instruction, but instead of doing it all myself, I go in with my neighbors and co-operatively we equip and run a school to educate our children. The school is one of the greatest co-operative agencies in the land and no one would think of saying that our schools are not efficient. In the matter of religious services, co-operation is a great thing, and one which has been practiced for many years past. I could preach, but my family probably would not stand for my preaching, so my neighbors and I co-operate and hire a preacher, buy or build a church and co-operate in our religious services. Now, I don't see why we can't extend this same spirit to our buying and selling organizations.

There is one thing that is often not quite fully understood, and that is that large co-operative organizations quite often start from small beginnings. I was out in Idaho where they have a large co-operative marketing association and I found that it started in an ice plant. At first the locality had no ice for summer use, and so five or six farmers clubbed together, dammed up a mountain stream, put up an ice-house and, when winter came on, they co-operated in putting up their ice. This led to something more being undertaken until now they have one of the most successful organizations in the country.

However, there is one thing which co-operative associations should avoid. Any co-operative association should be very careful that it does not act in restraint of trade, and in this connection, it must have as its object the lowering of prices to the consumer as well as getting a better price for the producers.

Note.—The above is the substance of an address given before the recent Country Life Conference held at East Lansing.

The man who would lift others must be uplifted himself, and he who would command others must learn to obey.—Charles K. Ober.



Well-grown Plants Command the Best Prices.

What tire success do you have?

THE miles you get is all important! With other standard make tires the anticipated life is but 3500 miles. Ajax Tires alone are guaranteed in writing for 5000 miles. Why not have and enjoy for yourself this extra mileage, this 43% more service? Why not save from \$4 to \$20 a tire, according to the size you use? Decide now to equip with Ajax Tires.

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5000 MILES

"While others are claiming Quality we are guaranteeing it."

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1796 Broadway, New York City
Factories: Trenton, N. J.

Sweeping The Field

FRIENDS, here is the New Gal- loway Sanitary Cream Separator! Its clean skimming, its perfect mechanical design, its smooth oval, sanitary surfaces and years of built-in satisfactory service are winning us customers by the thousands. It is made so good in our factory that I will send it anywhere in the U. S. without an expert to set it up, to any inexperienced user for a 90-day test against any make or kind that sells for even twice as much and let you be the judge. It's the most modern, the most sanitary, the most scientific, the cleanest skimmer, the most beautiful in design of any cream separator on the market today and I have seen them all. Get my new 1915 price-reducing, sliding-scale proposition before you buy a cream separator of any make or kind at any price. Just drop me a postal today. Address **WM. GALLOWAY COMPANY** Box 183, Waterloo, Ia. Shipper from Chicago, Waterloo, Kansas City, Council Bluffs or Minneapolis. All parts interchangeable.



THE HOOSIER Silo EXTENSION-ROOF

Roof Open and Filled with Ensilage. Roof Closed (Section of Roof and Silo removed). The Hoosier Roof will make your silo 100% efficient. No space lost by your ensilage settling. It is the kind of silo roof you have been looking for. Write nearest office for catalog and learn why Hoosier Customers say that the "Hoosier Roof ought to be on your silo." SHEET METAL SPECIALTY COMPANY, 537 Brokers Bldg., Goshen, Ind., Kansas City, Mo.

The Guarantee Lime and Fertilizer Spreader

The Spreader that Spreads Evenly under all conditions. Write for our low prices and Catalogue B. The Guarantee Spreader has shifting clutch, that can be thrown in and out of gear. Regulations can be made from seat. Accurate acre mark, indicator, screen and lid. Equipped with all accessories. We pay Freight. Dept. B, 50, Guarantee Mfg. Co., Baltimore, Md.

Pump, Grind, Saw Double Geared Steel, bronze bearings OILLESS WIND MILLS No oil, no oiling towers. Made for Hard Use. Feed Crushers, Steel Tanks, Wood Wheel Wind Mills, 2 1/2 to 20 H. P. Fuel Saving Engines. Perkins Wind Mill & Engine Company, Est. 1860, Catalogs Free, 135 Main St. Mishawaka, Ind.

DIRECT MARKETING.

THE father of the writer took up the plan of disposing of his farm and dairy products directly to the consumer more than forty years ago. This method has been in vogue in all sections for about that length of time, my father being one of the pioneers to sell in the small manufacturing city that has ever since been our market. Some of the families that started in taking his butter, eggs, fruits and vegetables at that time are still buying from us. In one or two cases it was the grandmother of the present customers who first bought the products of the Shesley farm. I mention this fact to show that I am familiar with the plan of direct selling to "customers."

The first product sold was butter. A uniform price was established for the six summer months and the same for the winter months. This was for some years five cents less in the warm weather than in the cold. Later the price was made uniform the year around. I do not think we have received much more for the butter than the wholesale price as an average, but we have been sure of a market for a certain amount every week. On our part it has been the study to be able to produce that amount.

Starting with the butter it was an easy matter to branch out on other products. Thus, eggs, dressed poultry, fruits and vegetables have been sold to the customers all these years. It soon became the rule for the buyers to depend entirely upon us for practically everything the farm produced. Regular trips have been made each week on certain days and it has been the endeavor to make every trip in spite of the weather. The customers could depend upon us, therefore they paid us our price without question.

Absolute honesty with price and quality has been the rule. In this way new customers were obtained whenever needed. There have also been plenty of others not supplied regularly who have been ready at all times to take surplus products not needed by regular customers. We have never made prices excessive. The average for all products for these years would be, if reckoned about the retail prices in the markets of the city. With the guarantee of freshness and fair dealing which we could give and the reputation for honesty soon obtained, the selling has always been the easiest end of the farm business. We have never hesitated to take into the city on our trips any surplus fruits for which there was little market, and distribute them among the children where we sell goods, in fact it can be said with truth that our customers are our friends and they consider us in the same way.

I believe this plan of selling offers many inducements to the dairy farmer and the poultryman. To handle with these, truck crops and small fruits should be grown. The farmer himself must attend to the selling. He must be willing to rectify any mistake and adjust any grievance, real or imaginary.

New Hamp. C. H. CHESLEY.

Crop and Market Notes.

Michigan. Gratiot Co., March 16.—The ground has been bare for some time; frost is about out of the ground during the day, but freezes every night. Wheat came through the winter looking good, but the past few weeks of frosty weather has affected it somewhat. Stock is looking very well. In general farmers have an abundance of feed. Hogs \$6.25; beans \$2.70.

Monroe Co., March 15.—March so far has been rather mild, with one light snow fall. Roads are very bad. Wheat, rye and meadows seem to be in fine condition. Stock generally in good condition. Feed, especially the roughage, will be pretty well fed up. There are a good many auction sales. Cows are not in great demand owing to the low price of milk. Horses are selling at \$50@175; cows \$45@80;

pork \$8@8.50; veal \$11@14; oats 55c; shelled corn 85@95c per bu; timothy hay \$14@16; a good many potatoes in farmers' hands, price offered being 35c per bushel.

Washtenaw Co., March 15.—The country has quite the aspect of spring, and the roads are good. Wheat, rye and meadows in good condition. The late freezing and thawing seems to have done very little damage. Cattle and hogs in small supply. Milch cows are in better demand, but prices at sales are somewhat lower. Grains in better demand and at better prices than any other farm commodity. Lots of potatoes selling around 30c. A good many beans have been sold at \$3, which makes the future crop look more attractive. A large acreage of beans and oats in prospect. Dairy butter 25c; eggs 17c.

