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\$2 FOR 5 YEARS

IT has been demonstrated in the last few years that soy beans can be successfully grown in almost every part of the state of Michigan. They ripen in Ogemaw county, they ripen in the southwestern part of the state, and with proper culture there isn't any question but what they can be successfully grown anywhere in the state. Again, soy beans seems to do well on a great variety of soils. You don't have to have any special soil for them to grow on. They will grow on hard clay or they will grow on light sand. Like other plants, they will grow better on a real nice soil than they will on a poor soil, but it is safe to say that soy beans will grow on any soil that will produce corn or clover. The abundance of the crop will depend largely upon the character of the soil; that is, the fertility of the soil and the mechanical condition which it is in—let us put it the fertility of the soil. With good fertile soil in good mechanical condition soy beans will grow luxuriantly and produce an abundant crop, and like all other plants they will give corresponding yields on soils varying in fertility.

The time to plant soy beans is after the weather becomes warm and settled in the spring, say just after corn planting. Put the corn in first; then get ready and plant the soy beans. There is one other thing that must be done if you want to raise good soy beans on soil that is somewhat deficient in nitrogen. The soy bean is a leguminous plant and, like clover and alfalfa, has a special bacteria which live in nodules upon the roots, and these bacteria have the power of taking free nitrogen from

Growing Soy Beans

the atmosphere if they find it too much trouble to get the necessary nitrogen from the soil. If you want to grow them so as to accumulate nitrogen in the soil, then you must secure these bacteria first, and the only way you are sure they are present is by the nodules on the roots. If soy beans have not been on this soil before they will not be present for a considerable time, and the best way to do is to inoculate the seed at the time of planting just as you do for alfalfa. On land that contains an abundance of nitrogen you can grow good crops of alfalfa or soy beans without inoculation. You can inoculate for soy beans in the same way that you do for alfalfa. You can get some soil from an old soy bean field where there were plenty of nodules present and scatter this soil on the land and work it in and the soil is inoculated. You can get a smaller supply of the soil and make it very fine, and wet your beans with a solution of glue and then stir this soil in with them so that particles of the soil will stick to the beans and you will then carry the inoculated soil with the seed into the soil. Or you can get some nitro culture from the experiment station and inoculate the seed in this way instead of getting the soil from an old soy bean field, if it is not readily available.

Planting.

There are two ways of planting soy beans. One is to plant them the way we plant white beans, in drills 28 inches apart, using a half to three-

quarters of a bushel of seed to the acre and then cultivate them as you would ordinary beans. Another way is to drill them in broadcast with the grain drill. This is done many times when the crop is cut for hay. When the soil and weather conditions are favorable they make a rapid growth and soon shade the ground and there is no trouble from weeds. However, if the soil conditions and the weather conditions at the time of sowing are not favorable, if it is on clay land for instance, and there comes a drenching rain immediately after the beans are sown, a crust forms which will prevent them from coming up well. This will also germinate all of the weed seed and the weeds may come up and get a little start and the soy beans not do well. We must take these things into consideration and sometimes we must run the risk. It pays to put them in drills and cultivate them. Then you can control the weeds even under unfavorable conditions. If you sow them broadcast with the grain drill you will want to sow from one and a half to two bushels per acre.

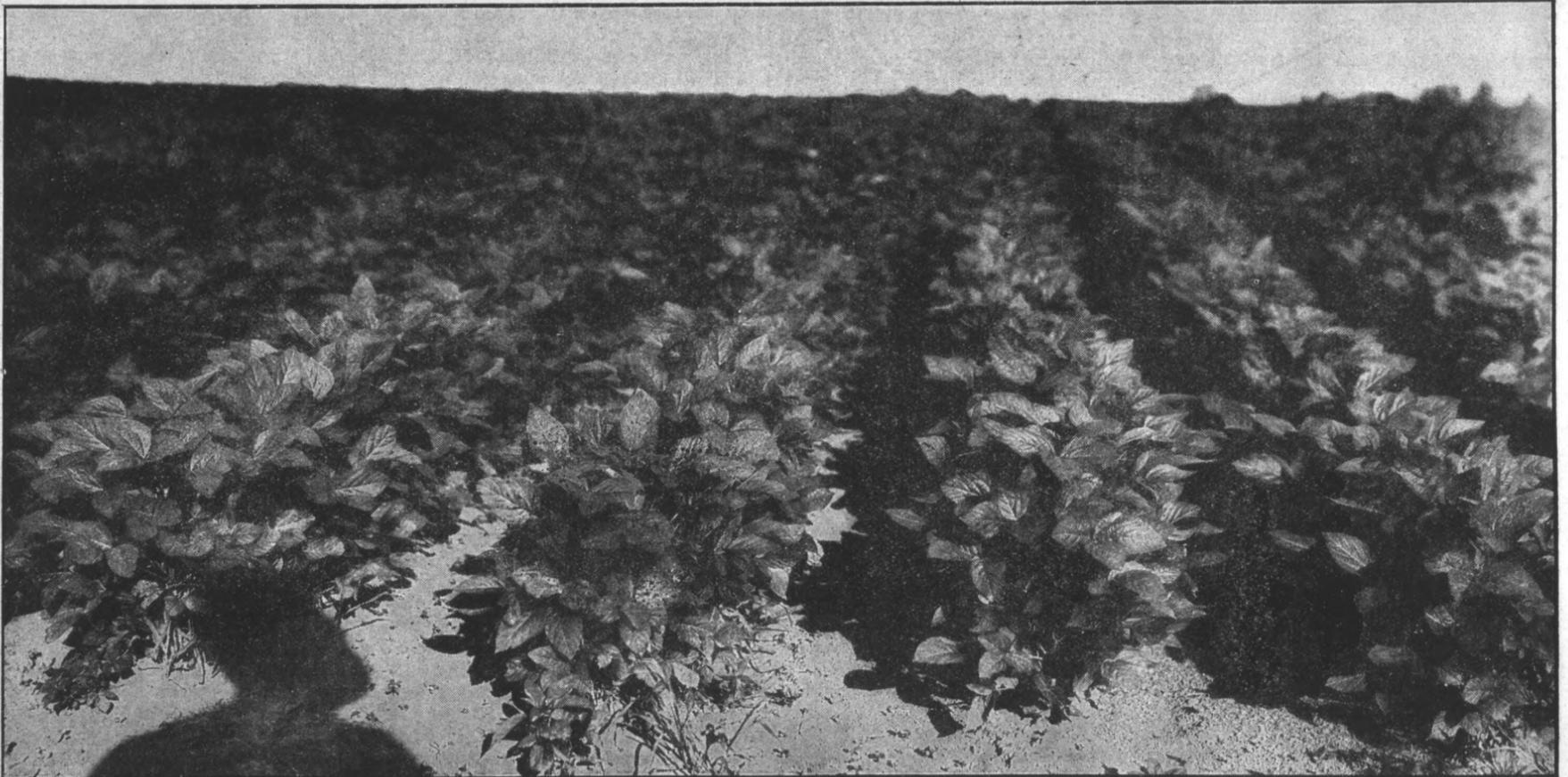
Undoubtedly the best preparation for soy beans is clover sod turned down, just as it would be for white beans or for corn or anything of that sort. The nature of this plant in its growth doesn't differ from other plants, and the better conditions that you can give it, so far as soil and tillage are concerned, the better chance you have for a good crop. But of course sometimes we want to sow

soy beans where we haven't got the very best conditions, then we must make the best conditions that we possibly can and do the best we can, and the plants will respond usually in proportion.

Harvesting.

Where the beans are sown broadcast and intended to be cut for hay they should be cut when the pods are nicely formed and the best way to do this is with a mowing machine the same as you would clover and make the hay on the same principle. Cut it down and rake it up before it has dried too much and put it into small cocks and leave it to cure in the cocks. You can leave soy beans on the ground in the swath longer than you can alfalfa hay and not have it injure the plants so much, but it is better to rake the hay up as soon as one can and let it make in the cock. You will have enough better hay to pay for this, and you will also save enough more of the leaves to pay. Where the crop is grown for seed it is usually planted in drills 28 inches apart.

In harvesting beans several ways have been tried. One is to use an old-fashioned self-rake reaper and throw the gavels off loose. You can bind them up afterwards if you want to, or you can handle them right from the gavel. Another way is to use a mowing machine, and last year on mine I tried the bean puller. We went on and pulled them just the same as we would white beans, and I like that way the best of any way that I have tried. Of course, you get the crop roots and all but the roots seem to do no harm. We put most of ours into the silo and the cows eat roots and all just as well as the pods



Soy Beans Planted in Rows, Showing the Dense and Rank Growth of Forage Produced by this Plant Under Favorable Conditions.

and the tops. Of course, they have to, but it don't seem to do them any harm. You get all of the crop and you don't spoil any mowing machine, and it is the nicest way to harvest them. One can use a self-binder but it is bad for the binder and if the beans are ripe they are liable to shell quite badly, and you have to handle them as cheaply as possible and save seed.

Varieties.

One must be careful as far north as Michigan to get an early maturing variety. Some varieties will not mature here for seed. The variety that has been grown most successfully and is pronounced the best by experienced growers is the Ebony or Black

Beauty, which has given good results so far as I can learn, in every instance, as have also the Wilson and the Ito San. Any of these varieties, if planted at a proper time, right after corn planting, will mature in Michigan in all ordinary years. Last year I had a field of early June peas for the canning factory and got them off the very last of June and the very first day of July I worked up this soil with a disk harrow and then planted it to soy beans. I got a splendid growth. They matured for hay. We pulled them and put them into the silo with the corn. Where one has a whole lot of live stock to feed this is certainly a proposition worth considering. COLON C. LILLIE.

those who are contented and satisfied with their present lot.

In point of fact it is proper in passing judgment on the work of the farm adviser to bear in mind that the opinions of those who have not availed themselves of his good offices are often ill advised, as opportunities for observation as yet are limited, and some who are disposed to criticize may yet lack information regarding his work. His progress must necessarily be slow, but it is absolutely indispensable.

Allegan Co. EDW. HUTCHINS.

THE SWEET CLOVER QUESTION.

Just now there are a great many inquiries about sweet clover. It is like the measles and chicken pox, they will never be safe until they have had them.

I have investigated sweet clover and if there is any reason why anyone should grow it, I have never been able to discover what that reason was. It has been recommended as a soil builder and as a forage crop. To my mind there is no use it can be put to that alfalfa will not serve better for. To begin with, the seed is expensive. You have to pay as much or more for the unhulled seed than you do for the hulled seed of alfalfa. According to bulletin 485 of the Department of Agriculture at Washington, a large part of this seed does not germinate the first year because of the thick hull that surrounds it. Now what good will the seed that comes the succeeding spring do? It will be but puny and insignificant at the time when, if used as a soil builder, it is ready to turn under. You can't get the full benefit if you do not let it get at least two feet high, and if you are not ready at once to turn under, it soon gets woody and resembles pig weed or shepherd's purse and is hard to get under. It is a biennial and it is its nature to die as soon as it makes seed, while alfalfa is a perennial and will furnish feed or hay for years and will build up the soil more cheaply than sweet clover.

Now as a forage crop, it is a delusion and a snare. What on earth anyone would starve cattle to eat it for, when they can raise alfalfa that all stock likes, is a mystery to me. It has a bitter principle which turns stock against it. Before you are tempted to try to make stock live on it, better sprinkle some quinine on your bread and butter and see how you like it. That is a good thing to give an appetite. True, stock will get used to it to some extent, but how about the young stock?

I have watched all kinds of stock and I will say they will not eat it when they can get any other fair feed.

Then it is claimed it will be a good thing to inoculate alfalfa ground. It will not inoculate for alfalfa any more than alfalfa will inoculate itself. You have to inoculate the sweet clover or wait until the bacteria gets into the soil in slow, natural ways. Then it needs lime in the soil, and if you think you can get a stand on run-down soil, you will be fooled. If sweet clover will grow on a piece of land, so will alfalfa with less cost for seed and it will be good for something when it is grown.

Gd. Traverse Co. E. H. ALLYN.

PROFIT FROM THE FARM.

I have no doubt that the many readers of the Michigan Farmer have been much interested in those articles lately in the paper, on that mooted question, "Does Farming Pay?" While so many of our farmers, especially the younger portion, are becoming somewhat dissatisfied, and some even moving to the cities, I believe it very essential that this most important question shall be thoroughly discussed. With your kind permission I wish to make a statement,

and also present some figures for the consideration of your readers and with the intention of verifying the same, viz., the ordinary farmer, with an ordinary sized family, on an ordinary 80-acre farm, receives a compensation other than money, equal to or greater than the interest at six per cent on his investment.

House rent	100
Use of conveyance for pleasure	50
Fire wood for cook stove.....	50
Flour	25
Potatoes	25
Meats	60
Butter	50
Poultry and eggs	40
Garden	50
Milk	20
Fruit	30

Total	\$500
Value of farm.....	\$6,000
Value of personal	\$1,500
Interest at 6 per cent.....	450

Now, what should his cash receipts be, which, deducting expenses, will represent pay for his labor?

Butter-fat or milk.....	\$ 700
Hogs	300
Wheat	200
Oats	125
Poultry and eggs.....	200
Fruit, etc.....	75

Total	\$1,600
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When we stop and think of the many different laboring classes not one having as many leisure hours as the farmer, the farm is by far the best place in the world to bring up a family of children, and with innumerable other blessings that are his we will, I trust, all agree that the "old farm" is a mighty good place after all.

Jackson Co. J. E. HELMER.

A HIRED MAN'S VIEWPOINT.

I noticed in my Michigan Farmer recently, a discussion of the hired man problem. Maybe I can solve it. I have been at both ends of the string and can say that if the hired man is used more as one of the family, and less as a tramp, he will undoubtedly work better.

The first place where I worked I was used like a dog, was begrudged a place at the table and given the smallest and most uncomfortable room in the house.

I was only a "kid" but I resented it, and slighted my work to "get even,"—I couldn't better my position. There were two girls, one my own age and the other a little older, and an elder son, they all picked on me, and had I been older I would have gone away, but at my age I didn't think it was well to try it.

I worked there seven months, doing the work while "the bosses" stayed in the house and played dominoes. This on an eighty-acre farm. The boss did the easy work, such as mowing and raking. While I, a sixteen-year-old boy, did the cradling, planting, cultivating and hoeing, and pitching hay and grain.

However, the last place I worked was a great deal different. There, on 200 acres we had four horses, 12 cows and the usual bunch of hogs and chickens. I took care of the horses, that was my chores. If I had time and cared to, I could help with the rest, but I didn't have to. I was used almost like a big brother by the children—of which there were nine—and almost like a son by the "gudemon" and his wife. It was home in the best sense. I didn't have the best room, but I had a good one. If I wished to go to town I was told to drive, if the horses were not working too hard.

The "boss" said that to get a man interested in his work he had to get interested in his man. And he was right. Give a dog a bad name and he will earn it. Use a man like a man and if he isn't all gone he will be a man.

I would advise the helping hand to have an interest in the work, the same as if it were his own, and he can't help getting along well.

Leelanau Co. H. M.

The County Farm Adviser.

IN several counties of Michigan farm advisers are employed for the purpose of encouraging better methods of agriculture. This is a new factor in disseminating information regarding improved ways of farming and quite naturally some criticisms are heard. Naturally the field of operation and methods of work and the exigencies of the situation in general are not generally understood. Some, too, are perhaps inclined to resent the suggestion that farmers are in need of such an agent for imparting instruction. In justice to the farm adviser, therefore, it is important that there should be a general understanding of the situation—the necessities of the case as well as the limitations under which this man works.

The necessities are found in the fact that the fertility of the soil is being depleted generally. In the older settled parts of the country, farms are being abandoned because they have become unprofitable and in all parts the average of crop production is declining. And this notwithstanding the work being done by the agricultural colleges in the several states, the experiment stations, farmers' institutes and the agricultural press. Already students of public conditions foresee the time in a very few years when with the present increase in population and the relative decrease in farm production this country will cease to export farm products and all that is raised will be required to support our own people. The seriousness of the situation and its consequences upon the welfare of coming generations as well as the prosperity of the present, unless this trend towards soil exhaustion is checked, is recognized by the general government and this service of instruction in better farming is established and fostered. It seems necessary that in some way the information shall be brought nearer to the farmers in general than is being done by any means now employed. It is thought to accomplish this by sending a man directly among them.

The difficulties and limitations under which the farm adviser labors should be understood. His position is a delicate one. He cannot go to everybody and offer his advice, but he can only go to those who ask for suggestions and assistance. Those who are satisfied and contented to follow along in the old ruts and continue to rob the soil, as many of them are doing, must be allowed to continue as they are doing, no doubt, until they die off and younger and more progressive men shall take their places and undertake the work of repairing the damage they have done and again building up the soil.

Another large obstacle in the progress of this work is found in what, by courtesy, may be termed the proverbial conservatism of the average farmer. He is slow to change his methods and take up with new ones.

This is illustrated in the progress made in spraying apple orchards. In the writer's vicinity a few began spraying with decided results probably 15 years before owners of apple orchards were generally buying spraying outfits. And yet the difference between sprayed and unsprayed orchards is decidedly more marked than would be the case between any possible differences in farm production. The farm adviser can gradually introduce successful experiments among the people as he can find men willing to undertake them and after a time others will gradually take them up, but the progress must necessarily be slow.

And probably one of the greatest of the limitations of the farm adviser may be found in the fact that the great body of farmers do not realize nor appreciate the gravity of the situation. Apparently they are quite contented with their lot, and if they note any falling off in yields over previous years they are disposed to attribute it to seasonal changes or adverse weather conditions rather than to any defect in their system of farming. They do not interest themselves very largely in different or better methods. This has been very apparent in an experience in farmers' institutes recently covering a period of nearly three weeks. In townships largely and, some almost exclusively, rural, with an average of 400 to 500 registered voters, not to exceed 40 to 50 actual farmers were in attendance on an average at the local institutes. And this in a county containing as many Granges and other farmers' organizations and in which as many institutes and similar meetings have been held, and as progressive in all respects, as any county in the state. Nor are these conditions confined to Michigan alone. A recent visit of several days in eastern central Illinois disclosed a similar state of affairs there. Probably no part of this country possesses richer or more productive soil, naturally, than those prairie soils of that section. The state is conducting experiments in no less than 20 different places and doing what is in its power to teach improved methods of farming; yet right up to the very suburbs of Champaign and Urbana, where are successful experiment stations, the same general practices of soil robbery prevail. Bankers, business and professional men understand that what was once considered inexhaustible soil is being rapidly depleted, but the large mass of the farmers do not, at least to the extent of adopting better methods. With some of them it is too much trouble to utilize the fertilizing material right at hand, but they prefer rather to rake together the cornstalks in the fields and burn them, and in the spring evenings the prairies for miles are dotted with the smoldering fires. Even a considerable falling off in production does not arouse nor alarm these sleepy farmers. It is difficult for the farm adviser to help

TESTING THE SEED CORN.

There are many different kinds of germinators on the market, and almost any of them are good; but the best and cheapest of them all can be made at home for a few cents. The germinator is made in the form of a shallow box with an inside dimension of 30x20x2 inches. This is space for 140 two-inch squares, if you put a brace piece in the middle of the tray. The lumber used should all be half or three-quarter-inch stuff, except the two pieces used for the ends and these should be one inch thick, in order to give the tray the desired strength and stiffness.

The squares into which the tray is divided are made by driving in tacks every two inches along the middle of the sides and ends, and stretching string back and forth on the tacks until you have the whole tray divided into two-inch squares.

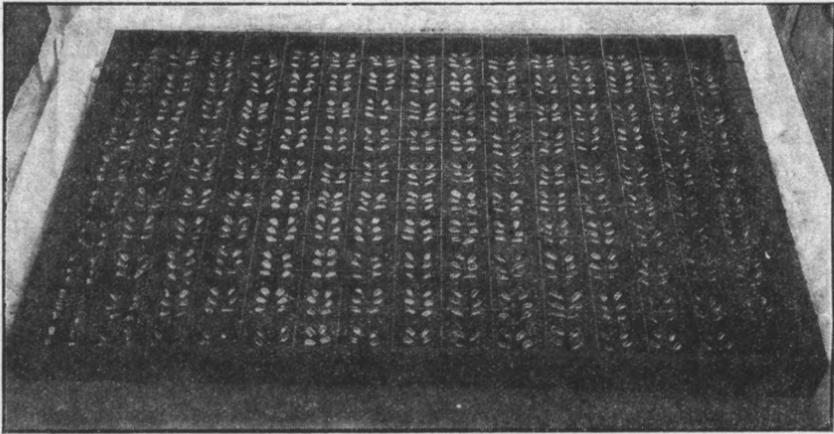
Light sand is the best medium in which to germinate the corn, as it is cleaner and more easily handled than anything yet used. A little readily available fertilizer is a good thing to put in with the sand, as it gives the plants a better media in which to grow, and thus hastens the germination and later growth.

The corn on the rack should be divided into rows, ten ears in a row, and with a stick to mark each ten. A tray is filled with the sand and is

event all the light possible should be given, because the corn comes on faster; and thus one is better able to tell the true condition of the ears represented. The corn will require at least twelve days of germination and growth before it is in the best condition for judging.

At the end of the time required the tray is taken to some convenient place near the corn rack, and the culling of the poor ears begins. It is more economically done by two men, one judging the corn, the other taking the ears from the rack as soon as they are judged. The work may be done by one man, but in this case he had best put down the results of his judging on a piece of co-ordinate or "squared paper," placing the result of his judgment in a square of the paper that will correspond to the ear on the rack. Then, after he has secured the data on one tray of corn, he may then take his paper and save or discard the ears, as may happen to be indicated.

In the judging of plants one must have a standard and stick to it throughout the entire time. The stalks, at this time, ought to be about four inches high and perfectly uniform. If, for example, in a certain square all the kernels came up but were shorter than the average in the tray, the ear they represent should be discarded, as this indicates poor vitality, and such an ear would not produce a pay-



A Good Germination Box for Testing Seed Corn.

leveled off even with the top of the tray. The sand should be left as loose as the leveling process will permit, as in this physical condition it is easiest to plant into. A cord is now stretched upon the tacks, thus dividing the tray into two-inch squares. Into the first square is planted five kernels from the first ear in the rack, in the second is planted five kernels from the second ear; and so on till the five representative kernels from every ear have been planted. The kernels should be selected around the cob, the first one about one inch from the tip, the last about one inch from the butt; the other three are taken from the middle of the ear and in a spiral manner around the cob. The five kernels should be pushed into the sand in the center of the square, and as close together as is possible, as this does away with any confusion due to the stalks of one square pushing out into another. Ten ears of corn fill up the ten spaces of the first row, and, as the ears are set off by tens, we may be able to tell readily just where a certain ear is on the rack. When a tray is filled a marker should be placed at that point to tell where one tray stops and the other begins.