New York. Niagara Co., March 17.—Snow all gone, and roads are good for this time of year. Spraying has commenced. Meadows look good. There is very little feed on hand for home use, as many farmers sold themselves short last fall, and now have to buy. Wheat \$1.35; oats 62c; corn 85c; hay \$13; bran \$30 per ton; middlings \$30 per ton; butter 24c; eggs 20c; horses are lower in price than for several years.

Ohio. Greene Co., March 15.—March has been dry, with freezing nights and sunny days. Some farmers are making maple syrup, which retails at \$1.25 per gallon. Public sales have been numerous and with most satisfactory prices. Wheat, rye and new seeding are not looking so well on account of the freezing nights. Farmers are busy with plowing and fence building, etc. Clover seed mostly sown. Eggs plentiful at 15c; butter-fat 30c.

Highland Co., March 15.—We are having fine March weather, no snow but some rain. Roads very good. The early sown wheat is looking fairly well, but late sown is poor. Rye looks well; meadows and pastures beginning to start. Very little old wheat on hand, and rough feed is scarce. Farmers have about half of their spring plowing done. Hay \$18; corn 85c per bu; wheat \$1.35; hogs \$6.50; eggs 16c; butter 25c; chickens 12c.

Crawford Co., March 17.—We are having fine weather. Wheat and meadows have suffered considerably from hard freezing. Spring seeding has begun. There is the usual amount of live stock on hand, and it has come through the winter in good shape. Farmers generally have plenty of feed. Wheat \$1.45; oats 55c; corn 70c; hay \$13.25; hogs \$6; veal \$9.50; butter-fat 29 1/2c; eggs 15c.

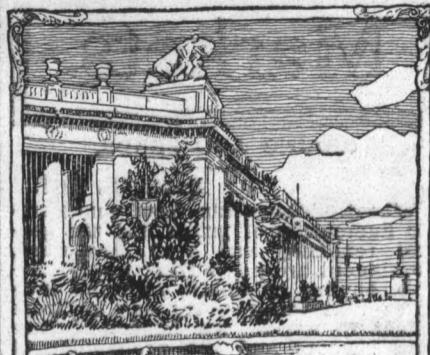
Warren Co., March 16.—Fine open weather; no snow and very little rain, and roads dry and in fine condition. Several hard freezes have done some damage to wheat and meadows. Clover seed about all sown, and oat seeding in progress. About half the spring plowing done. A great amount of tile put in. All live stock in fair condition. Roughage is plentiful, but many are short of grain. Horses are a little cheaper than formerly; few cattle moving; hogs being marketed freely at low prices. Wheat \$1.50; corn 70c; cattle \$5@6; hogs \$6; apples \$1 per bu; potatoes 55c per bu; butter-fat 29c per lb; eggs plentiful at 15c.

Wisconsin. Polk Co., March 15.—Roads breaking up and are in rather bad shape. All clover and fall sown grains ought to come out in fine shape, as the fields have been well covered with snow. Hundreds of cords of bolts have been taken out of the woods this winter. Cattle are selling at \$5; hogs \$6.20; milch cows \$60@75; hay \$8@10; oats 45c; barley 62c; corn on cob 75c; eggs 17c; butter 25c.

Kansas. Trego Co., March 15.—We have had about 18 inches of snow and some rain the past three weeks, and some snow still on the ground, making the roads almost impassable. Most of the wheat is in good condition and will make a good crop with very little moisture this spring. Plenty of feed and all kinds of live stock are in good condition. Not more than five per cent of last season's wheat crop on hand. Farmers are keeping nearly all their corn to feed to stock. Wheat is bringing \$1.35; corn 65c; butter-fat 24c; eggs 14c.

THE SUCCESS OF THE FARM DEPENDS UPON GOOD SEEDS.

You may talk all you please about good land and cultivation, but the real success of the farm depends principally upon the quality of the seeds you sow. The best cost only a little more. "Why not sow the best?" Our seeds have been proven to be good for years. Why take chances? Ask your dealer for our seeds, and be sure you get them. Brown Seed Company, Grand Rapids, Mich.—Adv.



California's Expositions

Via Northern Pacific Ry and Great Northern Pacific S. S. Co. Low round trip fares—liberal stopovers. Daily transcontinental trains from Chicago, St. Louis, Kansas City, St. Paul or Minneapolis to North Pacific Coast Points through the Scenic Highway.

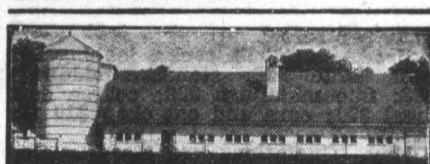
Enroute Stop at Wonderful Yellowstone National Park Nature's Own World's Exposition Enter via Gardiner Gateway reached only by Northern Pacific Ry. View the strange phenomena and unequalled beauty of wonderland. Personally escorted tours to and through the Park during the season. Send at once for free Expositions folder, travel literature, and information and let us assist you in planning your 1915 "Made in America" vacation.



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by fertilizing while cultivating with the **KRAUS** Pivot-Cultivator equipped with the Akron Fertilizer Distributor

The Akron Fertilizer Distributor is a new and exclusive feature of the KRAUS. Its use hastens the sturdy growth of plants, offsets bad weather conditions and will often mature a crop that would otherwise fail. The KRAUS is controlled entirely by foot levers; it works so easily that a boy can run it all day without getting tired. Width of cultivation controlled by lever; high or low wheels; enclosed end grease cups. Wheels and shovels move sidewise simultaneously, making it a **Perfect Hillside Worker**. Simple in construction, least number of parts, greatest adjustability. All steel and malleable iron except pole piece, singletrees and neck yoke—the strongest and most durable cultivator made. It will last longer and cost less for repairs or per acre of cultivation than any other. Ask your dealer for the KRAUS—accept nothing said to be "just as good." Write us today for catalog. **The AKRON CULTIVATOR CO.** Dept. 64, Akron, Ohio.



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are the two 14x30 Unadilla Silos on this fine New Jersey farm; and you can just believe they wouldn't have been erected had not the owner investigated their merits and verified all claims of quality, durability, greater convenience and ability to cure and keep silage prime. New catalog shows construction in detail. Send for a copy today and learn how a Unadilla will bring greater prosperity to your farm. Discount on early orders. Agents wanted everywhere. **UNADILLA SILO CO.,** Box Z, Unadilla, New York

A FARMER'S GARDEN

Helps his wife to plan her table in busy times. Saves work and worry, saves buying so much meat, gives better satisfaction to the help. A good garden will be almost impossible in your busy life without proper tools. They cost little and save much hard work.

IRON AGE WHEEL HOES AND DRILLS

will sow, cultivate, ridge, furrow, etc., better than you can with old-fashioned tools and ten times quicker. A woman, boy or girl can do it. Can plant clover and work these hard tools while the horses rest. 39 combinations from which to choose at \$2.50 to \$12. One combined tool will do all of the work. Ask your dealer to show them and write us for booklet, "Gardening With Modern Tools" Free. **BATEMAN MFG CO.** Box 242, Greenluch, N. J.