Each filled tray is now wet down until the water stands on the surface of the sand, this is done so that the kernels will have plenty of water to soak up, for this hastens the germination by the changing of the stored food in the grain to an available form ready for use by the developing "germ." Subsequent waterings should merely wet the soil. The corn will germinate best if it is given top light, but if this is impractical, good side light will do almost as well. In any

ing quality or quantity of corn. The ears, by the test, may be divided into four classes. No. 1, those that produced five good healthy plants; No. 2, that lacked one plant; No. 3, that lacked two, and No. 4, that lacked three or more. The first class may be depended upon to produce a stalk of corn apiece. If, for any reason, the second two classes have to be used they may, but allowances must be made for their deficiency in germinating and growing powers. Class No. 4 is of no value, and the members of it are, of course, discarded.

After the corn is tested and the different classes arranged, it is shelled and each class is put into a bag and labeled. The bags are then hung up in a cool dry place away from mice and other animals.

Ingham Co. R. P. WASHINGTON.

VITALITY OF SEED.

As a result of careful tests made by the Department of Agriculture of over 3,000 carefully selected ears of what was considered good standard seed corn, more than half of the ears were found to be of low vitality and unfit for seed. By testing individual ears and rejecting those of low vitality, an average gain in yield of nearly 14 per cent could be secured as a result of the better stand and better productiveness of strong plants.

This is a very attractive statement. Figure out the cost of these germination tests and then figure your last year's corn average and yield, and strike a balance with a 60-bushel yield per acre and with corn at say 60c a bushel, the increased profit per acre would amount to \$5.04.



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Paint is the sign of prosperity on the farm. To be well painted means real prosperity, because well painted buildings, fences and implements are actually worth more in cash. A prosperous look about the farm goes a long way in increased respect at your local bank. You can, with a little time and

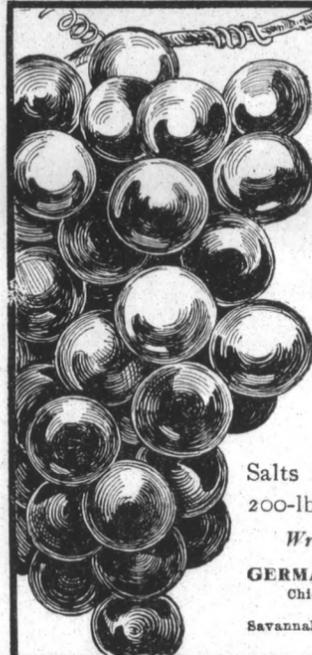
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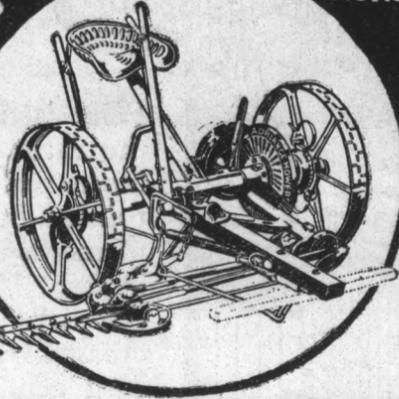
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FARM NOTES.

Sowing Alfalfa with Peas.

I have five acres of rolling ground, well drained, a good loam soil, which I wish to seed to alfalfa this spring. Last spring I plowed under a good rich sod and planted it to potatoes with commercial fertilizer, and raised a good crop of potatoes, keeping the ground free from weeds. I am going to sow peas for the cannery and sow alfalfa with the peas. What do you think of my proposition? Has anyone tried it? Would some of the Michigan Farmer readers answer through its columns?

Mason Co.

W. E. D.

When our soils have become well inoculated with the bacteria peculiar to alfalfa, it is entirely probable that we can get good stands of alfalfa much more easily than is the case on fields where this crop has never been grown. The common experience of those who have succeeded best with this plant is that the first time it is grown on a field, the conditions should be made the best possible in order to insure its success. However, these favorable conditions seem to be present on some soils, and it would not be an expensive experiment to try out the plan suggested in this inquiry, then if early peas are sown for the canning factory, there would still be time to prepare the soil and re-seed, if this first seeding of alfalfa did not prove a success. If any reader has had experience with this method of sowing alfalfa, information concerning it would doubtless be appreciated by many readers.

Seeding Sweet Clover with Peas and Oats.

Can one get a seeding of sweet clover with Canadian field peas and oats? How much sweet clover should be sown per acre; also how many peas?

Montcalm Co.

H. N.

While it might be possible to get a good stand of sweet clover by seeding it with peas and oats, it would be just as doubtful a proposition as getting a stand of alfalfa or common red clover sown under similar conditions. About twenty pounds of sweet clover seed should be sown per acre, as much of the seed will not germinate the first season. Peas and oats should be mixed equal parts and about two to two and a half bushels of the mixture sown.

Crops for Green Manure.

I have some very sandy soil which has been run for years with nothing put back. How would corn sown and then plowed under when knee high, act as a fertilizer, or is there any other crop that could be put in this spring that would be better?

Eaton Co.

S. R.

It will be more profitable to sow some leguminous crop, such as soy beans, as a crop for green manure. A good way to improve this land, and at the same time utilize it to some extent, would be to plant soy beans in drills so they could be cultivated, then about the middle of August sow vetch and rye between the rows, and hog down the soy beans this fall, turning the whole under next spring when the vetch and rye gets a good start. Of course, any crop which is grown and plowed down will improve the physical condition of the soil, but a leguminous crop will add some nitrogen as well.

Treating Seed Corn to Prevent Depredations of Crows.

I would like to ask through your paper how to treat seed corn so the crows will not take it.

Kent Co.

G. C. H.

Various plans have been tried for the treating of seed corn to prevent the depredations of crows, but practically all of these involve hand-planting and have been abandoned by most farmers. Devices of which the crows are suspicious are often resorted to to keep them from the fields, with varying success. Perhaps the best plan is to plant the corn on a well-prepared seed bed after the weather is warm enough to bring it up quickly, and guard the field if necessary until after the corn comes up until it gets too large for the crows

to disturb. A little corn scattered in an adjacent field would tend to bait the crows away from the cornfield.

Coal Ashes as a Fertilizer.

Are hard or soft coal ashes any good for fertilizer on light soil? What kind of fertilizer would be best for corn on light soil, with a light clover sod on part of it; how much per acre; how would be best to apply it, and what can it be bought for?

Allegan Co.

W. H.

Coal ashes are of little value as a fertilizer, and would not pay even for the labor of applying them to a light sandy soil. On heavy clay soil, soft coal ashes are valuable as a means of making the soil less impervious to air and water, and if available without cost other than their application, it will often pay to use them. Neither hard or soft coal ashes, however, contain any quantity of available plant food.

Fertilizer for Corn.

A complete fertilizer would be most suitable for use on corn on this kind of land. One should be used, however, which contains a fair percentage of phosphoric acid. A standard grain fertilizer containing eight to 10 per cent phosphoric acid, a fair percentage of potash and a little nitrogen would be suitable. If applied in the hill, only a small amount should be used, say 100 lbs. per acre, as a larger amount will be likely to injure the germinating quality of the seed under unfavorable weather conditions. Where applied broadcast and worked into the soil, 500 lbs. per acre is a fairly good application. The cost will depend altogether upon the analysis of the fertilizer.

Sowing Alfalfa in Wheat.

I would like to know about sowing a field to alfalfa. It was clover sod to start with, covered heavy with manure and put into corn, and is now in wheat. Would it be all right to sow alfalfa this spring in the wheat and plow it under in July to inoculate the soil?

Calhoun Co.

C. C. W.

There would be no object in sowing alfalfa with the idea of plowing it under after the wheat is harvested, to inoculate the soil. If the bacteria is present in the soil or is introduced with the seed by other means, and the soil is in a proper condition to provide a suitable medium for the development of the bacteria, the alfalfa plants would become inoculated, and if a successful stand was secured, it would be poor policy to plow it up. On the other hand, if the bacteria were not present or the soil not in a suitable condition for their development, the young plants would not become inoculated, and plowing them down would not inoculate the soil for future crops. After our soils have become accustomed to growing alfalfa and have become thoroughly inoculated, it is entirely probable that alfalfa can be seeded in wheat as common clover now is, but for the first crop on any soil, it is better to provide the best possible conditions for the plant, in order to get it well started.

MAKING THE FARM PLEASANT.

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RESULTS OF DIFFERENT METHODS OF INOCULATING FOR ALFALFA.

In the Michigan Farmer of March 22, 1913, I had an article on inoculating for alfalfa, in which I told the readers of my experiments in inoculating several plots of ground, using different amounts of soil and different methods of inoculating each plot, and said I would weigh the hay from each plot separately and report the results in the Michigan Farmer. Right here I will say that, owing to the very severe drought in the months of August and September, I was unable to get but two cuttings last year, and that there was more or less common red clover in each plot, but I made a careful estimate of how much there was and have deducted it from the total amount and this report gives only the exact amount of alfalfa hay per acre grown from each plot.

Now for the benefit of those who did not read the article referred to, I will say that the entire field was fertilized during the winter with 30 tons of stable manure per acre, except two small plots that were left for an experiment.

On plot one I sowed two tons of soil per acre from an old alfalfa field, disking it in thoroughly with the manure before plowing, and as this plot has yielded much more hay than any one of the others, I shall follow this method until I learn of some better way. This plot yielded 6,750 lbs. of hay per acre in two cuttings.

Plot two was only about two rods of ground near the middle of plot one which I did not fertilize but inoculated at the rate of five tons of soil per acre. From this plot I got about 50 lbs. of hay, or at the rate of two tons of hay per acre, and also learned a valuable lesson that I will not forget, and that is, that if I want to get a good crop of alfalfa I must use fertilizer with the inoculated soil.

Plot three was fertilized the same as plot one and was disking with a cutaway before plowing, but only one-half ton of inoculated soil was sown per acre and that sown after it was plowed. From this plot I got at the rate of 4,165 lbs. of hay per acre. Please compare this with the amount of hay I got from plot one and then multiply the difference by five and you will see how much I will lose in five years, as there will probably be about the same difference each year for the next four years in the amount of hay I will get from each plot, and then draw your own conclusions as to whether it pays to inoculate with two tons of soil per acre, or only one-half ton.

Plot four was treated exactly as plot three, except that there was one ton of soil used per acre for inoculating, but the yield of hay was but little more than plot three.

Plot five was manured the same as plot one but was not inoculated at all, and the yield was only at the rate of 1,500 lbs. of alfalfa hay per acre. Please note the difference in these two plots.

Plot six was not manured or inoculated and there was not enough hay on it to pay to cut it. I don't think there would have been at the rate of 100 lbs. per acre.

Now I will report the results of eight years of my farming the same acre that is in plot one. Ten years ago it was part of an old peach orchard and I pulled the stumps and manured some of the lightest soil and planted it to potatoes and got about 130 bushels. The price of potatoes that year was only 10 cents per bushel so I was out at least \$10 for my seed and labor. The next year I planted it to red kidney beans and got a good crop and a good price for them, and made about \$10 more than my seed and labor cost me, so I was just even on those two years. The next year I gave it a light coat of manure and planted it to corn and

got 110 crates of corn; then I was ahead about \$25 for that year. The next year I sowed it to oats and seeded it with clover and timothy, with a profit of \$10 for that year. The next year I cut a good crop of clover hay and also got a light crop of clover seed and was at least \$30 ahead for that year. The next year I got about \$15 worth of clover and timothy hay from it more than my labor cost to cut it. The seventh year I planted it to potatoes, using large seed and cutting them in three or four pieces, but owing to the very hot, dry weather at planting time, a large per cent of the seed almost baked in that ground, so that I had a very poor stand and got only about 40 bushels, which I sold at 70 cents per bushel. This made a net profit of \$5.00 or \$6.00 for that year. The eighth year I planted it to corn, but the cutworms were so bad that I had to replant it twice and it was so wet and cold in the fall that the corn did not ripen and was not worth enough to pay for the labor that year. On the average for the eight years this acre has paid me about \$10.50 per year net profit, or there has been grown upon it about \$185 worth of crops at a cost of over \$100 for seed and labor. In the year 1912 I sowed this acre on the third day of May to peas for the canning factory, and sowing 16 lbs. of alfalfa seed with them. The net profit that year was about \$20.

Perhaps nearly everyone who has made a success in growing alfalfa has observed that it grows a heavier crop each year for three or four years after it has been sown, and as I got 6,750 lbs. of hay the first year from two cuttings, I stand a pretty good chance of getting five tons or more this year at three cuttings, and even more than that the two following years. As we are told by those who have analyzed it that a ton of alfalfa is worth nearly as much as ton of bran, the hay will be worth more than \$20 per ton and can be cut and put into the barn at from two to three dollars per ton. Figuring on this basis, my average net income from this acre will be about as much each year for four or five years as it was for the entire eight years before I sowed it to alfalfa.

Oceana Co. H. K. BRANCH.

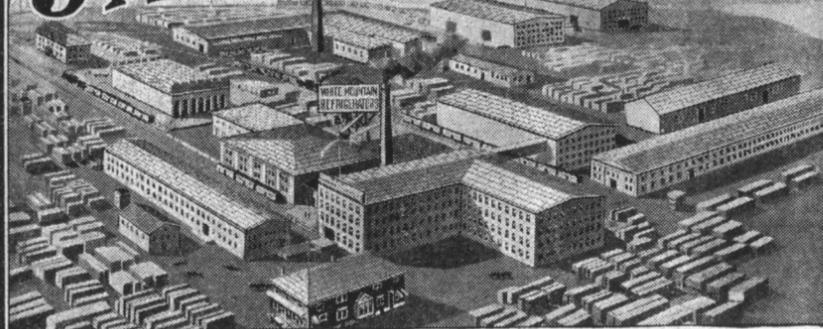
ROAD SOILS AND ROAD WORK.

Just as soils differ for agricultural purposes, so they differ for roads, say the road experts of the Department of Agriculture. Clay or soils of fine texture usually make poor roads, especially if they contain much vegetable matter. The coarser soils, however, which contain some sand or gravel, will often make very satisfactory roads for light traffic, provided they are kept in proper repair. If the road is composed of fine clay or soil, it will sometimes pay to resurface it with soil which has sand or gravel mixed with it.

It is a great mistake, say the road specialists, to put the working of the earth off until August or September. The surface is then baked dry and hard. It is not only difficult to work but is unsatisfactory work when done. Earth which is loose and dry will remain dusty as long as the dry weather lasts and then turn to mud as soon as the rains begin. By using the road machine in the spring of the year while the soil is soft and damp, the surface is more easily shaped and soon packs down into a dry, hard crust which is less liable to become dusty in summer or muddy in winter.

Repairs to roads should be made when needed, and not once a year after the crops are "laid by." One day's labor, judiciously distributed throughout the year, will accomplish more and better work in the maintenance of an earth road than the same amount of labor expended in six days, especially if the six days are in August, September or October.

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Live Stock.

COST AND PROFIT IN LAMB FEEDING.

For the benefit of your readers, I will try and give the exact cost of buying, feeding, shipping and selling a carload of lambs.

I bought in Chicago Nov. 24, 1913, 377 lambs, average weight per head, 44 lbs., at \$6.60 per cwt., which is \$1,174.00. Freight from Chicago was \$23.40; interest on \$1,197.40, \$21.15, making the total cost of lambs \$1,218.55. For two weeks I let them run in a pasture lot that had been used for cattle as long as they could pick a living, so I have made no charge for the pasture, for they had to earn all they got. Fed them on clover hay for one week, and then commenced to feed grain, oats, rye, beans, wheat bran equal parts ground together, adding one-fifth whole barley the first month, and for the rest of the time corn, beans, rye and wheat bran equal parts ground, and the same bulk of barley with clover hay. Amount of grain used, oats one and a half tons; beans, three tons; corn, two tons; rye, three tons; wheat bran, three and one-half tons; barley, 12 tons, and hay 13 tons, the whole cost of which, including grinding, was \$603.54. Six died, the balance I shipped to Detroit on March 10, getting \$7.75 per cwt. for 369, and \$3.00 each for the other two, which were crippled in the cars. They averaged 73 lbs. per head, or a total of \$2,096.95. Expenses of marketing were as follows: Freight, double-deck, \$13.50; single-deck, \$10.50; 300 lbs. hay, \$4.50; 4 1/2 bushels of corn, \$6.75; scales and yardage, \$7.38; commission, \$16; insurance, \$20; total, \$58.83. The net profit after deducting all expenditures above noted, was \$215.03.

I have not allowed anything for labor, but I have 50 loads of first-class manure to put on the farm, and that is worth nearly what the labor was, for if we had not been caring for these lambs we would have been idle, and that is as bad as working.

Genesee Co. JOHN DECOUR.

HELPING THE LAMBS.

There perhaps is no place in the management of live stock where a little help of the right kind will return greater compensation than with the little lambs when they are about to make a start in life. The flock owner who desires to encourage uniformity and rapid development in the lamb crop will study means of helping nature to give the young lambs a good start and promote continuous bone and flesh formation.

Ewes that have been well fed and cared for during the pregnant period generally drop strong, robust lambs, ready and anxious to undertake the burden of wool and mutton making. However, despite good attention, there are always a few ewes which encounter difficulty and must be helped in order to overcome functional weakness. Help, of course, must always be governed by circumstances, as probably no two cases will respond to the same kind of assistance. Ewes that drop their lambs on pasture during the months of April and May generally require less attention than ewes that lamb while confined to dry feed and do not have access to natural food.

No small amount of the trouble accompanying lambing can be avoided if the flock owner is onto his job and paying attention strictly to business. Ewes disowning their lambs is one of the common annoyances which every flock owner is up against, notwithstanding he has given the ewes the best of care. This trouble is not al-

together caused from improper feeding, but a maternal weakness that can be partially obviated through skillful management. Ewes suspected of giving trouble of this character should be removed from the flock several days previous to lambing and confined to a small pen where they can be closely watched.

For the good of the newly-born lambs and ewes, neither should be required to move about much, at least for the first day or two after lambing. If the lambs come on pasture during the month of April and early May it is prudent to guard against sudden changes of weather and cold, chilly nights. Newly-born lambs are very sensitive to abrupt changes of any nature and such are always likely to produce functional disorder. During the early spring, no matter how favorable the weather may be, it is a good practice to confine the flock to the stable at night to insure the young lambs against physical evil.

Sometimes lambs are born with stiff necks, or their necks become stiff subsequently. Frequently peculiarities, such as becoming lame in their legs, in some instances unable to stand, appear to nurse with difficulty and act sluggish, the flock owner is lost to know just what to do to effect relief. First, put the lambs in a warm, dry place along with their mothers. Then make a thorough examination of each lamb. Constipation, diarrhoea, inflamed gums, swelled neck and rheumatism are very common ailments of young lambs and if attended to on time can be successfully treated without causing a setback in the growth of the lambs. The secret of treating little lambs is discovering the trouble and administering treatment before the ailment has secured a strong foothold.

Shiawassee Co. L. C. REYNOLDS.

FEEDERS' PROBLEMS.

Catch Crops for Hog Pasture.

I have about three acres of June grass sod that I am going to fence off and sow half of field to some early crop for hog pasture and, as soon as that is ready to turn onto, plow and sow balance to something that would be good for a late fall pasture. What would you advise me to sow for the earliest pasture, also for the late? I would like to get this field sown to alfalfa as soon as possible but need the field for hogs this year.

Genesee Co. SUBSCRIBER.

A combination of peas, oats and rape should give as good results as anything which you could sow for early and late hog pasture. If the entire field is sown as early in spring as practical, then it could be divided and part used for early pasture, giving the balance of the field an opportunity to grow to near maturity before the hogs are turned in, then, if the first part used is pastured so closely that late fall pasture will not be secured from it, more rape seed could be sown to provide later pasture. Soy beans or cow peas could also be used for the later pasture, but the mixture above advised would give better results for early feed. About four or five pounds of rape seed would be sufficient per acre.

Cooking Cull Beans.

I wish you would have some of your readers tell me the proper way to cook cull beans for feeding hogs and cows. A good many of my neighbors have failed to make a success of bean cooking.

St. Clair Co. J. P.

The best way to cook cull beans is in a covered kettle or cooker, using as little water as possible so the beans will not be sloppy when they are cooked. A little experimenting with the cooker which is used will determine the best amount of water to use in the cooking process. For

cows a good many feeders are now using bean meal in connection with other feeds instead of cooking them, this being a more convenient way of feeding.

PUSHING THE PIGS.

To produce rapid gain with pigs at low cost in the shortest length of time it is very essential that the proper kind of food be supplied from the day of birth until the hogs have reached maturity.

There are three elements that the body of the hog is made of that should be supplied at all times during the growing stage. First, mineral matter, which goes to supply bone material; second, protein, which furnishes material for muscle and repairing broken down tissues, and, carbohydrates, which supply nourishment to the various parts of the body.

One cannot expect a hog to take on a large amount of flesh unless it has the frame-work to carry the burden. In a large measure the frame of the hog determines profit realized from feed consumed. In feeding growing pigs I direct my attention toward supplying the body with mineral matter to produce the bone growth as well as with other materials for the other parts of the body.

Of course, while the pigs are receiving nourishment from their mother the mineral matter must be supplied through that source. There are, I find, several ways of supplying this mineral matter to the growing pigs. Salt, wood ashes, charcoal and soil are good economical means of supplying this mineral matter to the pigs during all stages of growth and development. I find it an excellent practice to salt my hogs regularly no matter whether they are on pasture, grazing a good portion of their living, or whether they are in the fattening pens. If salt is fed in limited amounts in the slop daily there can possibly no injurious effect result and I know that my hogs keep in a healthier condition.

I always supply abundant charcoal obtained from the sifting of wood ashes and coal cinders to my hogs at all times of the year. I find that they relish the charcoal, and it seems to serve as a good tonic for them.

Green forage is one of the essentials to successful pig raising, and is a direct means of supplying mineral matter to the growing pigs during the summer season. Clover contains in the green stage small amounts of mineral matter and if grown for grazing purposes will produce rapid bone development. Cowpeas and soy beans are good and I always grow a lot of them as catch crops, but I do not consider them as good as alfalfa and other clovers for growing hogs.