DETROIT MARKET CONDITIONS.

March 18, 1915. Cattle.

Market dull; prices quoted are weighed off the cars without feed or water at packing plants. Best heavy steers \$7.50@8; best handy weight butcher steers \$6.50@7.25; mixed steers and heifers \$5.50@6.25; handy light butchers \$5.50@6; light butchers \$5@5.50; best cows \$5.50@5.75; butcher cows \$4.75@5.25; common cows \$4.25@4.50; canners \$3@4; best heavy bulls \$5.50@5.75; bologna bulls \$4.50@5.

Veal Calves.

Market dull. Best \$9@9.75; others \$7@8.70.

Sheep and Lambs.

Market steady. Best lambs \$9.25; fair lambs \$8.50@9; light to common lambs \$7@8; yearlings \$7@7.75; fair to good sheep \$5.50@6; culls and common \$4@5.

Hogs.

Market: \$6.90 at the packing plant, Thursday's shipments for good grades. The market at the Detroit packing plants has been about steady with those of a week ago. On Monday and Tuesday and Wednesday prices for hogs was \$7 for good grades weighed off the cars without feed or water; for Thursday's shipments that price dropped a dime and \$6.90 was top. Sheep and lambs have not been arriving very freely and the average prices for best lambs was \$9.25@9.50. Veal calves have been dull and the bulk of the good ones brought from \$9@9.50, with an occasional extra fancy animal at \$10.

The yards will be finished by Saturday night and again turned over by the government to the Michigan Central and it is expected that they will open Monday next, but nothing definite has been decided as yet.

The Railway Company may keep them closed until April 1, but as yet no one knows.

A protest has been filed with both the Michigan State Railway Commission and the Federal Interstate Commerce Commission against the increase in rates on stock, just made by the Grand Trunk, Pere Marquette, Ann Arbor, and Michigan Central and New York Central lines. The State Commission has ordered a suspension of rates for 45 days until a hearing can be held.

LIVE STOCK NEWS.

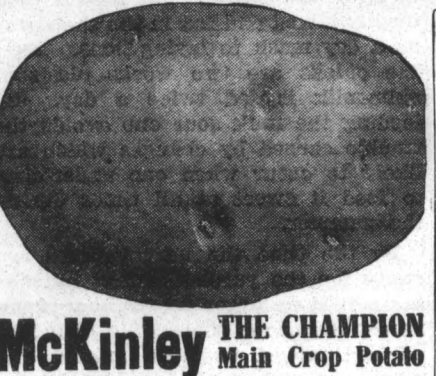
The frequent fresh restrictions placed by the various state authorities, as well as by the federal government, on the marketing of cattle, hogs and sheep are working seriously against the interests of sellers, and it has been impossible for a long time to foretell what would happen the next day. The placing of an embargo by the state of Pennsylvania on shipments through that state caused further bad breaks in cattle prices on the Chicago market recently, and this induced numerous cattlemen to defer further shipments to market. Stockmen are becoming a good deal discouraged by the long time it takes to rid the country of the foot-and-mouth disease, but in time this will be accomplished and then will come the long deferred active trade at much higher prices in all probability, for there is not the slightest doubt as to the great shortage of cattle in feeding districts east of the Missouri river. Already numerous farmers are planning how they can best increase feeding operations, while in various quarters a lively demand for high-grade breeders is witnessed, the call running on Shorthorns, Herefords and Polled Angus cattle. It may not be out of place here to advise farmers to hold on to their good beef cows and heifers for breeding purposes, and surely the farmers will realize the importance of maturing their calves with beef blood, for it is going to take years to build up beef herds to normal proportions once more. In Texas cows are bringing \$75 per head, and sales are reported of 1,500 calves at \$30 per head for delivery in November.

The upward flight of prices for fat lambs, yearlings, wethers and ewes has caused surprise to many sheepmen, although from the very start it was everywhere known that the country was seriously short of feeding stock. At such a time there is no excuse for marketing thin or half-fat flocks, and it will pay owners to see that their lambs are not too heavy when disposed of, for the demand runs mainly on prime, fat lambs of medium weight, the same being true of yearling wethers. Colorado sheepmen were fortunate enough to enter the winter season with normal holdings, and they are now marketing them and reaping the largest profits ever known.

Wool has been contracted for 25c per pound to some extent, with some sheepmen holding for 30c.

Prize Winners. The men and boys who secured the highest corn yields in Ohio and Indiana official contests, during 1914 used Swift's Fertilizers - Blood, Bone and Tankage Always Win. Men's Five Acre Contest. Norris McHenry, Elizabethtown, Ind. - 112.13 bus. Highest in State. G. W. Thompson, Letts, Ind. - 104.22 bus. Paul Patram, Columbus, Ind. - 100.2 bus. David Dunn, Columbus, Ind. - 98.03 bus. Boys' One Acre Contest. Arnett Rose, Alger, Ohio. (Ohio Champion) - 153.90 bus. Yield per Acre Shelled Corn. Harold Doster, Mayfield, O. (Champion Cuyahoga Co.) - 128.8 bus. Roy N. Friedersdorf, Elizabethtown, Ind. - 103.45 bus. Sherman Magaw, Edinburg, Ind. - 99.66 bus. Russell Corya, Hope, Ind. - 97.45 bus. Gordon Reap, Elizabethtown, Ind. - 97.45 bus. All of the above used Swift's Fertilizers in securing the big-profit-making corn yields. Swift's Proved the Best. Norris McHenry tested other fertilizers on some of his corn. Where Swift's Fertilizer was used the yield was 112.13 bushels per acre, the next highest yield from other fertilizer being 19 bushels less per acre. Swift's Fertilizers made him a profit of about \$11.40 per acre more than the other fertilizer. Even if he received only one bushel corn increase per acre, with corn worth 60 cents per bushel and one ton of Swift's Fertilizers covering five acres, it means that Swift's Fertilizers is worth \$3.00 per ton more than the next best brand. 42 Bushels of Corn Increase Per Acre. This big increase in yield was secured by Mr. O. P. Bourland, President, National Bank of Pontiac, Illinois. It is not unusual for farmers to more than double their corn yields by using Swift's Fertilizers. Buy Swift's Fertilizer now, enough for at least 5 acres and let it prove what it will do for you. Valuable Bulletin Free. On request, we will send a valuable bulletin free telling how to grow more and better corn. If you cannot buy Swift's Fertilizer from your local agent write us direct. Place your order now. Agents Wanted in Unoccupied Territory. SWIFT & COMPANY Dept. C U. S. Yards CHICAGO, ILLINOIS

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Hatching and Developing Pullets.

SUCCESS with farm poultry depends largely upon feeding and caring for the early hatched chicks so that they will develop rapidly and be ready to begin laying during the late fall or early winter. The production of winter eggs is one of the most profitable sources of income to the farmer, since the prices paid at that time for fresh eggs are usually double those that obtain in the spring, summer and early fall. Though it is true that the cost of production is higher, it is equally true that if care and judgment have been exercised in rearing and selecting the pullets which are to be retained for layers, the proportionate difference is not sufficient to prohibit one from realizing a splendid profit.

Properly fed and given clean coops and abundant range the young pullets will be fully developed in time to begin laying before cold weather comes. If they are overtaken by cold weather before they attain full development it is difficult to induce them to start laying before February or March. By proper management we can bring the early maturing birds to laying maturity late in October and then by good care and good food keep them laying right through the winter months when eggs are bringing the highest prices.

Separate Cockerels from Pullets.

The pullets will thrive better if they are separated from the cockerels when about three months old, the latter penned up and fattened for market. They should be given ample range, abundant room in the colony houses and an abundant supply of grit, oyster shells and charcoal so that they can help themselves at all times. Care must be taken to keep the drinking vessels and feed hoppers clean and sanitary and the food in the shape of a dry mash should be right at hand. Cracked grains should be added to the mash as soon as the chicks are capable of handling it. We begin feeding it when they are about one month old, but feed only in moderate quantities until they are three months old.

When the pullets begin to show signs of approaching maturity the addition of more protein will hasten development and give the ration just the stimulus needed to start them to laying. As soon as cold weather sets in they should be removed to the laying houses, have floors covered with clean litter, into which is thrown two feeds a day of scratch food. Straw, hay, leaves, millet, etc., all make good litter for the scratching floor. Clean, comfortable houses, plenty of exercise and an abundance of well proportioned feedstuffs and pure water are the essentials of success in getting winter eggs from the well developed young pullets.

New York. W. MILTON KELLY.

THE MOTHER HEN AND THE CHICKS.

Not all hens make good mothers, even though they are of the larger breeds. It is next to impossible to tell beforehand, but it is important that the breeding stock, especially those intended for sitters and mothers, should be made tame and amenable for handling. Such hens will be quiet when placed with their broods in the coops. They can be easily moved when necessary, and the chicks will naturally grow up tame and easily handled. The valuable mother is the one that has made a good hatch, and that, on removing from the nest with chicks, settles down quietly in the quarters assigned to her. She may be a well-meaning hen, but if she flutters around in her coop ready to fight on the least provocation she is a nuisance, and another should be substituted if to be had.

Provide Good Coop.

A good beginning with rearing chicks with hens is to have a proper kind of coop, one with a removable floor bottom that can be easily cleaned and one that can be easily and securely closed at night to guard against the various kinds of night prowlers which may come around. The coop should be tight, so as to remain perfectly dry inside in wet weather. It should have a closed front excepting an opening about one foot square, in which is fitted a sliding wire screen door and also a tight floor if for early chicks.

The coops should be placed on new ground, either in a place which has not been used before or where the soil has been plowed or spaded. I have found that if this precaution is

In order to hatch and rear a uniform lot of pullets at a minimum of expense and labor we begin incubation about the first of April; setting a few hens and starting our 200-egg incubator. As soon as hatching begins we give each hen from 20 to 25 chicks and put them in individual coops with yards about 5x12 feet, built so that both coop and yards may be moved to fresh ground once a week. With large and comfortable coops the hens have little trouble hovering the chicks and a lot of responsibility and fussing is avoided. While this method would not prove adaptable to the highly specialized poultry farm, it serves our purpose admirably and does away with the use of brooders and a more complicated system of feeding the young chicks.

Rations for Young Chicks.

To insure sanitation and cleanliness in feeding we have made a number of little 3x4 feet feeding platforms where a grain ration of cracked corn, wheat and rolled oats is fed. Plenty of fresh water is kept before them at all times. After the first week or ten days a mash made up of 100 pounds of corn meal, 100 pounds of wheat bran, 50 pounds of middlings, 50 pounds of gluten, 50 pounds of beef scrap and 10 pounds of salt, 25 pounds of chick charcoal is made up and fed to all of the chicks. The feed is thoroughly mixed and fed in the same way as a dry mash to laying hens. After the chicks are two weeks old sour skim-milk is fed twice a day. By feeding the milk sour one avoids the trouble caused by changes which are likely to occur when one undertakes to feed it sweet at all times during the summer.

By the time the next hatches are ready for the yards the first hatches are moved to larger colony houses and yards, the coops thoroughly disinfected and moved to clean ground and new hens and chicks put into them. By planning the incubation so that two lots of chicks of uniform size are started the work is simplified and from the combined hatchings we are able to add 100 to 150 choice pullets to our flock each year to take the place of the older hens disposed of along in the summer. The sale of cockerels, old hens and pullets that develop unfavorably usually pays every expense incident to renewing the flock and leaves a surplus to be added to the net profit at the end of the year. The growth of the chicks is made up, in large part, of waste feeds and insect life, which is not the case on the large poultry farm.

Keep Coops Clean.

Young pullets should have clean houses and plenty of range. One of the worst mistakes one can make is to shut them up with a lot of old hens. Such young birds are sure to become lousy, unthrifty and diseased at the very time they should be making rapid growth and developing strong, vigorous constitutions. By the time they should be showing reddening combs and looking about for a place to make a nest they are weak, emaciated bun-

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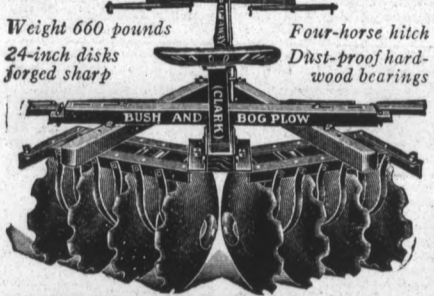
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Practical Science.

THE MOSQUITO NUISANCE IN THE HOME.

BY FLOYD W. ROBISON.

Michigan Was Once a Malaria State.

In the early history of the state, it was extensively known as a malaria center like many of the low countries bordering on the important waterways. In this manner, therefore, the public began to connect persistent fevers of the malarial type with faulty drainage and stagnant water. Certain of our prominent men began early to preach to farmers and to the public generally in the state the great importance of drainage, not only as to its far reaching influence upon agriculture itself but the great influence of drainage upon the health of the public generally. Malarial fever is very generally reduced in this state at the present time, although it is not absolutely eradicated. The early advocates of thorough and systematic drainage little dreamed as to the exact reason why stagnant water and low undrained marshes were so conducive to the development of diseases of the malarial type. It remained for scientists a little later to discover that the chief cause of the development of malaria from such sources was through the growth and activity of an insect pest, the mosquito, which thrived under the conditions above outlined.

The Mosquito and Yellow Fever.

About that same time other serious crimes were laid at the door of the mosquito. The great scourge of the tropical countries, particularly the West Indies and the countries surrounding and adjacent to New Orleans was yellow fever, and it was discovered that the mosquito was the chief source of this dreadful disease. A certain type of mosquito which acted as host for the development of these organisms' productive of yellow fever was found to breed extensively and almost exclusively in stagnant water in countries poorly drained or subject to frequent overflows.

The war against yellow fever, therefore, was a war against stagnant water and in favor of efficient drainage, in this way working to the benefit of man and agriculture together.

With the possible exception of the fly, we can think of no group of insects which have had a more detrimental influence on mankind than have mosquitoes, and yet in spite of all this it is by no means rare to find now on otherwise quite up to date farms numerous breeding spots for these pests of humanity.

Mosquitoes Are Carriers of Infection.