When pigs are pastured on mixed grass, clover or field peas, they will not consume as large amounts of mineral matter as when confined to limited quarters and when depending upon grain rations, nor do they need so much supplied, for they are getting a great amount of their supplies from grass and clovers.

The larger portion of the ration supplied to growing pigs should, of course, be made up of protein. From the period of two to six months old the main object in feeding growing pigs is to develop bone growth and the encouraging of the taking on a moderate amount of flesh. This being true, I consider that a ration that is excessive in protein is detrimental in producing rapid bone and flesh growth. Wheat middlings, oats and field peas are good materials for balancing a protein ration for growing pigs.

Last year I fed a bunch of pigs during March and April on a part ration of middlings, giving them access to a clover pasture and they did well, making gains every day. Hogs are great money makers, and especially so at the prices now prevailing. Texas. A. M. LATHAM.

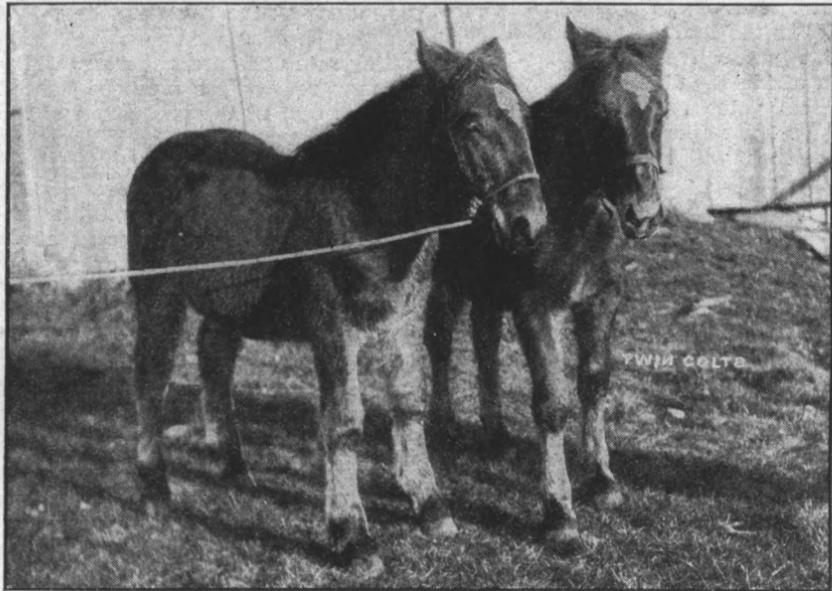
EXPERIENCE WITH HOG CHOLERA.

Immunity from the Disease.

Since hog cholera has become such a scourge, each one's personal experience becomes of interest, and while I cannot agree with the conclusion drawn by Mr. Townsend in his contribution, printed in a recent issue, I do not question the facts of immunity in his herd in the face of extraordinary exposures as he states them.

Five years ago I purchased the farm where I live. There is a slaughterhouse operated on the farm, then situated about 80 rods from the barns, now removed about 40 rods farther away. The year before I moved on the farm they lost about 40 hogs by unmistakable cholera; my first year here a herd of over 20, and while they now dispose of most of their hogs before they fear the disease among them, there has not been a year when the disease has not taken one or more hogs for them. My dog is in their yard every day, going there to get meat and bones. He has always played with my hogs. I have all fertilizers from the plant; and frequently go around my own hogs before even giving my boots a good cleaning after drawing manure from there. And two years ago, after they had lost several head of hogs from cholera, a bone dealer gathered a large load of bones

the cholera nearly cleaned out the hogs of that entire section. The following winter he began feeding chloride of lime, and salting liberally, the salt causing them to drink water freely. For about 30 hogs he would take a one-pound can of the lime, dissolve it in a 50-gallon cask, in as much water as would soak up enough corn to fill the cask when it swelled out, and fed this every week the year around. He never lost a hog from cholera after he began this, although the disease took whole herds on every side of him in several different seasons. I regret to say, that owing to the sales he got for brood sows he would never tell his neighbors what he did. As I raise but eight or 10 a year, I just take a small handful of air-slaked lime or hydrated lime, (either one, as I have it), for each two grown or half-grown hogs, and stir it into their swill twice a week the year around, and usually about cholera time, every other day. I sell milk, so for drink they get water. I salt this once a day and keep plenty of wood ashes where they can work them over for charcoal. For feed, pasture in summer, alfalfa or June clover in winter, with middlings, corn and meat scrap which I purchase from the meat company, being the scrap left after trying out the tallow other than the suet. I do not claim to be a particularly successful hog



Well Matched Twin Colts Raised on the Farm of W. Hunter, Montcalm Co.

from the yards, and in coming out his wagon broke down and he dumped the whole load in my yards. And when I came up from work six hogs were busy rooting and hunting them over for scraps of meat.

The year before I moved here, the renters who then lived on the farm lost 17 head from cholera. When the disease first appeared among their hogs they divided them, using about every available building and yard, and even the root cellar, and having no interest in the next year, buried them so shallow that the plow passed through some of them the next spring. And dogs and skunks dug into more of the carcasses. Although told I could not keep hogs here for at least two years, I raised four, fattened them in an old wooden pen where five died the previous year, and have raised hogs every year since and never have had a sick hog from any cause.

I note Mr. Townsend has a large pasture and nothing keeps hogs in better health than a good large range. And it is an old recognized fact that with man or beast a sound, healthy stomach and digestive tract will pass disease germs through when with weak digestion or impaired vitality the same germs will thrive.

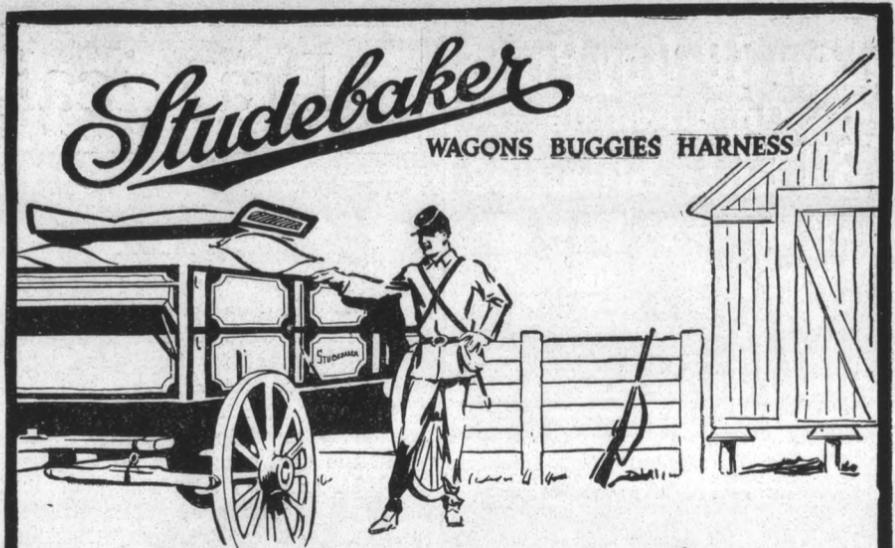
For the past two years the cholera has been very prevalent around here. Now I have no cure, but in my case, and in another in Nebraska, a treatment which has proven an absolute preventative. I had a relative in Nebraska who raised all the hogs he could from 30 brood sows. One year

raiser, but I raise them and have no fears of cholera.

Ionia Co. W. B. TRAVIS.

FEEDING EXPERIMENTS.

In experiments which were conducted at the Woburn Experimental Farm, in England, five lots of four each of approximately three-weeks-old Shorthorn bull calves, previously reared on whole milk, were fed nine weeks on the following feeds: Lot 1, cod-liver oil and separated milk; lot 2, a purchased "calf meal," along with whole milk and separated milk; lot 3, gruel, consisting of six pounds of fine oatmeal and one pound to one gallon of water, with separated milk; lot 4, whole milk; lot 5, crushed oats given dry, and separated milk. Following this period the calves were turned out and all fed alike with separated milk, a little linseed cake, and crushed oats; later the milk was discontinued, and the oats and hay increased. The calves were castrated when about six months old and then fed throughout the winter on linseed cake, cotton cake, and sliced roots. The greatest gain was made by the calves in lot 5—13.30 pounds a week per calf for the first feeding period of nine weeks, at a cost of about five cents per pound of gain. During the second feeding period this lot made an average gain per calf daily of two pounds. It is concluded that the early feeding of calves has an important bearing on their development, and that a good start is very essential.



Bought his Studebaker when he came home from the civil war—using it yet

WHEN David Hire, of Syracuse, Ind., got home from the Civil War he bought a Studebaker Farm Wagon. That was 48 years ago, and the same wagon is still hauling fifty bushels of wheat at a load to market.

Here is what Mr. Hire has to say about his Studebaker wagon.

"It may interest you to know that I have in my possession a Studebaker Farm Wagon bought just after I returned from the war, about 1866, I think. It carried a guarantee to haul 50 bushels of wheat and though it has been in constant use since it was bought, it is still good to haul that amount to market. I hope to use it for many years yet, as it is in good condition."

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You may be offered a wagon at less cost than a Studebaker, but consider that the cheaper wagon may last five or ten years, while a

Studebaker will last a lifetime. That makes the Studebaker the better investment, doesn't it? "Build not the cheapest, but the best" has been the policy of Studebaker for over half a century.

You can't make a mistake if you buy a Studebaker Farm Wagon, Buggy or Harness.

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STEWART'S No. 9 BALL BEARING SHEARING MACHINE PRICE \$11.50

gets all the wool and takes it off quickly and smoothly in one unbroken blanket. To shear with the Stewart Machine seems like play to those who have labored with hand shears in the old, hard, sweaty way. You don't have the same swollen aching wrists. You don't scar and disfigure your sheep with uneven shearing and spoil the wool with second cuts like you used to do. Get one from your dealer, or send us \$2.00 and we will ship C. O. D. for balance. Money back if you are not well pleased.

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For Horses, Mules and Cows
It pays to clip horses and mules in the spring—they look and feel better, do more work, rest better and get more good from their feed. Clipping the flanks and udders of cows prevents the dropping of filth into milk. The Stewart can be used for clipping horses, mules and cows without change. It's the easiest to turn, does the fastest work, stays sharp longer and is the most durable. Get one from your dealer, or send \$2.00 and we will ship C. O. D. PRICE for the balance. Money back if not well pleased. \$7.50

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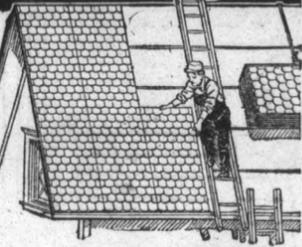
Roller bearing trolleys are completely enclosed in heavy steel tube. Cannot be clogged or derailed. Trolleys operate on level tread, reducing friction to the minimum and preventing wedging or binding. Light and heavy doors roll with equal ease when fitted with the Bird Proof. Double flexibility permits the door to fit snugly without sticking or binding, and lessens the probability of its being broken by crowding stock. The tubular form of the Bird Proof Track, and the special grade of steel used in its manufacture, combine to give it wonderful strength and rigidity. Will not sag with heavy doors.

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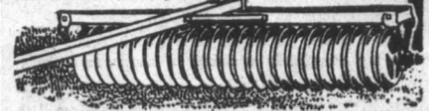
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Practical Science.

A CRITICAL STUDY OF THE MILK PROBLEM.—(Continued).

BY FLOYD W. ROBISON.

Suppose the City Controlled the Milk Supply.

If one man were to take upon himself the contract for furnishing milk to the city of Detroit, or if the distribution of milk in this city were to become a municipal problem, what would the cost of such a product be?

We discuss the advisability of the municipal operation of public utilities such as street car transportation, but hear very little or nothing about the ownership or control of a city milk supply, and yet the people of the city are more dependent upon the milk supply than upon the street railways.

Our purpose, however, in discussing this topic in this way, is merely that the public may get a clearer idea of the extent of the problem which the handling of city milk involves.

One Quart of Milk for Each Three Persons is Surely Conservative.

There are approximately 500,000 human beings in Detroit. The records will show that each human being consumes about one quart of milk in three days. Figuring the usual production of the average dairy cow, it may be easily seen that to produce this milk supply will require a herd of 25,000 active cows. The first investment, therefore, which would need to be considered, would be the cost of securing 25,000 dairy cows. We have placed the cost of such an animal at what we believe to be a conservative figure, \$80 per cow. This makes an investment in cows of \$2,000,000. To support this stock will require the use of 115,000 acres of land which, at a conservative price of \$100 per acre, means an investment of \$11,500,000. The average equipment necessary on this land we will represent at \$20 per acre, which again figured to 115,000 acres makes an investment of \$2,300,000. All of the above items are concerned with the production of milk.

Now, in a city like Detroit the distribution of milk is an important item and we allow \$2,000,000 as the investment necessary to secure distribution facilities for this milk. This means the handling of approximately 167,000 quarts of milk per day.

The Total Investment is No Small Sum.

The total investment, therefore, necessary to supply the city of Detroit with milk is approximately \$17,800,000. If the municipality should decide to supply and distribute milk to the city of Detroit, the investment necessary to carry on this transaction would be \$17,800,000, as herein estimated, or if an individual were to contract to supply the city of Detroit with milk it would be necessary for him to figure on an investment of this amount of money.

Now for the purpose of computation and arriving at the cost of production, it matters not whether the supply of milk is in the hands of one individual or in the hands of 5,000 individuals, except that in all probability one man would carry the service on at a less expense than would 5,000 individuals. The investment must be figured on the same basis and we purpose to consider it in the light of any other business transaction.

Cost of Money Invested, and Depreciation.

If a manufacturer in the city of Detroit were to undertake to conduct a business involving the investment of \$17,800,000, it would be necessary for him first to figure on the cost of this investment to him, which items must be added to the cost of produc-

tion before any profit considerations are taken up. Not only this, but there is always a certain amount of depreciation in property and in equipment, which depreciation must either be offset by a direct charge or, what amounts to the same thing, there must be created a sinking fund to take charge of the depreciation. The depreciation in a manufacturer's business of course depends on the nature of the business, but it applies to equipment, supplies, stock, buildings, and on the farm, to barns and fences and land, and implements used in farming. A self-binder may cost, when new, \$150 and the life of that binder may be, we will say, five years. Manifestly this binder has deteriorated to the extent of \$30 per year in addition to the cost necessary to maintain it at its maximum efficiency.

This analogy holds in any other line of business endeavor. In the dairy business not only do we have depreciation of buildings and depreciation of equipment and implements, but we have the very great factor of depreciation of the stock. The economic productive capacity of cows varies. But if we will establish six years as the limit to the animal's economic productive capacity, we may then divide the difference between the original value and the value at the end of her milk-producing period, by six, which will represent the depreciation of this animal per year. This is a big item. Other items of depreciation along this line would be the maintaining of the health of the cows in the herd, and depreciation due to the contraction of contagious or infectious diseases, which while perhaps not always a total loss, yet surely depletes very materially the financial value of the animal and consequently the selling price.

The Manure.

Some of our readers will assert that consideration should be given here for the money value of the manurial constituents produced on the farm. We feel that altogether too much prominence has been given to this manurial consideration in the farmer's account. We do not mean by this that we depreciate the value of this product, but we do not consider that the financial value of the manure produced on the farm can be cited as an element of profit in the farmer's account.

Manures and fertilizers are an offset against deterioration of land and should be so considered. In order that the land which is being used may preserve its original maximum valuation because of having maintained its original productivity, it becomes necessary to return to that land a certain consideration in manures and fertilizers. This is land depreciation and in order to prevent land depreciation the manures produced on the farm are returned to the farm. They are not an element of profit but may be used to offset deterioration.

It is difficult to fix a figure which will cover cow depreciation but it probably would not be far from 20 per cent per year. Now the real cost of the production of crops to a farmer is represented not only by the cost of his labor but there is involved in this the depreciation of his property plus the cost of the money which covers his investment. If a farmer has an investment of \$5,000 in his farm, in land and buildings, it becomes necessary for him to make on his products \$300, which covers the cost of the money invested alone. If he does not get \$300 his money is not earning him six per cent interest, and he is, therefore, getting less propor-

tionately for a small investment than men in other business get for a larger investment. We fully believe that many farmers do not get six per cent interest on their investment but if they are going to succeed in a business way, in a competitive market, they must figure the cost of the investment. If they did not have this investment their money could be drawing them six per cent interest. Consequently when they forego the privilege of the six per cent interest accumulation and place this money in real estate investments on the farm, to make its equivalent they must figure a six per cent interest on the money invested. Then to that product besides its proportionate share of the interest, must be added its proportionate share of depreciation and the actual cost of the production of that product. The selling price should be greater than all these items in order that the dairyman may receive a profit in his business.

To establish the soundness of this reasoning we simply need to say that if the municipality of Detroit started in to supply its people with milk it would be necessary for it to have an investment of \$17,800,000, and the only way it could get this would be to borrow it at the bank, giving in return interest-bearing bonds. And if an individual arranged this very service it would be necessary for him to obtain the money at the bank and he would likewise be compelled to pay the prevailing rate of interest thereon, which we may readily see must be figured into the cost of the production of the milk in order that he may carry on this business successfully.

Investment Per Cow.

We will find that the capital invested will in this way represent about \$668 per cow, and for every cow that is furnishing milk to the city of Detroit, the owner has a right to figure an investment of \$668, of which approximately \$600 represents the producer's investment, and the \$68 per cow represents the distributor's investment. This proportion is fairly representative of the comparative investments of the producer on the one hand and the city retailer on the other.

What the Cow Must Pay to Cover Investment Per Cow.

Now the actual feed necessary to produce one quart of milk costs approximately two and a half cents per quart. The interest on the investment of \$600 at six per cent is \$36 per year, which means that each cow must produce \$36 in milk in order that she may pay the interest on the investment she represents. This investment we have explained, means land and cows, also buildings and equipment, and are average conservative figures based on actual conditions.

For the city of Detroit the interest on the producer's investment to furnish milk represents approximately \$900,000 per year, which, of course, is the cost of the money on which the business is run. This represents approximately one and one-half cents per quart of milk produced which, added to the actual feed cost of two and one-half cents represents four cents per quart, which is the cost of the milk without consideration being given to depreciation. If now we represent depreciation at 20 per cent of the first cost of the animal and make no mention whatsoever of other depreciation, we must add to the cost of that milk 0.6c per quart. We have thus accounted for 4.6c per quart as the producer's cost in the production of milk. This must all be realized before a man who borrows the money to conduct his business on can realize any profit, and, of course, the money which a farmer may invest, even though it is his own money, is entitled to just as much interest-bearing value as money purchased at a bank.

(Continued next week.)

Dairy.

CONDUCTED BY COLON C. LILLIE.

SHALL WE SELL BUTTER, MILK, OR CREAM?

At this time of the year there is a scarcity of milk for market purposes in the city. In May and June usually there is an over-supply. Commercial milk dealers now are going out into the country surrounding big cities and purchasing milk, paying almost any price to get it, and farmers who are so situated that they can sell their milk in the winter time to the city dealer are quite fortunate, because they can get very good prices indeed. This is especially so in certain years. But a man to do this must figure on disposing of his milk at other times of the year when there is more than the ordinary supply in the city. So, while for a few months he perhaps gets a little better price for his milk than he would get if he made it into butter, it is a bad thing for the co-operative creamery, as this is just the time of the year when the co-operative creamery has hard work to pay expenses. They have practically the same expense that they have during the flush of the year and yet cannot get raw material enough to make a profit. The man, however, who lives close to a means of transportation and can go to the bother of taking his milk to the station every morning at a certain time can, as I say, during portions of the year probably get more for his milk than he would if he made it into butter. There are, however, other things to take into consideration. If he will follow this up the year round he won't make so much more as he thinks he will. Not only that, but he sells his skim-milk, or practically gives it away, because they make no allowance for it.

If the farmer is raising nice pigs or calves or if he has good poultry this skim-milk is worth considerable to him. Feeding it to ordinary scrub stock it is figured to be worth 25 cents per 100 pounds. If you are feeding it to pure-bred stock you can well make it worth \$1 a 100 pounds.

RATION FOR A TEST.

I am going to test a couple of cows in a few days. Will you please give me a balanced ration from the following feeds: Ground corn, ground oats, turnips, bran, linseed meal, and can get beet pulp, dry, cottonseed meal or any commercial feed if necessary. I have bright clover hay, alfalfa hay and corn fodder for roughage, but no ensilage. Prefer, of course, to use my own feeds as far as possible. What do you think of corn and cob meal in place of the clear corn?
Livingston Co. S. M. Y.

Nothing is better for the main part of a ration for a test or, in fact, for a cow to make a profit, than corn meal and ground oats and wheat bran. It may be that other feeds can be purchased which will be cheaper, but when it comes to having a cow do better I doubt very much if you can get anything. In making a test one is not so much interested in economical production as he is in a big yield, consequently the cost of the feed is a secondary consideration. Of course, everybody wants their test to be profitable, too, and yet what they are after is to bring the cow under the wire with a satisfactory record, and when we go into a test we make preparations for that and our calculations accordingly, and we don't let the differences of a dollar or two on a ton of feed stop us from reaching the desired end. But ground corn and oats and wheat bran mixed equal parts by weight, I should say, ought to be the bulk of the grain ration. However, you ought to have some commercial feeding stuff rich in protein, or two commercial feeding stuffs

rich in protein, to mix with this. Otherwise, if your cow is making a phenomenal yield, she may not have protein enough in the ration. So I would suggest your ground corn and oats and wheat bran as the main part of the ration and then cottonseed meal, oil meal, gluten feed, or all of them, to be used as occasion requires.

There is no use in prescribing the amount of grain to feed per thousand pounds live weight, when tests are to be made, because we throw all rules aside and simply cater to the appetite of the cow and push her to the limit. One begins by feeding a moderate ration at first and gradually increases until he gets to the limit of the cow's capacity to take feed and consume it. One might start in with the idea of feeding a pound of grain a day for every pound of butter-fat produced in a week, or a pound of grain for every three or four pounds of milk produced by the cow. But one making a test would not be satisfied with any rule like this. It is well enough to start that way but the feed should be gradually increased. It is needless to say that this must be done by careful feeders, it ought to be done if possible by the owner of the cow. Gradually add a pound or two each day until near the limit of the capacity of the cow. Then add another pound and wait two or three weeks. If she takes it, add some more, and keep at it just as long as the cow will keep increasing in yield. If she stops increasing the flow of milk, then stop the grain and drop back a pound or two on the ration, as you are giving too much. When she gets used to this, try her again carefully, and in this way get a maximum yield.