Mosquitoes pass through several stages before they become adult winged insects. The stages preceding the winged stage are spent entirely in the water, and in stagnant water. It has seemed that mosquitoes breed as well in long grass and in thick vegetation but apparently this has been thoroughly investigated and in the opinion of prominent entomologists vegetation serves as a hiding place only for the adults, and the breeding and propagation takes place solely in quiet water.

There is apparently no reason for feeling alarmed over the introduction of yellow fever into Michigan but malarial fever is still with us to some extent but that is not the only dangerous possibility from the mosquito nuisance. As these insects attack man the possibility of carrying infection from one individual to another is very great and we think there is little doubt that disease is in this manner carried from one person to another.

The common mosquito deposits her eggs on the surface of stagnant water, in small pools or pockets, or in larger undrained areas, during the

night. These eggs are deposited in masses of several hundreds and look while enmasse on the surface of the water not greatly unlike a small section of honey comb, although much smaller in segment. When these hatch, as they speedily do, the little wrigglers which most of us are so familiar with as found in rain barrels about the house, are the first stage following the egg. Little did we realize that these wrigglers which have been so common in the large rain barrel under the eave trough were the immediate progenitors of mosquitoes else some effort would have been made to prevent their propagation. Following the life of the wriggler comes the pupa stage, which immediately precedes the adult winged insect.

How annoying mosquitoes are, even though we look at them only from this standpoint, can surely be appreciated by all. Surely one single mosquito can make life unbearable throughout the night. When, coupled with this we think of the danger of infection through the mosquito as a carrier of disease, then we begin to feel that some strong urgent measures should be taken to rid the farm and the home of this pest.

Methods of Fighting the Mosquito.

As we may naturally suppose, the first and most efficient remedy is thorough drainage of the premises and as these insects in swarms are borne lightly upon the wind in a summer evening, it may be readily seen that it is quite imperative that not only should one's own premises be drained, but his neighbor's likewise. We see no reason why communities should not band together for their mutual protection in removing the breeding places of mosquitoes. In those sections where drainage is impossible or not feasible, the next method of attack is to so treat the water that the eggs will not hatch and the young wrigglers or pupa will no reach the adult stage. This may be done by spreading kerosene oil on the surface of the water. A small amount of oil will cover a large area in this way and as it spreads out to a thin film where it strikes the water it will reach into every nook and crevice and prevent the development of the immature mosquito. In the home after the above treatment has been followed the repelling of the adult insect is largely a matter of properly screening the house.

During the outbreak of yellow fever in New Orleans in 1906 equal parts of camphor gum and crude carbolic acid crystals were mixed and moderately heated in the home, in this way giving off a vapor which proved very destructive to adult mosquitoes. Much the same result was obtained with pyrethrum powder, but the carbolic acid-camphor mixture proved more efficient.

Getting Rid of Mosquitoes Means a Clean-up Campaign.

Probably a careful attention to the removal of sources in which mosquitoes breed, together with efficient screening of the home, will accomplish successfully the eradication of this pest and will be found much more satisfactory than the use of fumigants such as we have described. Very frequently an abundance of refuse, old pans, etc., around the buildings on a farm are found to be prolific breeding places for mosquitoes. These become filled with water and remain for several days, giving ample time for the hatching of the eggs and the maturing of the young insects.

As in other cases of disease production and infection, it will be seen that the fight against mosquitoes is a fight in the interests of cleanliness and sanitation. When scrupulous cleanli-

ness is observed, where no stagnant water or pools are allowed, where no refuse is allowed about and where a community's interest in these important topics is manifested, that community will be free from the mosquito nuisance.

We are in the habit of thinking that the enemies of man, such as insects, fungus diseases, and the like, thrive and reproduce with a much greater degree of perfection than do the things man specifically cultivates. We frequently hear it stated that it is very difficult and requires untiring energy to secure a crop of a desired vegetable or cereal, whereas if eternal vigilance is not observed weeds crowd in and without any care whatsoever thrive much more abundantly than does the crop we are striving to grow. As a matter of fact, while this may seem to be the case, almost exactly the opposite is really true for the insect enemies and the fungus enemies of weeds and the diseases of plant crops are very, very great. The percentage of mortality among weed seeds is very high, very much higher than among our cultivated grains. This is so well recognized that in certain fungus diseases the parasites which normally grow and develop on these fungi are actually encouraged and do effective work in eradicating the enemy. So it is even with mosquitoes.

Minnow Natural Enemy of Mosquito.

There are many natural enemies of the mosquito. There is an especial kind of fish which, if placed in ponds and streams of water will quite effectively rid it of mosquitoes' eggs and the young wrigglers, and the stocking of pools which it may not be considered desirable to treat as suggested with similar fish, affords one very practical solution of the mosquito difficulty. A test was made in Minnesota and it was found that the shiner, the little blunt-nosed minnow which is so common to every boy, ate 93 mosquito wrigglers every five hours, and seemed to attack these larvae greedily, showing a preference over other forms of food. It has been known for some time that many of the smaller minnows and the little sticklebacks have been active enemies of the mosquito and this knowledge has been turned to very good advantage in the fighting of these pests.

Here is a Job for the Boys on the Farm—One Worth While.

The time to begin the destroying of mosquitoes is really in the spring and this is a very fine piece of work to be entrusted to the boys on the farm to show what they can do toward ridding the community of this great nuisance. Let the boys in a community get together, those who live on adjacent farms, and by discussing and planning this work, see if much cannot be done during the coming summer to make life more worth living, because of the eradication of the mosquito nuisance upon the farm. This may well go hand in hand in the early spring with the removal likewise of the fly nuisance, which we will discuss in some detail in a later issue.

KEEP GREASE FROM RUBBER.

The worst enemy of rubber is grease or oil. The oil or grease in leather is harmful to rubber and your boots should touch leather as little as possible.

Heat is also very injurious to rubber. Never warm your boots over a fire that is too hot and never put them on a stove if you want to dry them. It's better for the boots to take them off and warm your feet.

Rubber footwear should be hung up when not in use. Hanging up a pair of boots gives it much longer life.

Use is good for good rubber. A little work keeps it from getting stiff and hard.

Fresh water is not harmful to rubber. Rubber boots should be kept clean of dirt, spots, etc. Just wash the dirt off. It's worth while.

These hints were gleaned from a little booklet, "More Days' Wear," which is given away by the Mishawaka Woolen Mfg Co., of Mishawaka, Indiana.

Grange.

NOTES FROM STATE EXECUTIVE COMMITTEE MEETINGS.

(Continued from last week.)

The secretary was instructed to write Congressman David J. Lewis, assuring him that the executive committee pledges him its loyal support in his efforts for government ownership of telegraph and telephone lines.

Most of the members, at this session of the committee, also participated in a conference of deputies from southern Michigan, conducted by Master Ketcham.

At a meeting of the committee, held January 29, the Master asked for an expression of opinion regarding establishing "Standard Granges;" and, as a result of the discussion of the subject, was authorized to make a reasonable expenditure of money in offering a Standard Grange plan.

The chairman reported he had secured the co-operation of the University in testing wire fence galvanizing in an effort to standardize the fencing made in Michigan.