In the roughage for a test ration, there is nothing better than good bright clover hay and alfalfa hay, and one should give them all they will eat up clean. There is no use in weighing it, and there is no use in figuring it. Simply give them what they will eat, and occasionally give them a feed of cornstalks. Of course, you won't ask them to eat it clean, but a little variety in this way will be relished by the cows, and probably they will do more than they would if you didn't have cornstalks to feed occasionally.

The turnips will come mighty handy as long as you haven't got any silage or any other succulent food. Hardly anybody would want to go into a long test with dairy cows without some form of succulent food and turnips will answer the purpose very well, indeed. In fact, there isn't anything that is very much better. Some might save their mangel wurzels or sugar beets, or something of that sort, but there is nothing any better than good old-fashioned turnips, and you can feed them liberally to the cows by beginning with small amounts and gradually increasing until you give them just about all they will eat up clean twice a day.

As long as you have bran and oats to mix with corn meal, I wouldn't advise grinding the cobs; there is very little nutriment in corn cobs. It will only be bulk. Where one has nothing else to mix with the corn, it is probably advisable to grind the corn and cob together, because the corn cob lightens up the meal and it will not set so compactly in the stomach of the cow, and I think you get better digestion. But where you have this variety of feed I should not bother with corn cob meal. Neither do I think it necessary to buy beet pulp as long as you have good turnips to feed. The only thing that you could get out of the beet pulp would be a little variety. The turnips are more palatable than the beet pulp. In fact, with your ration of clover hay and alfalfa hay, good corn, oats, wheat bran, cottonseed meal and linseed meal, (don't forget that), and perhaps gluten feed, and with plenty of turnips to feed, the cows will make a record if they are capable of it at all.

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with which you are sure you are at all times accomplishing the best possible results.

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Why I Started in the Dairy Business

When Dad left the farm to me I asked myself, "How are you going to make the old place pan out?" Dad had run it *his* way. I allowed I'd run it *my* way.

I borrowed money on it, bought more good native cows, became a dairy farmer, and put in a



SHARPLES MILKER

- Dad had been paying
- Del Morgan and Tom
- Hoops 15 cents an
- hour for milking about
- 6 cows each. Cost him
- 5 cents a cow a day,
- or thereabouts. No
- money in that. My
- three-unit outfit milk-
- ed 30 cows an hour.
- Del did most of the
- work, and I soon found
- that milking a cow
- twice a day cost 50
- cents a month against
- \$1.50 in the old-hand-
- milking days. Con-
- siderable saving, be-
- lieve me.

'em like it, produce a lot of cleaner milk, and cut down overhead expense about two-thirds, I'm ready to take the platform and tell you dairy farmers I'm strong for that machine.

Tom and Del have quit muttering and threatening to revolt. Dragged 'em out of bed pretty early in the old days. Now they sleep longer, start later, finish sooner, earn more than their salt. Got more outfits now, too. Paid the mortgage off long ago. Increased a one-horse wagon milk business to 75 cows and a flock of busy wagons. Traveling some!

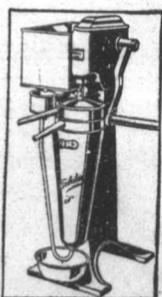
- Well when a machine can
- milk cows faster and better
- than I can by hand, make

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- Bought it about the time I
- got its running mate, the
- MILKER. Talk about
- team work! Men, give me
- a TUBULAR, a bunch of
- teat cups with the upward
- squeeze, 75 high grade cows

—or even less—and contented help like I've got. and I'm willing to take my chances with the old-fashioned chap who dairy farms with the drudgery methods of his grand-dad.

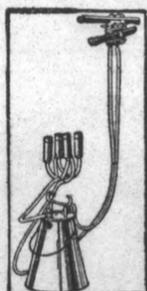


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MAKING DAIRY COWS OUT OF HEREFORDS.

I have a herd of Herefords and desire to cross with some breed that will produce more milk and contain more butter-fat. What is the best kind of bull to buy for this purpose? Livingston Co. A. W. K.

Herefords are intensely beef bred. There never has been any dairy family in this breed. Not only that but they are strong blooded and their characteristics are well fixed. Therefore, it would take longer to change Hereford cattle into the dairy type by breeding to a dairy bred sire than it would the common grade cattle. If this herd of Herefords are pure-bred or high-grades I would recommend that they be sold and that either pure-bred cows of some dairy breed, or else good common cows be purchased as a basis for a dairy herd. The present good prices and the demand for beef cattle would certainly warrant one in selling the beef-bred herd. This money could be invested in a dairy herd or in good common cows to good advantage.

You can readily understand that a dairy sire bred to common cows or native cows, or cows of miscellaneous breeding, would make a greater impression on the progeny than if bred to these pure-bred Herefords. Not only that, but the common cow or the most of them, at least, would have some dairy tendency and characteristics, while the Herefords would have practically none, consequently the progeny from a dairy sire and common cows would sooner become dairy type and make profitable cows, than if one attempted to breed Herefords to dairy purposes.

A. W. K. wants to know the best breed to select for this breeding up purpose. I am frank to say that I don't think there is any best. Of course, each breed has its characteristics, but the common standard by which all dairy animals are judged is economical production, and when that standard is taken for comparison there is very little difference in the dairy breeds. In fact, there is more difference between individuals of a breed than there is between breeds. One can, however, advise the selection of a dairy sire from one of four breeds, because there are four great dairy breeds, and they are Jersey, Guernsey, Holstein and Ayrshire. Now, my judgment is, select a good sire with plenty of good producing ancestors back of him, from one of these breeds which I like the best. I would breed the grade cows to this sire. Then I would breed the heifer calves back to the same sire to fix his blood, and after that continue to buy bulls of the same breeding and in that way get a high-grade herd of excellent quality dairy animals.

CORN WORTH MORE IN THE SILO.

Which is worth the most, 100 bushels of corn in the silo, or 100 bushels ground and fed to cows? Would you take the corn off the stalks before putting it in the silo? P. J.

If corn is cut up at the right stage of development and put into the silo there is no loss of food nutrients. This is at the time when the ear is glazed and dented but it is not ripe enough to cut up and shock in the old way. If you leave the crop stand some of the nutriment that is in the stalk will undoubtedly go into the ear. The ear is most valuable if the corn gets dead ripe. Now if you get some dead ripe ears in the silage it will not keep as well in the silo. On the other hand, the corn, stalk and all, contains the largest per cent of digestible nutrients when it is just mature, not dead ripe. You save the value of the stalks by putting them into the silo. If you put it in just before the ear contains the greatest amount of nutriment, you get that nutriment in the stalk, and the nutriment in the stalk is just as valuable

as the nutriment in the ear. I would not pick off any ears, but would put all into the silo, and you will get the entire food value out of the corn plant

A NON-SUCCULENT RATION.

Can one keep cows successfully without either beets or silage? I would feed a ration of grain, consisting of beans, corn and oats, and some cottonseed meal, and alfalfa, shredded stalks and mixed hay as roughage. What other feeds would I need? Shiawassee Co. C. R. P.

You can get fairly good results with dairy cows without succulent foods but you can get better results with them, especially for long periods of time. The succulent food is generally the cheapest food in the ration. I do not think it would be necessary to feed cottonseed meal when you have beans in the ration, especially when you have enough alfalfa so that you could feed a good feed of alfalfa once a day and mixed hay once a day, as you will then get a sufficient amount of protein to make a balanced ration.

EFFECT OF BEANS ON QUALITY OF BUTTER.

Do boiled beans have any effect on the butter when fed to milking cows? I am having trouble with my butter. It seems good when fresh churned but soon becomes rank, strong and totally unfit to use. Sanilac Co. W. D.

Too heavy a feed of bean meal or boiled beans makes a hard, tallowy butter. This must always be borne in mind when you want to feed cull beans. You can't feed too much of them or you will injure the quality of the butter. But so far as the taste and the keeping quality of the butter is concerned, I do not think it makes any difference. I never heard of it at least. If the butter gets strong quickly the probability is that you don't get all of the buttermilk out. This is usually what makes rank and strong butter. The butter should be washed thoroughly when in small granules to get all the buttermilk out.

IS THE RATION O. K.?

I would like to know if I am feeding my cows so as to get the best results. I now feed two feeds of bean pods and one of corn fodder a day and am feeding ground corn and oats and cottonseed meal for grain. Lapeer Co. C. A. H.

This ration is fairly well balanced. It contains in the roughage, bean pods, which are rich in protein, and in the grain ration, cottonseed meal, also rich in protein. Feed all the bean pods the cows will eat up, and about two pounds per day of cottonseed meal, and I should say the cows would have a sufficient amount of protein. It, however, would be better if you had some succulent food in the ration. If you only had corn silage or roots, or something that would furnish succulency, the cows would do better.

SERUM INCREASES MILK FLOW.

Experiments made on goats in the college of medicine at Cornell University may lead eventually to an increase in the supply of milk. It is stated that a goat has been made to give milk of twice the quantity and five times richer in cream, through the injection of a recently discovered serum under the skin or into a large blood vessel of the animal. Whether the same process will give equally gratifying results when applied to cows, has yet to be determined, but the investigators are hopeful. The serum is a preparation made from the pituitary gland of live stock. It has been found that injections have to be made frequently in order to keep up the increased production. It is but a short time after the injection that the increased yield is noted.

CORN AND COWPEA SILAGE.

I would like information in regard to filling silo with corn and cowpeas, also what part of each should be used.

Allegan Co. E. D. H.

This kind of silage, succotash silage, is made by mixing the corn plant with cowpeas, soy beans or any of these plants which are rich in protein. It improves the silage by making it richer in protein. The corn plant is deficient in protein. You can get along with a less concentrated grain ration if you have succotash ensilage than if you do not. If you have silage of the corn plant alone, you have got to use cottonseed meal, or something of that sort that is rich in protein, to make a balanced ration. On the other hand, if you mix cowpeas or soy beans with the corn when you fill the silo, say about one load of the cowpeas to two loads of corn, you will have a succotash ensilage which will allow you to do away with such feeds as cottonseed meal and oil meal to a great extent.

One can get along nicely with succotash silage and clover hay if he feeds ground corn and oats. Corn meal alone will make a very good ration, or he can certainly get along with corn and oats and a very little cottonseed or oil meal. Corn and wheat bran will also make a good combination.

The question is, will it pay? You can't raise as many tons of silage to the acre from cowpeas or soy beans as you can from corn. Would it pay better to plant this ground to corn and raise more tons to the acre and buy some of the concentrated foods to balance the ration? The farmer will have to figure this out for himself. It is some little bother to raise the cowpeas and soy beans on a field by themselves and harvest them and put them into the silo at the same time the corn is ready and get them equally distributed. It will take some extra time, and time is money.

FOURTEEN POUNDS OF GRAIN FOR THIRTY POUNDS MILK.

Am I feeding correctly or not to cows giving 30 lbs. of milk a day that freshened early last fall? I am giving 40 lbs. of good corn silage; 18 lbs. of good, bright bean pods; 10 lbs. of corn stover, not very good; 12 lbs. of corn and cob meal, two-thirds, and oats one-third; 2 lbs. of cottonseed meal. We also have oil meal which is the same price as cottonseed.

Clinton Co. L. W.

The different foods comprising this ration are very good indeed. There is nothing better than corn silage, and good, bright bean pods go a long way to take the place of clover or alfalfa hay. Corn stover will act as a filler and makes a very good feed also. The grain ration of corn and cob meal, two-thirds, and one-third oats and then two pounds of cottonseed meal per day is certainly a very liberal feeding of grain and a very well balanced ration indeed. In fact, I am of the opinion that you are feeding more grain than you can afford. Supposing these cows gave five per cent milk they would only give one and a half pounds of butter-fat a day, or about 10 pounds a week, and therefore, according to the Danish rule, you could not afford to feed over 10 pounds of grain per day to these cows. And yet, they are getting 14 pounds of grain. This is certainly an expensive ration and a very heavy one. It is a marvel that these cows eat all of the ration of 40 lbs. of corn silage, 18 pounds of bean pods, 10 pounds of corn stover, and 14 pounds of grain. I think the cottonseed meal would be more economical to use than oil meal, because you can get a pound of digestible protein cheaper in that than you can in the oil meal. As long as you have corn silage as the succulent food I would not object to feeding two pounds of cottonseed meal per day.

SEEDING AN ORCHARD FOR A COW PASTURE.

I have an orchard in which the seeding did not catch very good and as it is about all the pasture that I will have for two cows until after hay is cut, I have been thinking that I could drag it up a little with a spike-tooth drag and sow on more clover seed. Also what other of the quick growing grasses or legumes would you recommend sowing with clover and which kind of clover would you advise sowing? Also, do you think soy beans can be grown successfully and at a profit in Tuscola county?

Tuscola Co. R. P. R.

This new seeding can probably be harrowed over with a sharp spike-tooth drag and some more grass seed sown, to thicken the present stand. But neither red clover or alfalfa or any other grass is so slow in getting a start that this pasture will not amount to much before haying this year. All the good grasses are rather slow in getting a start. I think you will get as much pasture out of it by not disturbing it as you would to harrow it over, because the harrowing is sure to kill some of the present stand of grass.

On the other hand, you could work this land up, plow it or disk it up thoroughly, and make a good seed bed and then seed it to oats and Canada peas with clover, timothy, and perhaps some other grasses, and get much more pasture during the early part of the season that you could with the grasses alone. I don't know of anything that will furnish more feed for early pasture in the spring than oats and peas. You may not succeed in getting a good stand of the clover with the oats and peas when they are pastured, but it would not cost very much to put in the seed, and if the season was favorable and you didn't have to pasture it too close you might get pasture until after your haying was over with and you could pasture the meadows, which, by the way, is not a good practice, and then get a permanent seeding. Then, if you didn't succeed in getting a good seeding after the oats and peas were gone, or along in July or August, this could be again disked and worked up to get a good seed bed and then re-seeded to clover and timothy with some alfalfa. I would also put in tall meadow fescue and meadow oat grass and some orchard grass.

A SUBSTITUTE FOR OATS IN THE DAIRY RATION.

Our supply of oats is getting low and therefore I would like to know what I could substitute for them in the cows ration. I have been feeding for grain, 1 lb. wheat bran, 6 lbs. of ground oats and 2 lbs. of cottonseed meal to cows giving about 35 lbs. milk per day and for roughage corn silage and oat straw morning and night, and bean straw at noon. I wonder if I could use gluten feed in place of oats, or would it be preferable to buy more oats? Figuring on the protein, it would cost half as much in the gluten feed as in the oats, but would there be enough bulk to feed gluten and cottonseed together?

Huron Co. H. S. T.

In this ration it will not be at all difficult to get along without the ground oats if you do not desire to feed them. The bean pods in the roughage part of the ration are fairly rich in protein, and feeding wheat bran and cottonseed meal in the concentrated part of the ration I think you have enough protein so that you could substitute for your oats corn meal or corn and cob meal and probably get just as good results as you are getting now with the ground oats. Or you could do away with the oats and corn entirely and feed a little more wheat bran in connection with the cottonseed meal. Or you can do as you suggest, feed a little gluten feed. If I purchased gluten feed I think I would do away with the bran and cottonseed meal entirely.



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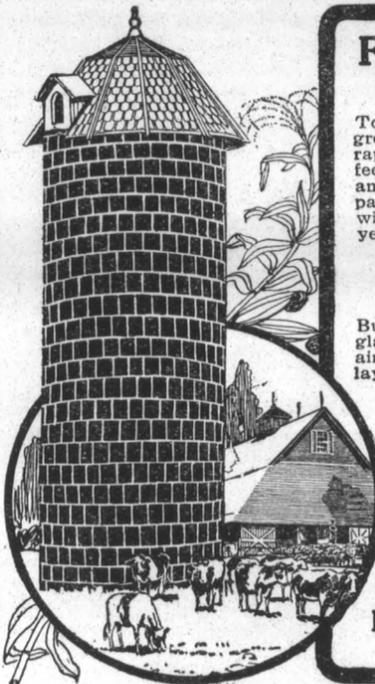
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DETROIT, APRIL 4, 1914.

CURRENT COMMENT.

The matter of the The Agricultural availability of the College. funds provided for the support of the Michigan Agricultural College is now before the Supreme Court of the state for adjudication and Michigan Farmer readers will be interested in the series of events which led up to the present difficulty confronting the college authorities. Briefly stated, the facts are as follows:

The Michigan Agricultural College, in common with other land grant colleges, is supported in part by the federal government, federal aid being granted and accepted under certain specific conditions hereinafter stated.

State aid for the support of the College was granted in the form of special appropriations for specific purposes until 1901, when an act was passed providing for an annual appropriation of one-tenth of a mill on each dollar of the equalized valuation of the property of the state. In the intervening years this income, in addition to the federal funds, has proven adequate for the conduct of the College and the construction of needed buildings. But the rapid growth of the student body, due to the recent agricultural awakening, and the increasing demand for extension work, made an increase in resources necessary if the College was to continue to meet the demands made upon it. Last year the State Board of Agriculture appealed to the Legislature for additional aid, and, acting upon the advice of the members of the committees of the two houses of the Legislature before whom the bill would come for consideration, a bill was introduced to increase the mill tax to one-fifth of a mill. Later the amount of the proposed tax was reduced to one-sixth of a mill and the bill was passed by the Senate. It was at once approved by the Agricultural College Committee of the House and was referred to the Ways and Means Committee, when the active opposition of influential members of that committee was developed. When the State Board secured a hearing before this committee, toward the close of the session, they learned for the first time that a bill had been introduced and referred to this committee providing for a special appropriation for a building and were informed that the hearing would be confined to that bill as the mill tax bill would not be considered. The alleged reason for this action was that the work of the En-

gineering Division of the College was a duplication of work done at the University. So strong, however, was the showing made by the representatives of the state's agricultural and allied interests, who appeared before the committee in response to the request of the State Board, that the committee finally reported out the mill tax bill, but with a clause providing that "No part of this or any other appropriation shall be available in case a sum in excess of \$35,000, from any and all sources, shall be expended in any one fiscal year for the maintenance of the Mechanical and Engineering Department." Upon the appeal of the committee the bill was passed in this form by the House. The Senate refused to concur in the amendment and a conference committee was appointed, a majority of whom were opposed to the restriction, but as the session was nearing its closing hours the bill was finally passed in this form.

To give the reader a clear understanding of the present situation a brief review of other legislation is necessary. In order to extend aid to the land grant colleges, of which M. A. C. was the first to be established, Congress, in 1862, granted to the several states public lands to be sold and the income therefrom to be invested by the state for the endowment of a college "where the leading object shall be, without excluding other scientific and classical studies, and including military tactics, to teach such branches of learning as are related to agriculture and the mechanic arts." This grant of 200,000 acres of land was accepted by the state under the conditions named, and a fund of over \$1,000,000 was realized from which the College gets an income of a little more than \$70,000 per year. In 1890 Congress passed another act to provide for "The more complete endowment and support of the colleges for the benefit of agriculture and mechanic arts, etc." by the terms of which \$25,000 per annum was devoted to the support of all land grant colleges. Again in 1907 Congress appropriated another \$25,000 per annum for the same purpose under the same conditions, both of which grants were accepted by the state under the conditions named. In view of these grants the federal government has insisted upon a fair division of this \$120,000 per annum between the departments named.

In addition to this fact, Section 2 of the mill tax law, which was not amended by the last Legislature, provides that all of these departments be supported as then existing, with the penalty attached that if this is not done the appropriation shall not be available.

Confronted by this situation the State Board of Agriculture, upon the advice of reputable legal counsel, early in the present fiscal year, made a declaration of its intentions under the law in which it was set forth that the Engineering Department could not be conducted as required by both state and federal acts, on \$35,000 per year, but that it would continue to so conduct it, using only \$35,000 of state funds for the purpose and taking the balance from federal funds. Under the wording of the act, however, the Auditor General was compelled to construe the limitation to apply to federal as well as state funds, and further requisitions have been refused, although less than half of \$35,000 of state funds has been devoted to the conduct of the engineering department. The State Board has applied to the Supreme Court for a writ of mandamus to compel the payment of these funds and arguments will be heard by the court at an early date.

The above is a brief statement of fact regarding the situation in which the College is placed. A discussion

of the political phases of the dilemma or its possible effect upon the institution will be held in abeyance until the court of last resort has rendered a constitutional interpretation of the conflicting statute under which the state tax for the support of the College was levied and collected and by authority of which even the federal funds are withheld by the Auditor General.

The Cost of Market Milk.

In another column of this issue will be found a discussion of this important subject under the head, "A Critical Study of the City Milk Supply," in which the writer has figured out the cost of market milk from what seemed to him to be a reasonable hypothesis and has reached the conclusion that the farmer producing a good grade of market milk should receive a price for it approximating five cents per quart in order to be well paid for his labor, to cover the interest on his investment and make a reasonable profit. At first thought it will doubtless appear to the reader, especially as he is engaged in the business of producing market milk at a much less price, that this estimate is altogether too high, yet if he has never made a careful estimate of the cost of his own product, figuring interest on his investment, reasonable pay for his labor and a very modest profit, his conclusion will be quite as theoretical and probably far less analytical than that of the well known author of the article in question.

In fact, few farmers know, even approximately, what it costs to produce market milk, and there seems to be little experimental data and almost no authentic statistics bearing on the subject. This would unquestionably be a profitable line of investigation for the association of dairymen who contribute to the Detroit milk supply. If the members of this organization knew the average cost of the production of market milk under conditions such as are demanded by the city authorities they would be in a far better position to take up the matter of price adjustment with the distributors of their product. This would be an exceedingly practical line of work for such an organization to undertake and one which would, we believe, prove exceedingly profitable to its members. This would be true in more ways than one, since such an investigation would, no doubt, reveal a wide variation in the cost of market milk and a further study of the situation would then enable many of the dairymen affiliated with the organization to reduce the cost of their product while the resulting knowledge of average costs would tend to bring about a more equitable distribution of the consumer's dollar which is invested in this product.