The following resolution presented by the chairman was adopted:

"Whereas, but a small per cent of country children can or do enter high school and the opportunities offered them in the country district schools being limited to the passing of the eighth grade, and,

"Whereas, said eighth grade is usually completed by students at from 12 to 14 years of age, while the law requires them to attend school until 16 years of age or until completing the eighth grade, thus forcing a condition of inconsistency and hardship upon a very large majority of country children and parents,

"Therefore, Resolved by the executive committee of the State Grange that we favor and urge upon the Legislature such amending of the school laws pertaining to the grading of the courses of study in district schools as will add the ninth and tenth grades thereto, and thus more fully perform that duty which an educational system owes to that great mass of country children who, for various reasons cannot, and in actual practice do not, go on to attend high school as seems to have been anticipated in the system as now applied."

On February 2 the committee met in conference with members of the Legislature. About 20 Grange members of the Senate and House accepted the committee's invitation to attend this conference, besides several visiting patrons.

Master Ketcham who, in the absence of the chairman called the meeting to order and presided, stated that the purpose of the gathering was to call forth a free and informal discussion of the merits and demerits of a few of the measures in which the Grange is, or should be, particularly interested; also, to decide whether or not it is advisable that they be urged during this session of the Legislature.

After some little consideration of the two measures for which initiative petitions were circulated last fall, namely, the Torrens system of land transfers and the tonnage tax measure, it was agreed to be at present advisable to work for the passage into law of the former, rather than to urge both upon the Legislature. The principle of the Torrens system of land transfers met with unanimous approval.

A proposed amendment to the highway law, so as to repeal the double reward on trunk lines, was discussed at some length and both advantages and objections were entertained. The subject was commended for further study.

The market commission bill was outlined and briefly discussed by its author, Representative Wells, of Cass

county. A number of questions were asked and answered by Mr. Wells. This bill was spoken of by several speakers as the most vital to farming interests of any measure likely to come before the Legislature of 1915. The law-makers present were assured of the Grange's earnest assistance in enacting a law which should cover principles of this bill.

Sentiment of the meeting was practically unanimous upon the desirability of amending the present primary law so as to separate the ballots.

Several gentlemen advocated a change in the mortgage tax law but, after discussion, the sentiment seemed to prevail in favor of no change.

Representative Follett outlined a bill that he planned soon to introduce, to provide for the establishment of short-term prisons to crush limestone for agricultural purposes.

JENNIE BUELL.

AMONG THE LIVE GRANGES.

Benzie Pomona Grange Meeting was held with the Inland Grange, March 10-11. As so many had to stay until evening trains could take them to their homes, a session was held in the afternoon of Thursday and every minute was full of interest. State Master Ketcham, or some deputy, was expected but they did not put in an appearance, and others filled in the time. Benzie county is full of live grangers who know how to have a good time. Their next meeting will be held with Cherry Grange, near Frankfort, the first Wednesday and Thursday in June.—Mrs. J. W. D.

COMING EVENTS.

Wayne County Pomona will meet with Huron Valley Grange at New Boston, Saturday, March 27. N. P. Hull will be state speaker.

April second and third will be big Grange days at Sturgis. A lecturer's conference will be held April 2 and Mrs. Dora H. Stockman, state lecturer, will be present. On April 3 State Master Ketcham will address the meeting.

Farmers' Clubs

OFFICERS OF THE STATE ASSOCIATION OF FARMERS' CLUBS.

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

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

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

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

Associational Motto:

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

Associational Sentiment:

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

CLUB DISCUSSIONS.

The State and the State Fair.—Ray Farmers' Club held its March meeting at the home of Mr. and Mrs. H. Livermore. There were about 55 present, who did ample justice to the bounteous dinner served by the Club ladies. After the dinner and a social hour the program was opened by prayer. Miss Hazel Jewell sang a solo and responded to an encore in a very pleasing manner. A discussion, "Would it be advisable for the state to take over the State Fair and assume its indebtedness," was led by Mr. Wm. Rouley. It was thoroughly discussed; some thought it would be a good investment while others thought it would be another burden on the state. The Club then adjourned to meet April 8 at the Church Hall for a maple sugar dinner.—Mrs. E. M. Frost, Cor. Sec.

An Entertaining Program.—The Deerfield Farmers' Club met at the home of Mr. and Mrs. D. Owen Taft, on February 27. While the company was being served a fine dinner, Mr. Taft entertained the company with music, which everyone enjoyed. Then the meeting was called to order by Mr. Clark Hall, then followed prayer

by the chaplain, singing by the Club, reading, "Over to the Hills to the Poorhouse," by Miss Julie Lannen, and other good numbers. A paper by Mrs. Dudley Mason was entitled, "The Tangled Skein." She compared this to our lives. We have sorrow, trouble, pleasure and happiness and we have a skein to untangle most of the time. We should take life as it comes and make the best of it. The question box was conducted by Mr. Don Johnston. Meeting adjourned to meet with Mr. and Mrs. W. B. Jones, March 27.—Mrs. John F. Lutz, Cor. Sec.

Science and the Farmer.—The March meeting of the Wixom Farmers' Club was entertained by Mr. and Mrs. F. R. Pearsall at their farm home. A large crowd of members and invited guests were present and partook of a good dinner. After the social hour Club was called to order by President Nicholson, followed by a good program, consisting of recitations and vocal solos. The question box came next in order. Resolved, that "Scientific Training is as essential in farm life as in professional life," brought out a lengthy discussion on both sides. The negatives declared that it was not necessary to have a scientific training to be a good farmer, but admitted the art with the profession made a better man.—Mrs. R. D. Stephens, Cor. Sec.

Pioneer Day.—Washington Center Farmers' Club held its March meeting at River View, with Mr. and Mrs. John Tobey. There was a good attendance. The morning session was opened with a piano solo by Mrs. B. S. Gillman. The regular business was disposed of and the rules governing the boys' and girls' contests as sent out by M. A. C. were read. The old but ever interesting question, "Good Roads," came in for a discussion. Some thought the old method under a pathmaster best, while others thought the present method all right. Neither way is there not much work done on the roads. Next came the social hour, and a splendid dinner was served. The afternoon session opened with a song, "When the Puritan Came Over," by Marita Tobey. This was Pioneer Day and roll call was responded to by early recollections of home. The Club then sang "Should Old Acquaintance be Forgotten." The story hour was opened by the reading of some original verses composed more than fifty years ago, and called "The New Country Song." The music of which has long been forgotten. Very few of the early settlers of Washington township are left, but two of the real pioneers were present, Mrs. Wm. Carothers, 83 years old, who came here in 1854, and Mrs. Albert Bovee, 80 years old, who came in 1857. Gratiot county was almost a wilderness at that time, and neighbors few and far between. These ladies related many incidents of those days of hardship and pleasures. Both thought those early days the happiest of their lives. Many stories of Indians, bears and deer hunting were told by other members of the Club, and a very enjoyable afternoon was spent. "Looking Backward," a solo by Mrs. B. S. Gillman, "I want to go back to Michigan," closed this most interesting meeting. The April meeting will be a corn and potato special and will be held at Highland Home with Mr. and Mrs. Frank Cook. A corn dinner will be served.—Mrs. S. N. French, Cor. Sec.

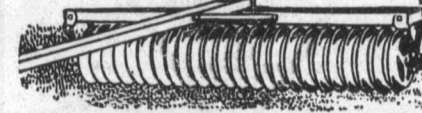
Financing the Household.—March meeting of the Union Farmers' Club was held with Mr. and Mrs. J. L. Holbrook. Mr. and Mrs. Holbrook are pioneers in Club work, having helped to organize the Club a quarter of a century ago. President Hall called the meeting to order and prayer was offered by Russell Ash. Roll call was responded to by "How can I improve the efficiency of the Club?" By coming earlier, by carrying out part of the program in the forenoon, by filling the part assigned by the program committee, by taking part in the discussions, were some of the good methods brought out. Daisy McKnight gave a humorous reading, "The Farmer and the Automobile." The feature of the program was a paper by Mrs. Alton Fizzelle, "Is the allowance plan the proper method of conducting the finances of the household?" Mrs. Fizzelle said, "Doubtless no one thing makes for so much unhappiness in the family as this one thing. Marriage is a partnership but too often on the farm it is of a one-sided variety. The wife contributes to the business her time, labor and brains as much as the farmer, and the profits are equally hers, and while he buys tools to lighten the labor on the farm she should have as many conveniences in the house." Mrs. Fizzelle thinks if the wife takes the extra care of the chickens on her hands the proceeds should be hers to do with as she pleases. This brought out a warm discussion, though evidently some opinions were bottled up until the men reached home. The question box contained several timely questions. Club adjourned to meet with Mr. and Mrs. Fizzelle the first Saturday in March.—Mrs. L. Smith, Cor. Sec.



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FIVE REGISTERED PERCHERON STALLIONS, blacks, from weanlings to 12 years old, and sound. **WM. McCRODAN, Dutton, Kent Co., Mich.**

FOR SALE—Registered Percheron Stallion five years old, price \$500. Would exchange for registered mare or pair of good work mares. **R. B. NOLL, Vickeryville, Michigan**

FOR SALE: Pair Registered Grey Percheron Mares 5 and 8 years old, weight 1900 lbs., 1 ready to foal \$300. **R. S. HUDSON, care M. A. C., East Lansing, Michigan.**

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FOR SALE—2 Reg. PERCHERON MARES, sound and right in every way. Weight about 1,600 lbs. **M. A. BRAY, Oakemos, Ingham Co., Mich.**

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Veterinary.

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 someone else. When reply by mail is requested, it becomes private practice, and a fee of \$1.00 must accompany letter.

Indigestion—Weakness.—I have a five-year-old mare that is not thriving; two local Vets. filed teeth and gave her medicine without doing her any apparent good. She lacks life and courage. **C. T., Dundee, Mich.**—Give her 2 drs. phosphate soda at a dose in feed three times a day. Also give her 1 dr. ground nux vomica and 1/2 oz. of Fowler's solution at a dose three times a day.

Chronic Catarrh.—What can I do for a two-year-old bull that caught cold about a year ago and since that time has been bothered more or less with catarrh. **D. DeG., Lamb, Mich.**—Give 1 dr. powdered sulphate iron and 1 oz. of sulphate of soda at a dose twice a day. If he has not already been tested for tuberculosis, better do so.

Bruised Face—Bone Spavin.—My five-year-old mare has a bunch on face, situated midway between nostril and eye, but it is not very sore. I also have a 12-year-old mare developing bone spavin. **O. B. D., St. John's, Mich.**—The bunch on face is bony, the result of a blow. Apply one part iodine and nine parts fresh lard three times a week. Give your mare rest and apply one part red iodide mercury and four parts lard every ten days.

Colt Has Two Jack Spavins.—Have a two-year-old driving colt which I have just begun to break, but he has two jack spavins which I had fired one year ago; he has just commenced to show a little lameness and I would like to know how to treat him. **A. D. S., Linden, Mich.**—Give your colt rest and apply one part red iodide mercury and four parts lard every ten days.

Stifle Stiffness.—We have a two-year-old colt, weight about 1200 lbs., whose hind legs appear to lock, making it impossible for a short period of time to move leg forward, then suddenly it snaps and he is all right. **C. V. H., Portland, Mich.**—Clip hair off stifle, and apply one part powdered cantharides and four parts lard every ten days and he will soon be all right.

Sore Neck.—Last year my horse's neck got sore on top and have not yet healed, although I have applied different kinds of healing remedies. **J. E. W., Bitely, Mich.**—Perhaps there is a core or fibrous center to these sores, or considerable scar tissue that should be either cut out with a knife, or burned off with caustic or a red hot iron, then neck will heal. Apply equal parts powdered alum and oxide of zinc. Powdered blue stone applied carefully will destroy fungus; however, in my practice I use a sharp knife.

Brood Mare Perspires in Stable.—Have a nine-year-old mare which is in foal that perspires when standing in the stable, and she has a puffy swelling on brisket, the result of a bruise against manger. **N. C., Columbiaville, Mich.**—Give your mare 2 drs. of acetate of potash and 1/2 oz. ground gentian at a dose in feed three times a day. Keep your stable clean, free from foul odors, admit plenty of fresh air, and ventilate barn. It is considered good practice to clip her body, especially if she is very rough coated, and it is possible that she is not exercised enough. Apply spirits of camphor to swelling on breast twice a day.

Roaring.—Have a six-year-old horse that had an attack of distemper three years ago, since then he whistles whenever exerted and I would like to know of a remedy. **L. S., Munith, Mich.**—A surgical operation on throat performed by a competent veterinarian will perhaps prevent this whistling. Wearing an overcheck and independent bit, straightening out nose and pulling head well up, relieves a driving or work horse which roars.

Cause of Constipation.—I would like to know why dairy cows at shedding time are troubled with costiveness without a change of ration. **C. R. H., Grand Rapids, Mich.**—I know of no reason why they should be more costive at shedding time, unless they are weaker for want of sufficient exercise.

Rheumatism.—Some time ago I bought a hog that had been fed cooked feed, such as potatoes and swill, but I have been feeding it ground

corn and cob meal, also some salts with each feed. When this pig first gets up, it dislikes to move and when forced to travel appears to suffer pain for a few minutes, then walks fairly well. **A. A., Fountain, Mich.**—Give your hog 20 grs. of sodium salicylate and 15 grs. of nitrate of potash at a dose in feed two or three times a day. Feed less corn, more oats, oil meal, tankage and roots; furthermore, he should be kept dry and warm.

Exostosis on Shin—Eczema—Collar Galls—Siftast.—Fifteen months ago my five-year-old mare was kicked, bruising outside of hind shin, leaving a bunch. My other mares are troubled with an itchy condition of skin, especially in scalp of mane and tail. Last year I had considerable trouble with collar galls and I have a grey horse with a hard bunch on shoulder which is movable, but in the way of collar. **E. D. S., Bannister, Mich.**—If the bunch on shin is not causing lameness and you care to work the mare, leave it alone. Clip your mares and apply one part bichloride mercury and 1000 parts water to itchy parts of skin daily. They may require grooming as dirt in coat and on skin causes itchiness of body. Give a tablespoonful of bicarbonate of soda at a dose in feed three times a day. Dissolve 1/4 lb. acetate of lead, 3 ozs. of sulphate of zinc and 2 ozs. of tannic acid in a gallon of water and apply to tender shoulders three times a day. Cut out hard bunch and apply shoulder lotion to wound three times a day.