Incidentally we know of one dairy farm on which the results quite closely approximate Dr. Robison's conclusions regarding the cost of market milk. This farm, which lies adjacent to one of Michigan's smaller manufacturing cities, is, together with its equipment, including stock, reasonably capitalized by the owner at \$20,000. The tenant's time and labor is considered of equal productive value as compared with this investment and owner and tenant share equally the net proceeds of the business, each having a drawing account of \$20 per week. The milk is bottled on the farm and sold to a distributor in the near-by city at 20 cents per gallon, or five cents per quart. The farm has been operated in this way for a number of years, during which time a small surplus or profit has accumulated after the payment of the weekly checks which in the one case represent only a fair rate of interest on the investment and in the other case but reasonably good pay for the in-

telligent management of a dairy farm. Surely the farmer is entitled to both of these items, if not to the small profit above the labor and interest charge which has accumulated on this productive and well managed farm. It would at least be interesting and well worth while for every dairyman to know what his product of market milk is costing him, including his labor and interest on his investment and now is a good time to begin to find out, preferably in an organized way, but by individual study of the problem if this is not possible.

HAPPENINGS OF THE WEEK.

National.

The battleship Texas is now in the New York navy yard in Brooklyn, where the boat will be finished and made ready for service.

It appears that the administration bill now before Congress for the repeal of the Panama Canal toll measure will likely pass that branch of the Federal Legislature. In a ballot taken last week on restricting the time for debate on the question, the vote stood 207-176.

Toledo is having a fight with the street railway company of that city for lower rates. Recently the common council passed an ordinance providing for three-cent fares on the electric cars of the city. The company is strenuously opposing the arrangement and riots are anticipated.

A petition for executive clemency for the four gunmen under sentence to be executed Easter week for the murder of Herman Rosenthal in New York, will be handed to Gov. Glynn of that state, Monday. The granting of a new trial to Lieut. Becker has made it seem just to stay the execution.

Although weather conditions were not as favorable as they might have been, the campaign in Detroit and nearby places for a large church attendance on March 29, resulted in a general increase in the congregations Sunday morning. Many churches were so crowded that all who came could not be accommodated.

After April 1 the Pere Marquette Railroad will be managed under the direction of four superintendents instead of six. The divisions have also been changed. It is expected that the new arrangement will reduce operating expenses.

An effort by the better element of Alton, Ill., to gain information regarding the underworld of that place and its connection with the liquor traffic, has brought on a reign of terror. Sunday the \$80,000 Y. M. C. A. building was nearly destroyed by fire, believed to have been of incendiary origin. Leaders in the movement to improve civic conditions have also received threatening letters. Church property is being watched closely by agents of the church boards.

The exports of merchandise from the port of New York for the week ending March 21 amounted to \$21,673,900, against \$20,945,607 the previous week, and \$14,960,442 in the corresponding period of 1913. Since January 1 the total exports of merchandise aggregate \$243,667,426, against \$235,200,829 in the corresponding period of last year.

Foreign.

A large section of a mountain between Brive and Lanteuil, France, has become detached by seismic disturbances and is slowly sliding down into the valley. Several farms and cottages have already been wiped out, and the inhabitants are moving to safe territory.

The latest information from Mexico states that Torreón has practically fallen into the hands of the rebels under Gen. Villa, although there were three forts still held by Huerta's troops. At first the rebels had been repulsed but after reorganization they succeeded in capturing the strong defenses of the city. Gen. Carranza arrived in Juarez on March 29, and declared that with the fall of Torreón, northern Mexico was now under the control of the Constitutionalists, and that the capitol would be established at Chihuahua immediately.

There appears to be a lull in the political crisis that confronted Great Britain last week. It is not impossible that an election will be necessary before the Home Rule program as outlined by the government will be carried out. In the event that an election be called, present indications are that the issue will be the "army vs. the people." Investigation into the recent resignations from the army will be taken up in the House of Commons this week.

Magazine Section

LITERATURE
POETRY
HISTORY and
INFORMATION

MICHIGAN FARMER
AND
LIVE STOCK
PUBLISHED WEEKLY
JOURNAL
ESTABLISHED 1843.

The FARM BOY
and GIRL
SCIENTIFIC and
MECHANICAL

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

Some Interesting Facts Concerning Radium.

By JAMES N. McBRIDE.

IF someone were to give you a yellow piece of ore a little deeper shade than sulphur and were to tell you it was carnotite, you would be holding in your hand an infinitesimal amount of the element, radium.

The scientific world had known that carnotite was peculiar in many ways, for it had been determined that this ore contained rare metals, uranium and vanadium. Uranium is used for fine china painting and for the delicate tinting of cathedral glass. Hamburg, in the German Empire, is the great center of the rare metal indus-

try. The Metallurgical College at Freiberg is the school from which so many engineers in Europe have been trained and gone all over the world, and it is here that the rare metals are best known. I have sometimes thought that the theological schools should have a course in metallurgy, particularly the rare earths and metals, for few things are more useful in understanding infinite wisdom and creative power than these.

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The delicate uranium colors given to cathedral glass are wonderful but more so, and of greater utility, is the tensile strength and resiliency that the other elements of carnotite, vanadium, contains. One per cent of vanadio oxide added to steel has made it possible to make the lighter weights and spongy conditions demanded by automobile manufacturers. Vanadium steel is used for armor plate on war vessels. When a projectile strikes the vanadium steel it is resistant, resilient and non-fracturing, as the navy experts describe it. For many years the great Krupp works at Essen, in Germany, were the



Mill for Treating Carnotite Ore.

sole users of vanadium in steel manufacture. Now the Pittsburgh Reduction Company are the great manufacturers of vanadium steel alloys. Along the western line of Colorado and over into Utah are deposits of carnotite ore scattered over the rough and broken country along the Dolores, San Miguel and Grand rivers. Charles Paulot, a French chemist, was the first to give this section of the world a place on the map. Paulot had been a student under Carnot,

a French chemist, and brother of the then French President, and gave this newly found ore the name of Carnotite. On Roc Creek, on the north side of the Paradox valley, an old prospector named Hamilton had been prospecting for copper and struck a deposit of this yellow ore in the tipped up strata where nature had suffered some remarkable convulsions. Some people called it sulphur, only it wouldn't burn, others called it chrome, and it was the puzzle of local people. A sample fell into the hands of Paulot at Denver, who recognized it as of somewhat similar ore to that found in Austria near Joachmithal. Tradition has it that Paulot bought several tons of this ore as chrome at a ridiculously low price, and sold it for \$1.50 per pound in Germany. Soon other deposits of carnotite were found and a mill erected for treating the low grade ores at a place called Snyders on the Dolores.

There is a dark colored rock resembling furnace slag found near the surface which is sought for as an indication of carnotite ore. When this is found, the miner puts in a few shots of dynamite and probably uncovers a pocket or an ore impregnated body of sandstone which he proceeds to mine. Few mines produce over 25 tons of material, i. e., sand-impregnated rock, and then a new deposit must be found. I only knew of a few deposits that exceeded 100 tons.

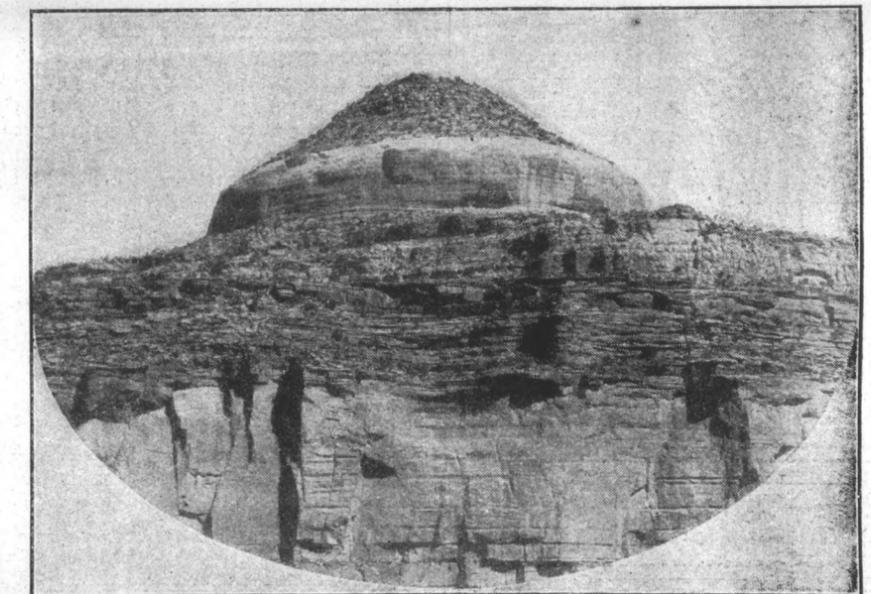
The miner must work out in the open by stripping off a few feet of the top rock and in summer the sun beats down most pitilessly. In win-

ter the bleak wind-swept cliffs are unendurable and the trails impassible. Carnotite mining is despised by most miners, and worked at largely by those who want to make a small stake to continue prospecting.

"Grizzly" Jack Streeter came into camp much elated over "striking it rich" on Roc Creek, and got supplies enough to last him a week to develop his find. In a few days Jack came back saying that he dug out all the ore there was in a few hours, and that the carnotite ore was too low grade to pack in.

At Snyder's on the Dolores river there was a mill for treating carnotite ore. A ball mill ground the ore and then it was placed in large tanks and diluted sulphuric acid used to leach out the uranium-vanadium content. The solution was neutralized with soda and the solid portions fall to the bottom of the precipitation tank, and when filtered and dried in the hot sun was ready for shipment. A carload of this precipitate shipped to Germany and analyzed by Ledoux & Co., contained 15 per cent uranium oxide and 19 per cent vanadium oxide, and was worth about \$500 per ton. If these concentrates had been treated for radium the world's supply would have been increased several grams. How little the world knows of what lies hidden and appears commonplace, for in this carload was the element that might have been the curative agent of many cancer sufferers.

Long before Prof. Currie and his wife isolated radium from uranium, Colorado prospectors knew of the radio activity of these ores. A piece of ore placed on a sensitive photographic paper and completely excluding light



Where Carnotite Ore is Gathered Under Trying Conditions.

by repeated coverings, would imprint the exact form of the piece of ore in every detail.

Perhaps no other form of ore prospecting has been so uniformly disappointing as has the search for uranium and vanadium-bearing ores. The country is most rugged, hot in summer and cold in winter, and remote from water and railroads. I remember the disgust of a mining engineer



"Mexican Joe" Sells a Uranium Claim for \$2,500.

who looked at the little post holes in the sand rock where the ore had been removed and the waste rock piled up around it, and later came upon a miner with a meal sieve screening grains of ore not larger than kernels of wheat. The engineer remarked that that was not mining. Of all the prospects staked and recorded I never knew of one claim that was regarded of sufficient importance to warrant securing a patent.

The element radium to the claim owner is negligible. It is so infinitesimal and remote of treatment that no one can say how much it adds to the value of a ton of ore. Originally the uranium was all that was paid for and the vanadium might as well have been so much sand. Later a use was developed for this, and now

comes the world-wide demand for the great curative radium.

The first commercial preparation of radium was prepared by the Central Society of Chemical Products in Paris under the direction of Debierne and at that time the price was \$80 per milligram of radium bromide.

Radio activity is atomic disintegration, and the emanations of the gas helium supports this theory. Under

Cushion Shoes that relieve tender feet

Mayer Yerma Cushion Shoes are worn by people for comfort and relief from troubles due to sensitive feet. A soft quilted sole is built in so as to conform to the lines of the foot and absorb the jar of walking. Resists dampness—cool in summer, and warm in winter.

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BOUGHT—Bears, Foxes, Minks, Ducks, Guinea's and all kinds of birds and animals—
William J. Mackensen, Box 334, Yardley, Penna.

certain conditions radium emanations will discolor rock crystals and diamonds. Organic substances are affected by radium—paper becomes singed, celluloid brittle, and green leaves turn yellow. Radium will dissolve the chemical combination of water into oxygen and hydrogen and other conditions will combine these elements into water.

Here seems to be the primal electro solvent that thrills and awes us with its wonders. Dr. Lebon fancifully illustrates its power by saying that a piece of radium the size of a marble had the energy inherent or contained that would propel a train of cars along a track four and one-half times the circumference of the earth. Dr. Sanberman, of Berlin, says that radium emanations promote the growth of healthy cells and their multiplication, while morbid cells decay, that it stimulates the activity of the digestive tract, increases the excretion of uric acid, thins the blood, lowers blood pressure, soothes the nerves, and much more, which sounds too good to be true. When one gets into the realms of life's processes and organic chemistry exposition reads more like a medical journal than a popular description.

For cancer radium seems to hold out positive hope. Already there has been established at Baltimore an institute where it is planned to treat patients suffering from this affliction. Other institutions are also taking up

the matter and but for the expensive methods of obtaining the rare element, it would not be long before the treatment would be available to the majority of our people.

The committee for an international radium standard has given the name Curie to the measure of radium in honor of Prof. and Mme. Curie, who first isolated radium from uranium. Thus we have one millicurie, one microcurie, etc.

The energies of so many men working for a common end, and also personal gain, starts with the prospector and the miner and his faithful burros, toiling under the burning sun on the cliffs to pack down a few sacks of the yellowish sand—carnotite ore. If we were to have a moving picture the final reels would show the artist using uranium for china painting and cathedral glass; a powerful dreadnaught with its vanadium armor plate resisting the projectiles of a hostile force, or the swift automobile with its spindle-like axles made of vanadium steel, going on a mission of mercy or pleasure; and the closing picture would be the trained physician applying the radium emanations to the heretofore hopeless cancer patient, and like the miracles of old, the latter going forth cured by the scientific touch if not by that of the divine.

"Behold what manner of love the Father has bestowed upon us, that we should be called the Sons of God."

The Discoverer of Pike's Peak.

By WILLIAM F. PURDUE.

PROBABLY few of the thousands of tourists who, every summer, gaze with rapture at the lofty summit of Pike's Peak know anything of the life of the man whose fortitude and endurance brought him to the base of the snow-capped mountain a little more than a century ago. The "great peak," Zebulon Pike called it. His feet never rested on its summit, but the great mountain will always bear the name of the daring young American who discovered it, getting his first view of the mountain from a point near the present Colorado-Kansas state line, while proceeding up the Arkansas river.

Zebulon Montgomery Pike was born at Trenton, N. J., January 5, 1779. His father had served with distinction as an officer in the navy during the Revolution. Young Pike was exceedingly well schooled for those times. He was proficient in languages and mathematics and exceptionally well equipped mentally for the army. He is described, however, as being slight physically and rather timid, but these handicaps proved to be small barriers standing in the way of his professional advancement.

The elder Pike having been appointed an officer in the army, he removed with his family to Nebraska, where young Pike was soon made a cadet in his father's company. By hard study and close application to duty, he received a lieutenant's commission when but twenty-two years of age, and from that time until the end of his life he was constantly on duty and went through experiences of the toughest character. Probably few officers have done and endured so much at critical times for their country. At twenty-seven he was made a captain, at twenty-eight a major, and when he was killed at the assault on York, Canada, April 27, 1813, he was only thirty-five years of age. At the time of his death the United States Senate was about to confirm his appointment and promotion to brigadier generalship. Pike's deeds as a soldier stand high on the official records at Washington, but they find almost no place in the minds of the American people. This is largely due to the fact that few

men who have risen to the rank of brigadier general in the army of the United States have left so meager an account of their personal lives as did General Pike.

As an explorer, Pike was in the field long before Fremont, and his discoveries rank in importance with those of Lewis and Clark. In 1805 and 1806 Lieut. Pike with a handful of men made a tour of discovery and exploration of the source of the Mississippi river, Lewis and Clark having been sent at the same time to explore the Missouri to its source. From April to July of 1806 Lieut. Pike was preparing for his trip through the territory of Louisiana and the provinces of New Spain.

Pike's discovery of the famous peak which bears his name was but a minor part of a daring journey which accomplished much for the young nation in its first stage of expansion. The primary object of this expedition, as set forth in Lieut. Pike's orders from the commander-in-chief of the army, was to return certain Osage captives, who had been released, to their homes. After the Osages had been delivered Pike's orders were to visit various Indian nations and establish friendly relations between them and the government, and then to return to the headwaters of the Arkansas and Red rivers, returning to the post of Natchitoches, Louisiana.

The hardships endured on the Mississippi trip sink into insignificance when compared with those encountered on this second expedition. The heroic little band of explorers, although sent on their mission by the war department, was very poorly outfitted for such a trip, under the most favorable conditions.

almost a straight line until the Kansas-Colorado line was reached. Pike must have caught his first glimpse of the snow-capped peak which was to receive his name, when fully one hundred and fifty miles away. He kept a brief diary of each day's happenings, and this diary for November 15, 1806, contains the following entry: "At two o'clock in the afternoon I thought I could distinguish a mountain to our right, which appeared like a small blue cloud." This was Pike's Peak.

The journey from this time on was one of great severity. His horses died, but day after day Pike and his little band of followers pushed forward, carrying their packs, and trusting to a scant supply of ammunition for subsistence. The men often had to go forty-eight hours without food. In addition, they were very miserably clothed for such a region at that season of the year, when, in the vicinity of the mountains, the temperature was below zero most of the time.

But Pike was ambitious to conquer that "blue cloud, although he wrote in his diary for November 27, at which time the peak appeared about fifteen miles distant, that he believed no human being could ascend to its summit. The party skirted the base of the grand mountain several times in an endeavor to find a place to ascend. No possible ladder could the soldiers find to scale the peak, however, and after weeks of discouragement, with winter approaching, they proceeded southwest. While crossing disputed territory a few weeks later the little band was captured by Spanish troops and marched to Santa Fe to appear before the commanding officer. After many exchanges of courtesies the explorers were finally permitted to proceed to Natchitoches, where they arrived July 1, 1807.

Gen. Pike was killed April 27, 1813, while leading a command of 1,600 men in an attack on York, the capital of Upper Canada. The assault was successful, the garrison being driven out, but the explosion of a magazine killed or wounded a large number of the assailants, among whom was the brave commander.

Colorado Springs, located on the very ground traversed by Pike and his men while seeking a pathway to the summit of the mountain that today overshadows a beautiful city, has honored Pike's memory by the erection of a handsome statue, which was unveiled in August, 1901. On one side of the statue is inscribed:

"A mountain to our right which appeared like a small blue cloud."—Pike's diary, Nov. 15, 1806.

And on another side of the statue is the inscription:

"The desert shall rejoice and blossom like a rose."

THE GIFT SUPREME.

BY R. S. W.

Give me, Oh! Christ, the faith I need
To take my brother by the hand
And, with a heart devoid of greed
To love him as Thou didst command.

The beacon light of hope bestow
That I may shed, along life's way,
Its radiance where e'er I go
To help some soul that's gone astray.

And one thing more I would implore
Above all else, give Thou to me
Thy rarest, fairest flower in store,
The heaven born gift of Charity.

MAKE WAY FOR LIBERTY.

"Make way for liberty," they cried,
And through the Austrian phalanx
dart,
As rushed the spear through Arnold's
heart;
While instantaneous as his fall
Rout, ruin, panic scattered all.
An earthquake could not overthrow
A city with a surer blow.
Thus Switzerland again was free
Thus death made way for liberty."

"Life is a leaf of paper white,
Whereon each one of us may write
His word or two, and then comes
night."



Copying Heroines a Thankless Task.

By ALTA LAWSON LITTELL.

I'VE been such a perfectly lovely child since New Year's, mayn't I do anything I like this afternoon?" begged Peggy Ryan of her mother one bright Saturday morning. "I've got my room all straightened up and I'll sit right down this minute and do my mending."

"I don't know about 'anything' you like," smiled Mrs. Ryan. "Hadh't we better say anything reasonable you'd like to do? Seems to me I remember a young woman who had the whole neighborhood out searching for her once when she was doing what she'd like and thought she would like to explore the tamarack swamp alone."

"Oh, that was ages ago, mother," said Peggy, blushing. "I was only ten then, and I thought I'd like to feel what it would be like to be lost. I had just been reading Robinson Crusoe. Just think how much one learns in two years," she concluded, with all the wisdom of 12-year-olds.

"Two years does make a difference," conceded Mrs. Ryan. "I think we might try it if you will be perfectly sure to think twice before you decide."

"Better spend the afternoon practising being yourself instead of every girl you read about," suggested Peggy's brother Jack, taking his head out of "Scottish Chiefs" long enough to give this thrust. "What book are you reading now?"

"Don't you worry about me, Jacky," Peggy replied. "I'm being myself all the time now. That was one of my New Year's resolutions." And Peg danced out of the room to begin her weekly mending.

Up in her room she worked busily, pausing every once in a while to view with pride the small, even stitches which were so easy to make now, but which had caused her so many tearful moments when she was learning.

"My, how awful I used to think it was when mother made me rip my work all out and do it over again!" she mused. "But I'm glad she did, though, for that patch certainly is a work of art," and she eyed the neatly mended garment with much satisfaction. "I don't believe even 'Luella' could have done it better, if she did go to sewing school and learn how from the best teachers." "Luella" was the heroine of Peggy's new Christmas book. "It must be nice, though," thought Peggy, "to be so clever and so much loved as she was. She was always doing something for others. I'll bet she never asked her

mother in all her life to let her do just as she pleased. I suppose that was selfish of me. But here, I said I would be just plain Peg Ryan and already I'm thinking about a book girl." She shook herself vigorously and reached for a pair of stockings which lay in her workbasket yawning for help. "If I don't watch out Jack will have another chance to say 'I told you so.'"

The stockings claimed her undivided attention for several moments, but at last they, too, were finished and stowed away in her bureau drawer.

"I'll have just time to read one chapter before I set the table for dinner," Peg decided, glancing at her clock. "Let me see, where was I? Oh, yes, she was just deciding whether to stay home from the party and take care of the baby so her mother could sleep off a headache, or go and have a good time. Of course, she stayed at home, they always do in books. Now if it had been me, I'm most sure I should have gone, and advised mother to take a headache powder." With which reflection Peggy forgot everything in the engrossing story of Miss Luella Fitzherbert's self-sacrifice and devotion to her family.

A half-hour later, in response to her mother's call, Peggy's body descended to the sordid world of the Ryan kitchen. But her soul was far away in that wonderful realm, where dwelt the lovely, albeit unearthly, Luella. Under the spell of the book Peggy's fingers misplaced knives and forks, upset the salt, drew the cloth askew and failed entirely to find cups and saucers to put on the table.

She was still ruled by "Luella" when the phone rang after dinner and her favorite friend, Mary Hally, asked her to come over that afternoon and talk over plans for the canning club which the girls were to organize. Peg was the leader in the movement, but her present mood demanded sacrifice.

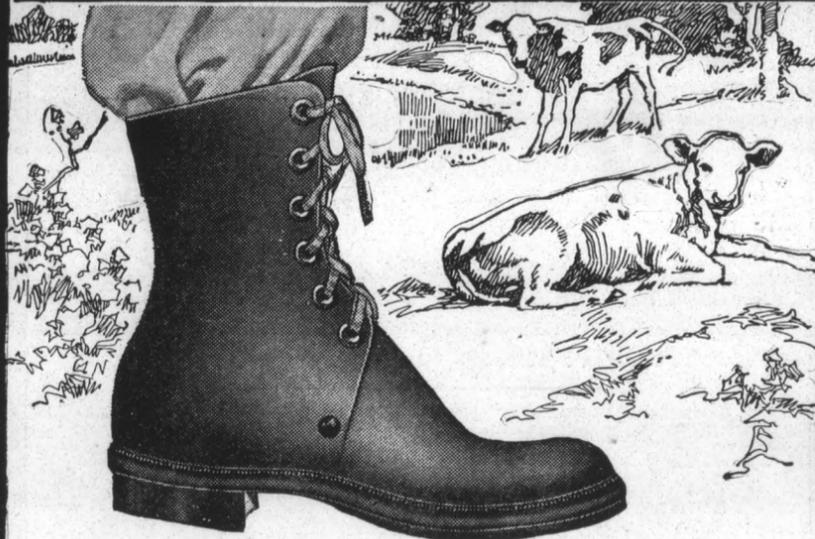
"I can't come, Mary," she decided. "I've something really important to do."

Just what the important thing was, Peggy had no idea. She only knew it must be something which would be disagreeable under ordinary circumstances. The most disagreeable thing she could think of suddenly occurred to her. It would be to spend the afternoon with Granny Harbinger, a cross old woman who lived a mile away. Mrs. Harbinger had long since



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ceased to neighbor with anybody, unless a sick animal demanded attention when she was willing enough to ask anyone for help. Peg decided that it was all the neighbors' fault. They quite failed to understand the poor old soul, just as everyone failed to understand "Luella." She would visit her that very day and let her see that one, at least, knew there was kindness concealed beneath that rough exterior.

Mrs. Harbinger opened her door a crack in response to Peg's knock an hour later, and peeped cautiously out. "I don't want nothing today," she croaked. "I never buy of peddlers. Go 'way."

"I'm not a peddler, Mrs. Harbinger," Peg replied in her sweetest voice. "I'm Peggy Ryan, your neighbor, come to spend the afternoon with you."

"I can't be bothered with young ones today," snapped the old woman. "The plaster's just fallen off the ceiling."

"Oh, let me help you clean it up," urged Peg. "I just love to clean up plaster. Or at least I think I would," she added, suddenly remembering that the plaster had never fallen off their ceiling.

Mrs. Harbinger evidently saw a chance of getting something for nothing, for she opened the door gingerly and admitted Peggy. Strips of paper which had been inserted in the cracks fell to the floor during the operation, and Peggy had time to glance around while the old woman was carefully replacing them. The room wasn't exactly tidy and Peg's certainty that the neighbors were entirely to blame wavered a bit. But she had come determined to be a friend, and she dismissed the suspicion as unworthy.

"Here ye be," said Mrs. Harbinger, leading the way into a large room which would have been a living room in Peg's home, but was here a store room filled with all sorts of nondescript articles of furniture and clothing. "You can take that basket and shovel it up," said the old woman. "I got a sick lamb in the kitchen to look after."

She hobbled off, leaving Peggy staring at the dirt in dismay. The plaster had come off with a vengeance. Only a few bits were still clinging to the ceiling and so far no attempt had been made to clean it up. Peg reflected that if this had happened at home her father and Jack would have carried out the dirt. This wasn't at all according to her ideas. She had come there to have a heart to heart talk with an ill-used old lady and here she was set to work to shovel up dirt. For a moment she rebelled. Then she decided that a kind deed might be the way to the poor woman's heart, so she set to work. Her back and arms ached when at last she had finished and the room was clean enough to suit her.

"Well, you done a good job 'o that," Mrs. Harbinger croaked, inspecting the room when Peggy told her it was finished. "You be a smart little girl, after all."

"Oh, I can do a great deal of work," Peggy replied, brightening under the praise. "Mother says she never could get along without me. You've never been over to our house, so you see you don't know me."

"No," snapped the old woman. "I don't go anywheres. I've got all I can do to stay at home and do my work without gadding and having folks runnin' here to eat me out of house and home. Well, if you're rested I've got another job for you," she added.

Peg was by no means rested, and she had not counted on another job. She wanted a chance to talk, but Mrs. Harbinger had other ideas. She was already leading the way up the steep stairs to the cold chamber above.

"My hired man is a fool," she grumbled. "He will take papers and read. Why, that fellow takes one paper

that costs him ten shillin' a year, and what he ever gets out of it is more than I know. All I saw in the one I looked into was just stories and some pictures of a canal somewheres or other. And he takes a farm paper, too, as though a farmer needs one, and the county paper, and every time he goes to town he spends two cents for the city paper. I've been savin' 'em all to sell to the rag man, but he'll only give me two cents a hundred for 'em and he shan't have 'em. Now you carry 'em right down stairs into the back yard and I'll let you have a coal out of the kitchen stove to light 'em and have a bonfire."

Peggy looked with dismay at the papers stacked in the room. The hired man certainly liked to read, she decided. There must be as much as ten cents worth of papers there, according to the rag-man's figures. And this on top of all those baskets of plaster was too much. Besides, the stairs were dark and steep, and Peg had a vision of herself in a heap at the bottom, with an armful of papers scattered over her broken bones. But Mrs. Harbinger was already clattering out of the room and if Peg was to win her she must show her she was no shirk. With aching muscles she proceeded to her task and by slow and careful steps succeeded in clearing the room without the expected tumble.

"Now, Mrs. Harbinger," she said cheerfully, when the last armful was out doors, "they're all in a nice pile, and if you'll give me the coal I'll start the bonfire."

"Bonfire," shrieked the old woman. "Who said bonfire? Do you want to burn me up? Whoever thought I'd burn up all those papers in a bonfire when I need 'em every morning to start the kitchen fire? You bring 'em right back into the woodshed and leave 'em there."

"You said to take them out doors and we'd start a bonfire," protested Peggy, angry tears springing to her eyes.

"You contradict me to my face, you sassy thing," screamed Mrs. Harbinger. "March out there this minute and bring 'em in or I'll tell your father on you."

Peggy had intended to refuse, but this threat finished her. If Mrs. Harbinger told her father, Jack would be sure to find it out and after her boast of the morning his ridicule would be more than she could bear.

"It never turns out for me as it does in the books," she mourned. "Now, if 'Luella' had come here this afternoon, she'd have talked Mrs. Harbinger into anything. Well, maybe I'll learn after awhile just to be myself. Now I'll just carry these things back in and skip for home before she gets a chance to set me at something else. I don't believe Mrs. Harbinger deserves friends, anyway, or she wouldn't have been living here alone all these years waiting for me to discover her."

And with this reflection Peggy went out into the twilight to return the papers to the house.

WILD GEESSE.

BY J. A. KAISER.

High over-head, with honking clangor loud,
A flock of wild geese flies—
A wavy line of life 'gainst fleecy cloud
And stretch of azure skies.
More common scenes of March dissolve and go,
And but the wild geese high—
A wilder life than our tame regions know
Attract the ear and eye.
They stir my blood; they beckon, beckon me;
The wild within them calls,
And in my heart respond the wild and free
Which Custom's bondage galls.
Their noisy clangor fades and dies away;
Their far-off forms depart;
But through the fleeting hours of that March day,
There's longing in my heart.

Recollections of Lincoln and Grant.

IN the spring of 1865 in the month of April, my company (Light Artillery) was doing detached duty, and our camp was about six miles from the city of Washington.

On the eleventh day of the month of April, General Grant arrived in the city and was given a royal welcome and reception, in honor of his victory and the surrender of Lee.

Along Pennsylvania avenue were several mottoes in honor of General Grant. There was one opposite the treasury building which I distinctly remember that read as follows:

"Glory be to God who hath to U. S. Grant-ed the victory." During the evening up to a late hour, the avenue and all around the White House was crowded with soldiers and civilians.

General Grant came out on the balcony of the War Department building and said a few words, but there was so much cheering only a few could hear what he said.

No one at that time realized that this was the last public speech that he would ever make, and that in a few days he would be murdered by an assassin. On the night of his assassination, everything was peaceful and quiet in our camp, when suddenly about 11:00 o'clock the bugle sounded and we quickly fell out and formed in line, and when an officer told us what had occurred, no man can describe our grief and sadness of our feeling, when told that our beloved President had been shot down and was dying.

Ottawa Co. JOHN JACKSON.

THE BLACKSNAKE AND THE WOODPECKERS.

BY W. T. CHILDS.

George Bender and Pete Moore had noticed in the spring that a red-headed woodpecker often punctured the decayed trunk of an old oak tree in the pasture, and, after flitting about and drilling the rotten limbs, placed its head close to the loose bark, so that its acute ear might discern the consternation of countless insects and vermin as they burrowed deeper and deeper into the millions of pin-holes under the bark.

When the boys were convinced that the red-headed woodpecker and his less gaily cooled mate had selected this particular old oak tree for their domicile, it taxed their patience to wait until the first egg appeared. Day after day, for two weeks, one or the other of the boys had climbed the tree and thrust his hand into the hole from which the woodpeckers were seen to fly as the boys approached the tree, only to find at the bottom of the hole daily increasing numbers of cherry seeds.

"Two woodpecker eggs will be quite an addition to our collection," said George as he balanced himself upon an unsound limb of the tree, before thrusting his hand into the hole. Suddenly with a yell of alarm he slid to the ground just as a big black snake's head came out of the hole, and its forked tongue bade defiance to the two boys who had disturbed its nap.

Whiz! The stone sped from his hand, and the next instant the black-snake's head was mashed to a pulp

against the tree, and its body squirmed and coiled in the agony of death and dropped helpless and defenceless to the ground. With a shrill cry, the woodpecker flew away to the woods.

Pete climbed the tree and thrust his hand into the hole. "No woodpecker eggs for us," he said, dejectedly, as he withdrew the crushed shells. The snake sucked 'em. Wonder what became of the mother bird?"

Pete slid down the trunk of the tree to the ground, and stretching the snake to its full length, revealed a bunch several inches down the snake's length.

"There she is!" exclaimed George. "Just like a snake! It was waiting for the male bird to come back so it could swallow it, too!"

IMMORTALITY.

BY MATTIE M'CASLIN.

I had a funny dream last night, a dream that made me squirm, For right upon my shoulder, was a horrid, great, green worm! It wriggled and it shivered, and it lifted up its head, Then whispered in my shrinking ear, and this is what it said:

"Be patient little maiden, and see what I will do." And then it quivered and was still; it seemed to die all through, Then soon a tiny coffin grew, around its stiffened shaoe,

It was not black, and there was not a single bit of crepe. I tried so hard to keep quite still, I'm sure I must have wept, At least my eyes were dim with tears, until again I slept.

And had a dream within a dream, a thrill of joy ran o'er me, As brilliant sun-kissed colors flashed on dancing wings before me.

A tiny buzz of laughter, "You were patient dear," he said, "And you see I've kept the promise that the caterpillar made.

Yes, I know I am a beauty, will you join me in a dance? I will teach you to be graceful, not a jumping, bumping prance.

Let us hasten to the meadow, there are flowers there, poor things, can "honors to their partners," in the dance, but have no wings, are flowers of the earth, while I'm a flower of the air,

I'm so happy, happy, happy, full of joy and free from care.

We will love them, smile upon them, lead the figures you and I.

And I woke while I was dancing, with my friend, the butterfly.

My Mamma, she has told me, Oh, how wonderful it seems!

That the very bestest things of life are found outside of dreams,

For inside the caterpillar grows, the lovely butterfly

And in each of us, an angel, we may grow it if we try.

Your car starts in trim for 1914—How will it end?

A canvass among New York repair shops showed that over one-half of the automobile engine troubles are caused by incorrect lubrication.

Your motor has approximately 1500 parts. To reach all friction points properly your oil must suit your motor.

No one lubricating oil can be efficient for all cars.

The Lubricating Chart, printed in part on the right, was prepared after a careful analysis of the motors of each make and model of American and foreign car.

It is a standard guide to correct automobile lubrication.

Make a note of the grade of Gargoyle Mobiloils specified for your car. Then make sure that you get it.

It is safest to buy in original barrels, half-barrels and sealed five and one-gallon cans. See that the red Gargoyle, our mark of manufacture, is on the container.

On request we will mail a pamphlet on the Lubrication of Automobile Engines. It describes the common engine troubles and gives their causes and remedies.

Stationary Gas Engines—For all types of small gas and oil engines use Gargoyle Mobiloil "A" the year 'round. During very warm weather Gargoyle Mobiloil "B" is most economical on engines from 9 H.P. up.

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Correct Lubrication

Explanation: In the schedule, the letter opposite the car indicates the grade of Gargoyle Mobiloil that should be used. For example: "A" means "Gargoyle Mobiloil A." "Arc." means "Gargoyle Mobiloil Arctic." For all electric vehicles use Gargoyle Mobiloil "A". The recommendations cover both pleasure and commercial vehicles unless otherwise noted.

Table with columns for Model of Car (1910, 1911, 1912, 1913, 1914) and Lubrication grade (A, Arc, B, E, etc.).

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White hardwood floors should be mopped two or three times a week with water in which "20 Mule Team" Borax has been dissolved. The floor will remain beautifully white and no scrubbing is necessary.

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Woman and Her Needs

At Home and Elsewhere

The Week's Work, How Do You Plan It?

EVERY time I read a message from a woman advising her sisters to "cut out the non-essentials," I utter a word of thanksgiving. We have so long been slaves to what "folks-would-think-of-us-if-they-knew-we-didn't-iron-oursheets-all-over," that it comes hard to slight material things in order to have time for spiritual. But gradually we are coming to it, and the next generation will, I fondly believe, see the real emancipated woman, the woman who has time for whatever she needs to make her broad-minded and healthy and keep her family in the same condition, but who has no time to scour knives three times a day nor wash her windows every week, nor put three sets of fine tucks and lace-edged ruffles on little Mary's underclothes.

When I was a child I remember the average woman was a martyr. More than that, she revelled in being a martyr, and tried hard to bring her daughters up in the same way. Those women just loved to get all the meals for a family of eight, wash all the dishes (and scour all those knives and forks, too), do their washing and ironing and scrub the kitchen every Monday. They wanted to do it so they could tell their husbands how hard worked they were when night came, and brag about how much smarter they were than the poor woman who thought life meant something more than hard and unceasing toil. The woman who stopped work in the daytime to pick up a paper or magazine, was a lazy good-for-nothing and her husband a hardly used man. A spotless house was the one thing needful in life, and it must be maintained, no matter at what expense of woman's flesh and blood.

But the women of this generation have a wiser way. They are taking lessons from their master, man, and looking for the quickest and easiest way to do everything, knowing that that way is usually the best. Dishes are washed, rinsed in hot water and turned up to dry. Stockings, knit underwear, dust-cloths, dishtowels, bath towels, etc., are folded up smoothly as they come from the line and put away unironed. Sheets have only the top hem ironed, and perhaps not that. Carpet sweepers are called into requisition instead of brooms, unless there is money enough for the vacuum cleaner. The kitchen floor gets along with a scrubbing once a week, and the mop keeps it clean enough the rest of the time. Neither does all the woodwork in the kitchen receive its old-time scrubbing every Saturday morning. A large part of the baking has been done away with, too. Modern women have learned that the family will be healthier and stronger with fewer pies and rich cakes, and more vegetables, so cooking has undergone a change in that direction, while the fireless cooker, home-made or from the store, takes off a large percentage of the work that is left.

Neither is it considered a loss of time to read. Women have learned the truth of that doctrine, "Power through repose." They have learned by watching man, that if they drop down right after dinner and rest for a half hour or an hour, they can finish the day much more easily than without that little rest. Usually the mind is working during that breathing spell

and the bit read each day makes a brighter, more useful member of society.

Women are learning little by little to put health and good spirits above

work. Just how it is accomplished is an individual problem. How do you arrange your week's work so as to do it with the least effort and secure to you the most time? Are you willing to write and tell us, in a few words, for the benefit of "the other woman?"
DEBORAH.

Planing the Home Flower Garden.

By MRS. JEFF DAVIS.

IN determining the time for planting, differences in the latitude must be considered. But before planting time arrives, your garden should be planned and your seed selected. Plan your garden most carefully, and select suitable locations for plants. Much depends on this, and do not forget that the morning sun brings best results. Very few flowers thrive in full shade.

Don't be too ambitious, but use a common sense plan, bearing in mind the requirements of the flowers you want to grow. It is a mistake to think every plant will thrive in your garden because you have seen it catalogued. Select the varieties you know to be suitable to your locality, and if you wish to add others inquire from the nurseryman if they can be successfully grown in your garden.

To get pleasing effects, study a color scheme. Mass the colors, using enough flowers of one variety to get a decided tone. Plant tall flowers and shrubs as a background, placing your short ones in the front.

Roses in all lands virtually require the same culture. The better their culture, the better the roses. Roses, to be sent by parcel post should be ordered early, as florists are not rushed and can give more prompt attention to orders. Then, plants suffer more by heat in the parcel post, than by cold, hence the advisability of early orders.

Set roses in sunny places. They will not bloom in the shade. Neither will they live or grow in damp, soggy soil. Good drainage is of vital importance. The morning sun is always the best for them, so an eastern exposure should be chosen if possible. The afternoon sun is exhausting to roses. The only danger of overwatering is for the first ten days after the plants are put out. After growth begins, if the soil is well drained, copious watering in dry weather is highly beneficial.

Sweet peas also require a location with plenty of sunlight, and if possible let the rows of planting run north and south. First have the ground to be planted forked up a foot or 18 inches deep, then cover the surface with decayed straw, leaf mold, or grass clippings which have been piled up all summer and are beginning to decay. Work this into the soil breaking all clods until the ground is well pulverized. It is best not to use animal manure on peas as this breeds all sorts of insects. If decayed straw or leaves cannot be secured, use bone meal or nitrate of soda. Bone meal can be sprinkled on the ground to resemble a light snow, then worked in. Nitrate of soda is best used in a liquid form, two ounces to a gallon of water. This can be applied to the peas after they are well up, but do not let the mixture get on the plants themselves, only on the ground as near to the roots as possible.

If planting is done very early, it is best to pull the ground up over the

rows in a little ridge, which can be leveled off later. This is a protection and prevents the peas starting too soon.

As soon as peas are two or three inches high work the ground with a hoe, pulling the dirt to them for a support. Stake them as you do ordinary garden peas. Do not let the faded flowers go to seed. By pulling off the full grown blossoms every day the blooming period will be lengthened. Select the best varieties, buying seed in separate colors, and not in mixtures. The mixed seed have a great many combinations of colors, but are not nearly so distinctive or effective as separate colors.

IMPROVING THE HOME.

BY THEDA DEE.

Whether our homes are on the farm or are suburban or city lots, let us see to it that they are properly improved. By improved I do not mean city water service, electric or acetylene lights, etc., although these are nice, and right if they can be afforded. But I have reference to the planting of trees, fruit, ornamental and shade, flowering shrubs, vines, berry plants and grape vines. Such everyone can afford, yes, cannot afford to do without.

How often we see places which have been homes for years with never a shade tree nor a fruit tree. Or if there chance to be a few, what a sad condition they are in. Perhaps the owner planted a number, but let calves, pigs or horses run in the same lot and his trees were broken down or crippled otherwise.

Some people say as an excuse that they did not intend to make this their permanent home and did not expect to remain on the place long enough to reap any good from fruit trees or vines which they would plant! What of that? Plant them anyway, and cultivate and trim them, and if not in bearing, they will add to the appearance of the home and help to bring a better price than you would get if no trees were there.

Really, it requires but a very few years for fruit to begin bearing, especially peach, plum and cherry trees, grapevines and berries of various kinds. We have always planted such things wherever we live and although we have not always stayed long enough to eat of the fruit, we have the satisfaction of seeing it grow and know that someone will reap the benefits, even if we do not. Besides such improvements always help to sell a place, for no one wants to buy a barren and treeless home.

Three years ago we planted fruit trees of different kinds. This year we ate grapes, peaches, plums and cherries of our own planting. Next year, if it is a fruit year, we expect more. We also had grapes, pears, peaches, plums and berries, which had been planted by the former owner. We have apricots, apples and cherries coming, and in a few years we expect



Illustration Expressly for Montgomery Ward & Company by R. F. Schabelitz

-and they lived happy ever after

Love has found a way—

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But planting is not all we have to do. We take good care of our fruit trees and vines, prune them, cultivate and fertilize them. In the late fall we wrap the small trees well with rags or paper to keep the rabbits from gnawing the bark. Yes, it pays to plant, but not unless you take care of the trees afterwards. It is a real pleasure to raise one's own fruit, and have all you want, fresh and ripe. Such fruit is not to be classed with that which is shipped in and usually picked before nearly ripe. Besides, it is a great saving, not to have to buy it.

Even if living in a town there usually is room for a grapevine or two, a few cherry or peach trees. And if they are well cared for they will repay for all the time spent upon them.

TO SHORTEN A SKIRT.

BY LURA W. CALLIN.

Of course, you are all alone when you decide to shorten that skirt, but you have a "now or never" feeling that makes the task seem very urgent but not sufficiently so to warrant a trip to the dressmaker.

With a bit of chalk, a piece of string and a yardstick to conjure with, the deed may be done. If you have no yardstick, take a stick from the hem of the curtain. Make a circle about 18 inches in diameter on a large piece of paper, using nine inches of the string and the chalk. Place the paper on the floor in front of a mirror where the feet may be seen. With chalk and stick, take your place in the center of this circle. Chalk the upper end of the stick and placing the lower end on the circle and keeping it perpendicular, press against the skirt, which you have put on. Make a row of marks all around the skirt, the circle regulating the distance from the foot all around.

When done remove skirt, hook the belt together and pin to a curtain, pinning the belt in several places so it hangs fairly even. Mark on the stick the height you wish the skirt to be from the floor and, with the other end of the stick placed carefully at each chalk mark on the skirt, make another row of dots along the bottom of the skirt just where the chalk mark comes. Fold the hem along these dots.

To Reinforce Hose.