Vaginal Polypus.—I have a cow, since having her bred ten days ago, has fallen away five pounds on her milk yield and she passes considerable blood, and her bowels are loose. I feed ensilage, cob meal, ground oats and a little oil meal. Her appetite is good one day and apparently gone the next. **G. W. P., South Haven, Mich.**—You fail to state whether blood comes from bowel or vagina; however, I presume it comes from vagina. Give her 1 oz. doses of hyposulphite of soda, 1 oz. of ground gentian three times a day for a few days, then give her one-half of this quantity at a dose three times a day for 30 days. If the blood comes from vagina, dissolve 1 oz. of powdered alum in three pints of tepid water and inject her once or twice a day.

Looseness of Bowels—Weakness.—I have a mare nine years old, in fairly good condition, but when worked bowels act altogether too free and when standing in the barn she sweats much on the neck, chest and flank. **C. O. J., Cadillac, Mich.**—Her teeth may need floating. Change her feed, clip her, ventilate your stable and give 1 dr. of ground nux vomica, 2 drs. of red cinchona, 1 dr. acetate of potash and 3 drs. of ground gentian at a dose in feed three times a day.

Chronic Cracked Heels.—I have a four-year-old mare that is troubled with scratches on both fore legs and one hind foot. **W. N., Wolverine, Mich.**—Apply one part carbolic acid and nine parts glycerine twice a day, and give a dessertspoonful of Fowler's solution three times a day.

Pinworms.—I have a four-year-old mare which has been bothered with pinworms since she was eight months old and the commercial remedies that I have tried have failed to do her much good. **J. G., Newport, Mich.**—If your mare is in good condition and not in foal, give her 7 drs. of aloes, 1 dr. santonine and 2 drs. of ginger made into a bolus and given at one dose. Give her a well salted bran mash before giving her this dose of cathartic medicine. Drop 1/2 lb. of quassia chips into a gallon of water, boil it until the quantity reduces to two quarts, then strain off the chips and inject into the rectum, keeping it there for one-half hour; this is best done by holding the tail down and placing her in a position with her fore feet 12 inches lower than hind ones. The rectum should be cleaned out before making this application, with clean, tepid water. Kindly understand she should be treated once a week until you succeed in effecting a cure. Another very good remedy is one part coal tar disinfectant and 30 parts water and you had better purchase one of the commercial coal tar remedies that are regularly advertised in this paper.

Nervous Cow.—I have a cow that has been very gentle to milk until lately, now she lifts hind feet much like a trip-hammer, only at milking time and does not move until I take hold of teat. **L. W., Bangor, Mich.**—Apply one part lemon juice and three parts glycerine to teats twice a day, and buckle a surcingle around body just in front of udder when you milk her, and she will stand quiet.

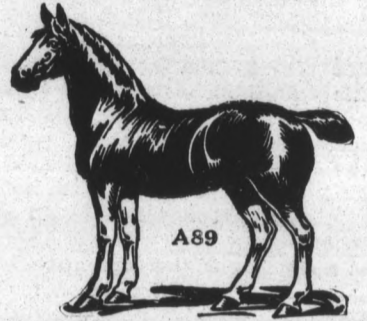
N. H. P., Flint, Mich.—Your cow's milk becomes infected after it is milked. Thoroughly clean milking utensils, hands of milker, udder of cow, cow stable and milk house and you will have no further trouble with the milk.

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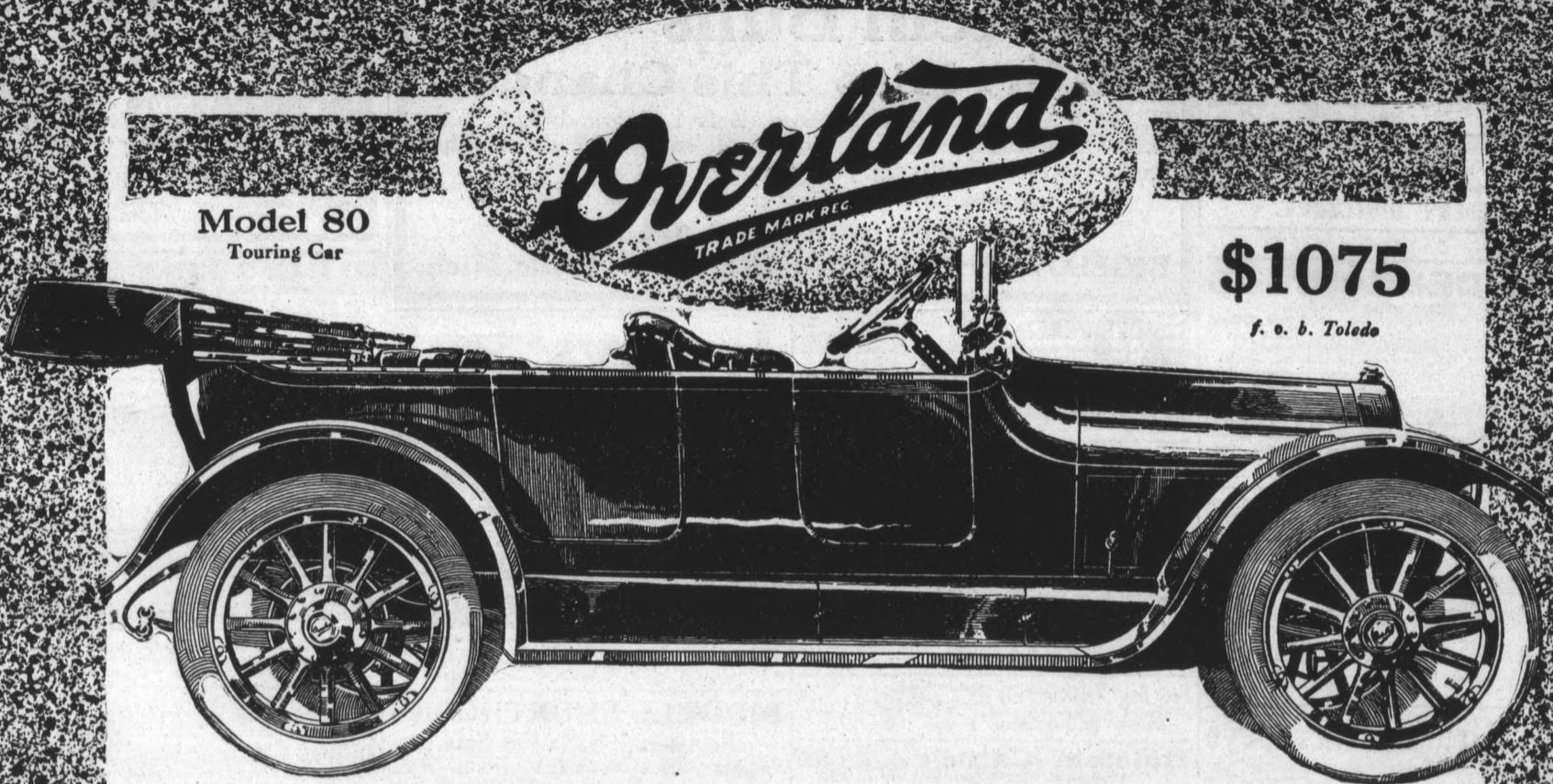
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