When buying fine hosiery get, also, a pair of cheap stockings the same color for each pair. Cut off the tops of the cheap pair and sew inside the tops of the good pair, stitching on the machine twice, stretching the goods under the machine foot. This reinforces the grip of the garter and prevents railroading. When the hose get thin in the feet draw the cheap nose over a last and over it the good stocking and sew with a fine running stitch all around on a line just below the slipper top. Darn all thin places, fastening the two thicknesses together. Take off the last and, turning wrong side out, trim off the cheap goods just above the line of sewing and hem this edge down neatly. Sew loosely or the thread will break when drawn over the foot.

To Fasten Sheet Hems.

To keep the hems from fraying at the ends as they sometimes do when whipped by the wind, turn the ends of the hem back a little bit and stitch close to the edge and also back along the fold for two inches. The ends of the thread can not work loose and there is no corner to offer any resistance.

SCHOOL LUNCH NEEDS ATTENTION.

"When it is considered that many school children depend upon the box lunch for about one-third of their food supply, it is seen that its preparation is rather an important problem," says

Mary Betz, of the College of Agriculture, Ohio State University. "A lunch may be a source of pleasure to a child; it may be full of surprises; or it may be a disappointment. Just as in the preparation of any other meal, there are three points to consider in getting up the school lunch: selection of proper food and the right amount of variety; preparation of food so that it will be palatable and digestible; and packing in an attractive, sanitary way. Often lunches consist of foods that are difficult to digest such as meat, pie, doughnuts, cheese and pickles. There is a lack of the simple, more digestible foods, such as jelly, jam, peanut butter and lettuce sandwiches, custard, ginger bread, fruits, nuts and candy. Neatness should be emphasized in packing the lunch for unattractive food is not eaten with relish. Wax paper should be used to wrap up such articles as sandwiches so they will not absorb flavors. A permanent container, made of tin, is better than a paper box or bag for daily use since it can be cleaned easily and prevents the food from drying out. Each article of food should be packed compactly in the container, because jostling is apt to spoil the lunch."

Mend your rugs by whipping over the worn edges with yarn to match the rug, and then single crochet over the hole or worn place tightly with a crochet hook.—F. T. M.

HOME QUERIES.

Household Editor:—Will you please publish in the Household Department the piece titled, "The Farmer and the Fox?" If not, could you tell where it could be found?—M. S., Bellevue.
I have been unable to find the article. Could you give further information, as the author's name, when first published, etc.? Is it a poem?

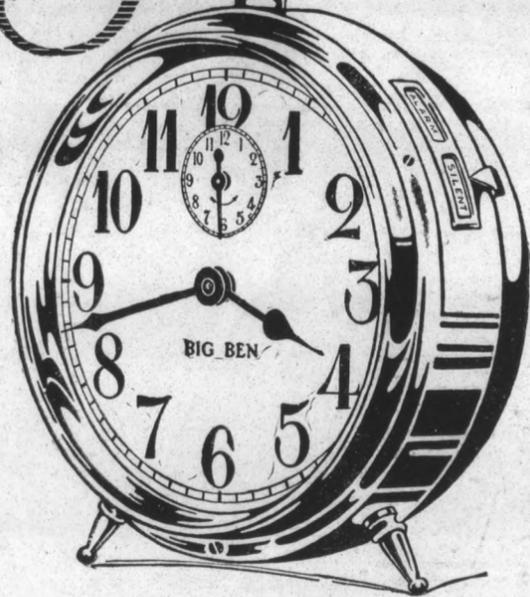
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Farmers' Clubs

THE FARM LABOR PROBLEM.

(Continued from last week.)

Let us next note some of the causes of the present lack of efficient help. Some of these we will find outside the pale of the farmers' effort at remedying; others may require long-continued, united effort, perhaps by a whole neighborhood, yet it is essential that each individual understand what may be done. In my estimation, the dearth of competent farm help is not due to the introduction of farm machinery; the latter is to a greater extent an effect of the former. I would rather place as one of the foremost reasons the fact that agriculture is not an organized industry, such as mining, factory work, carpentry, and so many other forms of manual labor. I believe this is largely the source of the dissatisfaction of the better class for farm work. The farmer far too often is a poor manager; the very nature of his work is seasonal, but there is really no necessity for doing only chores during the winter. The more progressive farmers of my acquaintance that own 200 acres of land or more, find employment for a man the year around, because they carry on intensive farming to their own profit, beside extra stress is laid on dairying during these winter months, the fertilizer is hauled directly to the fields where it does the most good, the year's supply of wood for fuel is prepared, repairing of harness, tools, and to some extent, buildings, is done, extra stock is fattened, and all in all, there is plenty to do for two, and spring time finds both ready. Where a man is hired for the summer, it is easy to see that his business entails considerable loss. He must find something to do during the winter season. The old wood-chopping days are over. Even if he goes to the northern lumber camps and succeeds in securing work, he is out considerable money for railroad expenses. If he secures work in a factory it will be at very low pay, and about the time spring work re-opens on the farm would be as early as he could expect much of a raise in pay. How, then, can an ambitious man afford to work on a farm when the work there is open to him but from April to November? The farmer shows himself a poor manager in another way, that is, by the irregular hours for work. No one wants to be in a business having 17 working hours per day, that is, not deducting the time for required for meals. These hours may, of course, be an exception, but the exception occurs too frequently to be conducive to the satisfaction of the worker. The trouble is, too often many farmers forget to allow for the chores, and these add very materially, especially if the man has already done his ten hours of work in the field.

(To be continued.)

COUNTY ASSOCIATION MEETS.

The sixth annual meeting of the Tuscola County Association of Farmers' Clubs was held in March, at the Baptist Church, Caro, where a musical and literary program of interest was enjoyed by all who attended. The usual business hour just before dinner resulted in the election of officers: President, James Wilson, Ellington; vice-president, John Retherford, Kingston; secretary and treasurer, Mrs. M. Arnold, Indianfields. It was decided to encourage the boys of the country to enter into a corn and potato growing contest and exhibit the same next January at the Farmers' Institute, Caro. A sumptuous dinner was served by the Ladies' Aid of the Baptist society in the church dining-rooms, where 112 did their best. The table decorations consisted of beautiful pink roses, wandering Jew and primroses. An ideal day and a good attendance helped to make it

one long to be remembered. More than a dozen members of the Caro Business Men's Association enjoyed the dinner and program, and two of them gave short talks which were appreciated by the members.—Mrs. Margaret Arnold, Cor. Sec.

CLUB DISCUSSIONS.

Young People Interested.—Geraniums decorated the spacious home of Mr. and Mrs. Charles Pierce, who entertained the members of the Indianfields Farmers' Club on March 19. Nearly 70 were present, including a goodly number of the younger members who are very much interested and readily respond when called upon to take part in the programs. After the social hour the meeting was called to order by Vice-president R. W. Black. Papers were read as follows: "Mud or Stars," Mrs. Ellen Purdy; "Inspecting the Tree Trunks," Mrs. James Paul; "Getting the Most Out of the Soil," M. Anger; "Swatting the Fly," Mrs. Mary Fournier. Her paper was of the clean-up movement and concerned dirty alleys and filthy backyards. When alleys and yards are cleaned flies breed less and disease creating conditions are abolished. Paper, "Poultry Hints," Mrs. Castle Taggett. The question box contained very interesting questions. One especially, "Is a new court house a necessity?" This created a lively discussion and after several men and ladies had given short talks a straw vote was taken which resulted largely in favor of the proposition. Club adjourned to meet with Mr. and Mrs. Joseph Fournier, April 16.—Mrs. Margaret Arnold, Cor. Sec.

Discuss Seasonable Topics.—Although it was a cold winter day, 50 members of the Hadley and Elba Farmers' Club met in March with Mr. and Mrs. Chas. Lerrar. We were made very welcome and all thought it a day well spent. After dinner the meeting was called to order by President B. L. Snook. Singing "Nearer My God, to Thee;" prayer by Rev. Ehrhardt; roll call, early recollections. Rev. Walker thought there was no fonder recollections than "Home, Sweet Home" with father and mother. C. P. Johnson gave us a very practical paper on good roads, with general discussion. Carrie Snook gave a nice paper on bulbs and seeds, which was followed by discussion. Adjourned to meet at Hickory-Glen-Lawn with Mr. and Mrs. Harvey Phelps, on April 9.—Flora Pierson, Cor. Sec.

Grange.

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

TO EVERY MAN HIS TASK.

An assistant lecturer in Pennsylvania writes: "The great problem is to set every member at work and make all feel it is not a waste of time to attend Grange. Hence we want the very best advice on things to do."

This correspondent has named two fundamental features of successful Grange management, namely, to set every member at work, and to make each feel it pays him to attend the Grange. Every person who joins has the right to expect these two returns. In order to accomplish this, it seems that we will have to go a long way to find a better plan than that by which our state sessions are handled. As is well known, every delegate to State Grange is assigned to a committee and expected to share in the responsibility of that committee's work and report. In this way every delegate is set at work at the very outset. A similar plan of dividing the subordinate Grange into committees or groups holds within it great possibilities. The subjects assigned to the groups should be carefully selected, with due regard to the interests and needs of the locality of the Grange. Not many groups should be made up, unless the membership is very large. Perhaps four would answer in most Granges and the subjects should be quite broad. Later, other topics may be chosen and subdivisions of the first general subject may be taken up.

For example, suppose at first a Grange divided into only four groups known as: 1, soils and crops; 2, farm animals; 3, home economics; 4, child training. Let each group or committee select its own leader, or one may be appointed by the master or lecturer. The members of a group should be encouraged to make note of facts, incidents and experiences which they run across and bring these to the group meeting to share with other members of that group. Use may be made of these groups upon the regular programs. Some time one group will be given a quarter of an hour in which to report its findings. At another time, perhaps, the entire Grange will break up into groups or committee meetings in the four corners of the hall for a few minutes' conference. All will be admonished and encouraged to talk group topics whenever and wherever they meet one another. Best of all, it will be possible to stimulate through these groups an improvement of the neighborhood interests. The spirit of community pride will be aroused. A sort of rivalry can be engendered among the groups as to which will set real movements on foot for the common good. Perhaps the farm animal group will be casting about to see how better stock may gradually be introduced. The soils and crops group will be testing soils, comparing treatment and canvassing for orders for lime and fertilizers, or enlisting members in better methods of seed selection. We can fancy that the home economics group will present balanced ration menus for the home that will vie with those served to stock at the barns; while the group that devotes itself to child training will lead to a closer study and more sympathetic understanding of the children of the neighborhood.

JENNIE BUELL.

IONIA POMONA.

Danby, Sebewa, Berlin, South Boston, Orleans and Keene Grange were represented at Blanchard's hall when the Ionia County Pomona Grange met with the Portland society recently. Danby Grange won the pennant for the largest foreign representation, sending 11 members to the meeting. The various sessions were highly instructive and thoroughly enjoyed by the Grangers and invited friends.

Following a big dinner, at which time plates were laid for 80, the afternoon program began with the address of welcome by Master Joseph Morse, of the Portland Grange. Fred Eddy, master of the Pomona Grange, responded. The reports of the various subordinate Granges were read, some of them showing great progress along the line of gains in membership, etc. The chief topics of the afternoon session were "Ideals," by Mr. McClure, of Lansing, and "Does the Strong and Faithful Tie of Agriculture Unite?" by V. W. Clark, of Keene. Supt. Gourlay, of the Portland schools, favored the Grangers with a couple of good readings, and Mrs. Daniels and Mr. Clark rendered a vocal duet.

Like the afternoon session, the evening program began at the close of the supper, which was served to upwards of 05. Charles Lindquist, of Sunfield, was assigned the topic, "Are the Present Rural School System and Teachers' Factors in Drawing Pupils from the Farm?" and handled it in a very commendable manner. "Is the Study of Sanitation, Foods, etc., Worth While to the Farmer's Wife?" was discussed by Fred Eddy, both topics being followed by general discussions. Mr. McClure's evening subject was "You," in which he drove home some facts with convincing forcefulness. Wade Allen, of Ionia, gave a reading, and Miss Lucinda Munroe rendered a vocal solo which brought pronounced applause. All in all, the meeting was most enjoyable, and members of visiting Granges will look forward to the next meeting of the county society in Portland.

Charlevoix Pomona Grange will meet with Ironton Grange on Thursday, April 9. Prof. L. R. Taft, of Lansing, Superintendent of the State Farmers' Institute Society, will be the principal speaker and will speak in the morning as well as in the afternoon and evening.



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Farm Commerce.

Reducing Marketing Expenses.

EXPERTS who have made a careful study and investigation of the transportation problem agree that it costs too much to distribute farm products after they reach the city terminals. It is found that the cost of city distribution frequently exceeds the cost of producing them on the farm. To put it the other way, the farmer gets for his products but little more than it costs to deliver them from the city freight terminals to the consumer. Just here is the proper point of attack in solving a very complex marketing problem. So long as it is costing the city dweller as much to get his foodstuffs from the city freight terminals to his home, it shows a woeful lack of intelligence for him to talk about the inefficiency of the farmer. It is the city that needs to clean house.

An Example.

The problem of city distribution works as follows, to give a concrete case: A farmer living within eighty miles from one of our large cities ships five bushels of potatoes and a barrel of apples to a mechanic who lives four miles from the freight terminal. Potatoes are worth, perhaps, 35 cents per bushel and the apples \$1.25 per barrel, or a total of \$3. The freight charges will amount to approximately 60 cents. The trucking charges from the freight terminal to the home of the mechanic, will amount to, at least, \$3. If the produce is sent by express the cost of city delivery will be eliminated, but a higher rate means practically the same charges between the producer's farm and the mechanic's house. Years ago before the cities began to spread on all sides and annex surrounding territory, the problem of handling farm products after they reached the city terminals was less complex.

A Civic Condition.

The automobile and trolley have had a marked tendency to develop new residence districts and induce manufacturing firms to buy sites in the outskirts of large cities. All of this has removed the city dwellers further from markets and freight terminals than they were before these improved transportation facilities enabled people to ride to and from their work and business in the city. Not long ago the city authorities of a large eastern city set an expert at work to investigate the local market and distribution problem. When he made his report he attached great importance to the fact that it cost too much to handle farm products after they reach the city terminals. One of the best solutions of the problem would be that of utilizing the trolley lines to distribute freight as well as passengers within the city limits.

An Unused Factor.

As farmers and business men we would look upon the man who made his kitchen garden at the farthest end of his farm as somewhat of a curiosity, yet city dwellers, who brand the farmer as the antithesis of efficiency, have given practically no attention to the problem of bringing their food supplies within easy access to their homes. The fact that the steam roads derive more than three-fourths of their income from freight, and that trolley lines derive 98 per cent of their income from carrying passengers, and that all of these passengers have homes somewhere, affords considerable food for thought to the student of the transportation problem.

Will it Interfere with Regular Service?

Some will claim that trolley sys-

tems cannot afford to impair the efficiency of their passenger service by handling freight. Let us see if this claim holds good, and, if not, how a better distributing system could be devised for farm products after they reach the city. Would it not be practical and profitable for trolley systems to carry freight from 12 o'clock at night until the rush of morning traffic begins? By establishing freight terminals in the residence sections they could carry farm products cheaply and efficiently at a very low rate, thus serving as the connecting link between the farmer and city dweller. Some will argue that it will cause a congestion of traffic but this does not hold good, because it would reduce the number of power-vehicles

(Continued on page 414).

ADJUSTMENT OF OUR DAIRY MARKETS.

It appears that there is a change going on in the markets for dairy products. In the butter industry we seem to be approaching a new epoch, one where the price of butter will not rule so high as during the past few years. It is probable that the removal of the tax on butter is bringing this about. Our markets have recently attracted the attention of the foreigner, and quite an amount of butter has been shipped here from other shores. For this reason, largely, butter values have dropped earlier this year than in former seasons.

But we must not lay all the blame for the change at the door of readjustments in national policies, for it must be admitted that the quality of the butter being delivered by the creameries of this and other states has not been of the best. A large per cent of the butter produced is low grade. Such butter is bound to move slowly. While the commission men have tried to hold up the market in former years by paying more than they ought for the inferior grades of butter, the burden has now become too heavy; so that at present they are grading the butter they handle on the basis of the butter market prices and paying for it according to quality. The result has been that the low grades of butter have lost the creameries some money. This, together with the fact that foreign butter is seeking a market here, and also that oleomargarine is a substitute for the low grades of butter, is bringing about the crisis in the butter market.

The solution of the problem seems to lie in improving the quality of our butter. This must be done and it can be done, by the creameries paying for cream according to quality, the same as the commission man is now paying for butter. It can be done in no other way. The farmer will not take the pains to produce an extra quality of cream for the creamery when he is paid no more for good cream than he is for poor cream. It is really the duty of the creamery to see to it that the man who takes the proper care of his cream should get proper remuneration. This will avert a crisis in the butter industry and place it upon a foundation that will defy foreign competition. It is better for the American people to eat American butter than it is for them to eat foreign butter. In fact, it is their duty to eat American butter. On the other hand, it is the duty of the American farmer to produce butter at a moderate price and of good quality. The tax ought not to have been removed, but if the removing of it hastens the day that

will bring about an improvement on much of the butter produced, then it may be a blessing in disguise.

COLON C. LILLIE.

MARKETING COTTAGE CHEESE.

Can you tell me if it is possible for one to work up a trade in selling cottage cheese, and how could one make deliveries where he cannot go and deliver in person?

Monroe Co.

R. S.

It is possible to secure customers who will take cottage cheese regularly, both where it is delivered in person and where sent by parcel post. While all nationalities are beginning to use cottage cheese more liberally because of the healthful influence eating it has on the human system, and also because it is liked after they have tasted it a few times, one is most certain to find a lively demand for a good product in German settlements. Usually it is sufficient to get started with a family or so, after which the merit of the cheese you deliver will either end your trade or cause it to develop as the satisfied customers tell their friends of it.

But the other day we received a shipment from B. L. Snook, of Lapeer county, who is supplying a trade by parcel post. He leaves but a small amount of moisture in the cheese so that the postage will be reduced, and as he makes his from skim-milk it is left for the consumer to mix cream with the cheese to suit his peculiar taste, both as to the amount of moisture and cream he desires incorporated. For us, the arrangement is very satisfactory. It is likely that where one would ship such cheese to new parties he would need to explain how to prepare the cheese lest they become dissatisfied without cause.

The lots sent by Mr. Snook were divided into pound parcels, each pound inclosed in a parchment package, with a cover fitted over the top to exclude the air. Two, four, six or any even number of the pound packages are enclosed in a corrugated pasteboard box wrapped with twine and sent by parcel post. The reason that he sends even numbers of pounds is that it is more difficult to pack an odd number.

Besides the convenience in shipping, the parchment packages have the advantage of keeping the cheese well after it is in the hands of the consumer. Air is kept away from the contents of remaining packages, while the first are being used, which prevents the development and multiplication of undesirable ferments. This is an important point, since it enables one to send a larger quantity at one time, thereby reducing the cost of transportation.

It is observed that in working up markets of this kind the person who is not easily discouraged is the one who usually succeeds in getting a trade that others afterwards envy him for. One should go after such a market determined to make good, and toward this end he should seek to make the very best product and to serve his patrons with the closest attention.

CLIPPED LAMBS ARE NOW COMING FORWARD.

Shearing operations have been going forward steadily in the large feeding stations near Chicago, and already limited numbers of clipped lambs have shown up in the market, meeting with an unfavorable reception, as is always the rule before settled warm weather sets in. Clipped flocks offered on the Chicago market have been selling at a big discount from prices paid for woolled lots, with only one packer buying. However, it will not be very long now before conditions are reversed, for shearing is general where sheepmen are going to hold their lambs and sheep for longer feeding, and by the time it is warm the woolled flocks will be selling at a discount.

Crop and Market Notes.

Michigan.

Lapeer Co.—We have had some disagreeable weather recently, and the wheat fields look brown and seem to be having hard usage. There have been more auctions this year than have been known for a number of years. Eggs, potatoes and butter have taken a decided drop in price. Stock of all kinds is looking well. There is a considerable amount of beans and potatoes still in the farmers' hands. Clover seed, medium, sells for \$8.

Northern Isabella and Southern Clare Co.'s—Warmer weather and the snow nearly gone, and the roads are quite bad, but if the farmers listen to the good roads men we will have better roads soon. Clare and Isabella counties both vote on whether they will adopt the county road commissioner system, and the outlook in Isabella county looks as though the voters will hold to the township system, while Clare looks as though the proposition would carry. Clare county also votes on local option this spring, after 15 years in the dry column, with good prospects of remaining dry. Beans being kept down to \$1.60 by the association and not many marketed at the present time. Hay selling from \$10@12; oats 35c; cream 25c; butter 25c; auction sales numerous and all kinds of stock selling well.

New York.

Columbia Co.—The severe weather the past season froze potatoes in cellars heretofore considered frostproof. Apples have rotted badly. Twenty inches of snow still covers the ground, something very unusual for this time of year. Rye looked well when the snow came. Very little hauling has been done, roads having been blocked with snow. A little rye straw is being delivered at our station at about \$15. Potatoes are worth \$1; butter 34c; eggs 30c.

Niagara Co.—We are having fine weather and there is plenty of water running. Some roads are good, and others flooded, according to drainage. Meadows are in good shape yet and no heaving. Spraying will commence as soon as the ground is fit to hold up rig. Lime-sulphur 10@12c; gasoline 21c. Hens are laying well and some are setting. Eggs 25c; butter 20c; hay, best grade \$13; mixed clover hay \$7.50; oats 50c per bu; wheat 95c; cloverseed \$10.50 per cwt; timothy \$3.25; ground feed \$33 per ton; potatoes 90c; calves and hogs \$7@9.

Nebraska.

Cass Co.—The weather is warm and fine, but there is considerable frost in the ground yet. Roads are getting dry again. A little farm work has been commenced. Some consider the wheat badly injured, but here we consider it in fine condition. If the weather continues warm, spring wheat and oats will soon be sown. Stock of all kinds is in healthy condition. Horses are not in great demand and are cheaper. Cattle are still high. Wheat 80c; corn 58c; oats 40c; hay \$7@10; butter 20c; eggs 20c; hogs \$8.

Scotts Bluff Co.—The weather is warm and the frost is about all out of the ground, and farmers are getting ready for spring work. There is very little sold except potatoes and alfalfa hay. Potatoes bring 90c per cwt. at car; hay, good grades \$8@11 on the track. A good many fat sheep are being shipped. Feeders are not making as much as last year. There is no grain for sale; corn is being shipped in at \$1.35 per cwt. There are many public sales, and everything, especially cows and hogs, sell high.

Dodge Co.—We have had a few cold days this month, but are having fine weather now. The frost is going out of the ground, and farmers are getting ready to prepare the ground for seeding oats. Meadows are in good condition, and the wheat looks good for the time of year. A few farmers have been selling corn for 56c per bushel and hogs for \$7.75 per cwt., and some are selling oats at 35c. The hens have begun to lay; eggs 20c; butter 25c.

Ohio.

Shelby Co.—We are having open weather with a few showers. The wheat is found to be badly damaged by the severe weather of February, as it was not protected with snow. Clover is also badly injured. Hens are beginning to lay well. Milch cows are scarce and high. Horses bring high prices at public sales this spring. Wheat 92c; oats 36c; corn 80c per cwt; eggs 20c; butter 25c; cloverseed \$7@7.50.

Guernsey Co.—Winter wheat and young grass wintered well. We have had a few light snowfalls and little rain, with cold weather the past month. Frost is about all out of the ground. Hens are laying well generally, and the price of eggs is 30c; butter 35c. Assessors are making their

annual rounds, and more personal property is being listed under the Warner law. Tax dodgers are beginning to sit up and take notice and are coming across. Not much hay and grain are being marketed. Potatoes bring \$1 retail. Marketers are marketing nothing but produce and milk, this section being engaged mostly in dairying.

Crawford Co.—The snow is all gone and we are having nice spring weather. The roads are muddy and almost impassible for heavy hauling. Farmers are busy building fence and pruning fruit trees, and are preparing to spray. The heavy covering of snow was a great benefit to meadows and winter grains, which now seem to be in fine condition, and are not pulled out by the frost. There are some hogs and grain being marketed, though some grain is being held for higher prices. Hens are laying well, and the price of eggs has decreased.

Hancock Co.—Wheat and rye are in fine condition, although damaged a little by cold weather. Meadows are fine, and will make a good crop of hay. Very little live stock is marketed. Cattle \$6.50@8; hogs \$8.50. Hens are laying well; eggs 18c. The assessors are making their calls on the farmers, and there is much dissatisfaction, this being the first year that the Warner tax law is in force.

Clermont Co.—Meadows, wheat and rye are in fine condition. Seed wheat brings \$1.15 per bushel; corn 65@75c. Eggs are still scarce, price is 28c; butter 28@30c. Some are stripping tobacco. Some farmers have most of their plowing done. There have been a number of sales this month, with horses and cows bringing good prices, some thoroughbred Jersey cows selling for \$100 each.

Greene Co.—There have been an unusual number of public sales recently, everything selling high. Winter grains have come through the winter in good condition. There is very little being marketed now. Maple syrup is being made, selling at \$1@1.50 per gallon. Hens are laying well now, and the price of eggs has dropped to 24c. The roads are good, and the drag is being tried for the first time this year. to become in better condition.

Coshocton Co.—Wheat prospects are very bright, and meadows have not been injured by winter. During the first few days of March we had zero weather, but now it is like spring. All stock is coming through the winter in good shape. Farmers are marketing hay and wheat. The horse market is dull, but hogs and cattle bring good prices at sales. Hens are laying well now. Hogs \$8.25@8.50, live; dressed \$11; veals \$8@9.50; chickens 14c; cloverseed \$8.50@9; corn 70@75c; oats 40c; wheat 95c; hay \$14@15.

Medina Co.—On account of the large amount of snow covering the fields all winter, wheat and meadows were never in better shape for the time of year. Some sugar bushes have been opened, but prospects are rather poor. A good many farmers are buying feed for their stock. There is scarcely any hay, corn or oats for sale, though some wheat is sold. Wheat 94c; pork, of which there is considerable, is being sold at 8½c; beef 6@7½c; chickens 17c; eggs 25c; butter 23c; milk 18c per gallon.

Hancock Co.—The weather is very pleasant, and the frost is almost all out of the ground. Roads are drying in fine shape, and much scraping is being done. Meadows are looking very good, but wheat and rye are injured some by frost. Many farmers are sowing cloverseed, which sells for \$8.50 per bushel. About all grain and live stock has been marketed. Hogs \$8.50; cattle \$7.50@8.50; cows scarce and high in price. Many horses are being shipped in from Iowa, and sell at \$200@250 each. Hens are laying splendidly, eggs 25c; butter 20c per pound.

Indiana.

Allen Co.—Big reductions have recently been made in butter and egg prices, and wholesale dealers anticipate a further decline. The price of onions is now high, due to scarcity and will not go lower until the new crop arrives from Texas. Apples are lower in price, as the stock is not as good as formerly. Potatoes are steady and no change in prices is looked for. Wheat 92c; oats 39@45c; corn 60@63c; first-class hay in good demand at \$12@14.

Noble Co.—Snow all gone, and the wheat is looking fine, though some shows damage by fly. Roads are very bad, and no heavy hauling can be done. Public sales are very numerous, and farmers seem anxious to buy brood sows and milch cows. On account of last year's poor crop, two-year-old seed oats are selling for from 50@80c per bushel; hay \$12@18; wheat 92c; oats 36@40c; corn

(Continued on page 408).

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Markets.

GRAINS AND SEEDS.

March 31, 1914.

Wheat.—Although the market has shown some strength during the past week, on Monday and Tuesday it weakened under favorable weather conditions. All over the winter wheat district there has been a sufficient fall of rain to satisfy the growing plant. The bullish news is from abroad, Russia is not exporting her usual amount and Argentine has a visible supply of about one-sixth of that of a year ago. However, Liverpool and other foreign markets appear to be influenced by the good crop prospects in this country. For this date in 1913 the price for No. 2 red wheat was \$1.84 1/4 per bu. Last week's quotations are:

	No. 2	No. 1	May
Wednesday	98 1/2	97 1/2	1.00
Thursday	98 1/2	97 1/2	1.00
Friday	98 1/2	97 1/2	1.00
Saturday	98 1/2	98	99 3/4
Monday	98	97 1/2	99 1/4
Tuesday	97 3/4	97 1/4	98 3/4

Chicago, (March 31).—No. 2 red wheat \$93@93 1/2c; May 91 1/2c; July 86 1/2c per bu.

Corn.—This cereal suffered with wheat, experiencing a decline of a cent, although retaining a substantial portion of the previous week's advance. Ideal weather is helping the buyers to work values lower. One year ago the price on the local market was 53c for No. 3 corn. Quotations for the week are:

	No. 2	No. 2	Yellow
Wednesday	Mixed	67 1/2	69 1/2
Thursday	67 1/2	67 1/2	96 1/2
Friday	67 1/2	67 1/2	69 1/2
Saturday	67 1/2	67 1/2	69 1/2
Monday	67	67	69
Tuesday	66 1/2	66 1/2	68 1/2

Chicago, (March 31).—May corn, 67 1/2c; July 67 3/4c; Sept., 67c per bu.

Oats.—In Missouri and other states of the same latitude oat seeding is well along and the acreage will be fairly large. Prices here are down with those of the other two major grains. Demand is normal. One year ago the quotation for standard oats was 36c. Values for the past week were:

	Standard	No. 3	White
Wednesday	42 1/2	42	42
Thursday	42 1/2	42	42
Friday	42 1/2	42	42
Saturday	42 1/2	42	42
Monday	42	41 1/2	41 1/2
Tuesday	42	41 1/2	41 1/2

Chicago, (March 31).—May oats 38 3/4c; July, 38c; Sept., 37 3/4c per bu.

Beans.—An improved demand exists and prices have gone up 10 cents. The local board of trade quotes immediate and prompt shipments at \$1.92; May \$1.97 per bushel. Chicago reports a steady trade. Pea beans, hand-picked, choice, are steady at \$2; common \$1.75@1.85; red kidneys, choice \$2.80.

Rye.—This cereal is steady. No. 2 is quoted at 68 1/2c per bu.

Barley.—At Chicago barley rules easy and is quoted at 49@62c per bu., while Milwaukee quotes the malting grades at from 52@68c.

Timothy.—Prime spot is selling at \$2.30 per bu.

Alfalfa.—Steady at \$7.25 per bu.

Cloverseed.—Values are lower again. Prime spot \$8.25 per bu; alsike at \$10.25; Toledo prime cash is quoted at \$8.22 1/2 and prime alsike at \$10.40.

FLOUR AND FEEDS.

Flour.—Jobbing lots in one-eighth paper sacks are selling on the Detroit market per 196 lbs. as follows: Best patent \$5.30; second \$5; straight \$4.75; spring patent \$5.10; rye flour \$4.40 per bbl.

Feed.—In 100-lb. sacks, jobbing lots are: Bran \$29; coarse middlings \$28; fine middlings \$30; cracked corn \$30; coarse corn meal \$29; corn and oat chop \$26.50 per ton.

Hay.—Demand steady and prices higher. Carlots on track at Detroit are: No. 1 timothy \$15@15.50; standard \$14@14.50; No. 2, \$12.50@13.50; light mixed \$14@14.50; No. 1 mixed \$12.50@13; No. 1 clover \$12@12.50.

New York.—The market continues steady. No. 1 timothy \$20.50@21.50; No. 3 standard \$15@20; light clover, mixed \$18@19; clover \$17@18 per ton for the large bales.

Chicago.—Prices here rule higher. Choice timothy is quoted at \$17@18 per ton; No. 1, \$15@16; No. 2 \$12@13.50.

Straw.—Steady. Rye \$7.50@8; oat

straw \$7@7.50; wheat straw \$7@7.50 per ton.

New York.—Rye straw \$17@19; oat straw \$11 per ton.

Chicago.—Rye straw is quotable here at \$7.50@8; oat straw \$6.50@7; wheat straw \$6.50@7 per ton.

DAIRY AND POULTRY PRODUCTS.

Butter.—Market quiet with prices 1 1/2c lower. Extra creamery 24 1/2c per lb; firsts 23 1/2; dairy 17c; packing stock 14c.

Chicago.—Market is fairly steady, although trade is slow. Prices are 1 1/2c lower than last week. Extra creamery 24 1/2c; extra firsts 23 1/4@23 1/2c; firsts 21@22c; seconds 19@20c; lard 17@18c; packing stock 16c per lb.

Elgin.—Market is weak at 24 1/2@25 1/2c per lb., which is over 1c lower than last week.

New York.—The market is weak with prices 1 1/2c lower than last week. Creamery extras 25@25 1/2c; firsts 23 1/2@24 1/2c; seconds 22@23c; packing stock 15 1/2@16c per lb.

Eggs.—Market active with prices 3/4c higher than last week. Current receipts of fresh stock are quoted at 18 3/4c per dozen.

Chicago.—Conditions on the market are about the same as last week. Demand is not quite so urgent and prices are a little lower. Miscellaneous lots, cases included, 17@18c; ordinary firsts 17@17 1/2c; firsts 17 3/4@18c; seconds 15 1/2@16c.

New York.—Receipts last week exceeded the demand and prices are about 2c lower. Fresh gathered extras 22c; extra firsts 21c; firsts 19 3/4@20 1/2c.

Poultry.—Light receipts make market strong and holds prices up. No change in prices. Live—Springs 18c; hens 18c; turkeys 18@19c; geese 15@16c; ducks 17@18c.

Chicago.—The market is steady and prices are slightly higher on account of light receipts. Turkeys, hens and springs have advanced 1c. Quotations on live are: Turkeys, good weight 16c; others 12c; fowls, choice 18c; spring chickens 18c; geese 12c; ducks 16@17c per lb.

FRUITS AND VEGETABLES.

Apples.—The demand is good and prices are unchanged. No. 1 \$5.50@6.50; No. 2, \$4@4.50 per bbl. In Chicago the market is quiet. The sales are only in small lots and even such demand is tame. Prices have not changed, although some stock has to be sold at a discount. Barrel stock is quoted: No. 1 Jonathans \$6@7; Spies \$5.50@6; Baldwins \$5@5.75.

Potatoes.—Market is firm, with prices unchanged. Quotations: In bulk 55@58c per bu; in sacks 60@63c per bu. for carlots. At Chicago the market is firm, although the trade is quiet. Prices are slightly higher. Good Michigan white stock is quoted at 60@65c per bu. In New York good Michigan stock is quoted at 74c per bushel in carlots, but there is little demand for it as the quality is not as good as last year.

Cabbage.—Steady with prices unchanged. Good quality is quoted at \$3@3.25 per bbl. At Chicago the demand is only fair. Prices are about the same. Holland or Red \$1.50@1.75 per bbl., \$20@22.50 per ton, according to quality. In New York good stock of Danish or Holland sells at \$25@27 per ton in the yards. Much of the old stock arrives in poor condition and has to be trimmed.

Onions.—The local market is steady with prices unchanged. Quoted at \$3.25@3.50 per sack for yellow and \$1.75 per crate for Spanish. At Chicago the market is weak. Holders are getting anxious to get rid of old stock as the new is beginning to come. Good yellow sells for \$2.50@2.75 per sack and Spanish at \$1.75 per crate.

GRAND RAPIDS.

The egg market opens this week at 16@16 1/2c and is subject to change daily. Dairy butter is quoted at 18c. In meats, dressed hogs are worth 10@10 1/2c; live fowls 15@16 1/2c; grain prices are as follows: Wheat 91c; oats 39c; corn 65c; beans \$1.60. Hay on the city market sells at \$15@18; straw \$9@11.

DETROIT EASTERN MARKET.

The volume of trading done here has changed little and prices are maintained at recent levels. The market is firm with ample buyers coming to absorb the offerings. Potatoes are selling at 75@80c per bu; apples at \$1.50@2.25 per bu; parsnips \$1; carrots 70c; hens were sold from \$2@2.40 per pair; radishes 10c per large bunch; onions 15c per bunch. Loose hay still rules at \$13@17 per ton.

THE LIVE STOCK MARKETS.

Buffalo.

March 30, 1914.

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

Receipts of stock here today as follows: Cattle 170 cars; hogs 100 double decks; sheep and lambs 59 double decks; calves 1250 head.

With 170 cars of cattle on our market here today, and 20,000 reported in Chicago, and lower there, and a constant downpour of cold rain here today, our cattle market was all the way from 15@25c per cwt. lower than last Monday, and at the close there is at least a dozen loads of good weight good cattle here unsold. With unfavorable weather and a bad beef trade, the present prospects are not at all good for any advance in prices in the near future.

Receipts of hogs here today will be about 100 double decks, all told. Demand was good for all grades, and the trade full strong to a shade higher than Saturday's average. Pigs sold at \$9@9.10, and all other grades at \$9.20 generally. Roughs \$8@8.50; stags \$7@7.50. Trading fairly active, but close was a little slow and outlook is not very encouraging for the near future.

The market was active today on both lambs and sheep. Prices 20c higher than the close of last week. Choice handy lambs selling mostly at \$8.85. We do not think these prices safe and look for shade lower prices on lambs last of week.

We quote: Choice lambs \$8.75@8.85; heavy lambs \$8.25@8.50; cull to fair lambs, \$7@8.50; yearlings \$7.50@8; bucks \$4.50@5.25; handy ewes \$6.50@6.65; heavy do, \$6@6.25; wethers \$7@7.25; cull sheep \$4.50@5.75; veals, choice to extra \$10.75@11; fair to good \$8.50@10.50; heavy calves \$5.50@8.

Chicago.

March 30, 1914.

Cattle. Hogs. Sheep. Receipts today. 21,000 33,000 22,000 Same day 1913. 19,347 55,898 16,969 Last week 40,726 122,359 101,971 Same w'k 1913. 38,580 121,059 75,237

This is a "blue Monday" in the cattle trade, aside from some early sales of fat butcher stock at firm prices. At a late hour very few steers had been sold, and telegrams were sent out by commission merchants to the country calling prices 10@15c lower, although a few sales were made at steady values. Hogs opened 5c higher, with sales at \$8.35@8.75, but later the advance was lost. Hogs marketed last week averaged 236 lbs. Sheep and lambs were called 15c or more higher, with sellers asking much higher prices than buyers felt like paying. For fat lambs \$8.50 was bid, and prime Colorados were held at \$8.75. About 5,000 clipped sheep and lambs showed up and shared in the advance, with a better demand. Feeding lambs of good quality brought \$7.35, and a sale was made of 24 Iowa 46-lb. spring lambs at 14c per lb., the first sale of the year.

Cattle have been slow to develop firmness in prices recently, and larger consumption of beef throughout the country is required to put the market on a solid basis once more. Only 14,935 head arrived on Monday last week, following meager supplies for the preceding week, yet prices were no more than steady for steers going below \$9 and but a dime higher for steers selling at \$9 and upward, with fat butcher stock going 10@15c higher. Prime beefs were scarce all the week, and \$9.40 bought the best cattle on Monday, with the exception of prime Nebraska Herefords that weighed from 1545 to 1600 lbs and brought \$9.70. The Wednesday market was anywhere from 10@25c lower than on Monday, although only 17,849 were received, and a small Thursday run failed to bring about much of a rally. The bulk of the beef steers offered during the week brought \$7.75@9, with choice heavy steers taken at \$9@9.60, while common to fair light steers sold at \$7@7.95, with medium to good lots at \$8@8.35 and good to choice heavy steers at \$8.40@8.95. Good to prime yearling steers found buyers at \$8.35@9.25, and there was a good outlet for butchering cows and heifers at \$5.15@8.50, with a few head of superior yearling heifers at \$8.60@9.25. Cannors went at \$3.40@4.60, cutters at \$4.65@5.10 and bulls at \$5.30@7.90. A depressed market for calves resulted from increasing supplies from dairy districts, with sales ranging at \$4.50@8.50, but later smaller offerings caused a rally to \$9.25 for the best. Stockers and feeders were in as large request as could have been expected at such high prices for the choicer class, sales being made at \$5.75@8.10, with a car of prime feeders that averaged 1160 lbs. and a car of 24 little yearlings that

averaged but 543 lbs. both going at \$8.10. Milch cows sold moderately at \$55@85 per head.

Hogs were marketed less freely last week, as declining prices caused owners to hold back shipments until rallies should take place. Sentiment among stockmen throughout the corn belt is apparently as optimistic as ever, and liberal country shipments are seen only when values are near the top figures for the year, the top so far being \$9. As a rule, a good eastern shipping demand is needed to develop much firmness, and when this outlet falls off, local packers are likely to exercise their power by putting the market lower. The hogs coming to market are mostly superior in quality, and the bulk sell daily near the highest quotations, with choice light weights and prime medium butcher weights selling at the highest figures, while heavy hogs are fetching a discount. This is due mainly to the rapid increase in the average weight of the hogs offered, it having risen recently in a single week from 232 to 236 lbs., this comparing with an average of 242 lbs. one year ago, 219 lbs. two years ago, and 240 lbs. three years ago. Packers are manufacturing great quantities of fresh meats to meet the big demand, and provisions are active also. The close of the week saw hogs sell at \$8.25@8.70, comparing with \$8.45@8.77 1/2 a week earlier. Pigs closed at \$7@8.60 and stags at \$8.80@9.30.

Sheep and lambs of quality sold extremely well last week, a good general local and shipping demand putting prices on a much higher level. Woolled lambs rose to \$8.40 per 100 lbs. for the best, while yearlings sold up to \$7.50 and best wethers up to \$6.85, the top price for the month. Shorn flocks came forward in somewhat larger numbers and sold at the usual discount from prices paid for unshorn stock, while bringing much higher values than a week earlier. Sheep and yearlings comprised so small a proportion of the offerings that they were apt to advance faster than lambs. Demand for feeders was strong at firm values. Colorado furnished a liberal share of the fat lambs and they averaged well in quality. Fat lambs advanced during the week 40@60c and fat sheep and yearlings 35@40c. Lambs closed at \$6.50@8.40, feeding lambs at \$6.50@7.20, yearlings at \$6.60@7.50, wethers at \$6.15@6.85, ewes at \$4@6.50 and bucks at \$5@5.75. Fair to choice shorn lambs brought \$6.50@7.25.

CROP AND MARKET NOTES.

(Continued from page 407).

55@60c; hogs \$8@8.50; fat cattle \$7@7.50. Sheep have about all been marketed. Hens are laying well now, and the price of eggs is 20c; butter 26c per pound.

Wisconsin.

Clark Co.—A lot of small grain, hay and potatoes have been marketed during the last two weeks; also quite a bit of veal. The snow is all gone and hard freezing puts the meadows and winter grain in bad shape. The egg production has been very good the last month, and are selling at 24c; butter 26c; oats 38c; potatoes 47c; veal, dressed 14c; hay \$9; milch cows \$75@80; pure breed from \$200@300.

Polk Co.—We are having spring weather here now, the snow is gone and the roads are in bad shape. All winter grains and new clover seems to have come through the winter in fine shape. Stock is looking fine, but farmers are running short of feed. Milch cows \$60@80; beef \$6.25; hogs \$8.10; veal 9c; chickens 10c; eggs 23c; butter 34c; small pigs \$4@5 each; wheat 90c; barley 50c; rye 52c; oats 35c; corn 60c; potatoes 50c; hay \$12 per ton.

Illinois.

LaSalle Co.—At a recent meeting of representative farmers, a "good roads" organization was perfected, and work on the roads will soon be started if present plans are put into effect. Market prices remain. Hens are laying better than during the winter months.

Kansas.

Cloud Co.—We are having fine, warm days now, and winter grain is coming out green, but needs rain to soften up the crust caused by the snow melting. Some are beginning to harrow their wheat, and others will do the same unless we get rain. Oat sowing is the order of the day. It is about half done, and an average acreage is being put in. A few are beginning to prepare corn ground. Some horses and mules are dying from the effects of feeding on wheat pasture, which is said to be bad for them on account of their getting too much dirt in picking the short wheat. Cattle do not seem to be affected.

THIS IS THE LAST EDITION.

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

DETROIT LIVE STOCK MARKETS.

Thursday's Market.

April 2, 1914.

Cattle.

Receipts 1464. Market steady with Wednesday, but 15¢@25¢ lower than last week on everything but canners, stockers and feeders which are steady.

We quote: Best steers and heifers \$8@9; steers and heifers, 1000 to 1200, \$7.50@7.75; do 800 to 1000, \$7@7.25; do that are fat, 500 to 700, \$5.50@6.50; choice fat cows, \$6@6.25; good do, \$5@5.50; common cows, \$4.50@4.75; canners, \$3@4.25; choice heavy bulls, \$7@7.25; fair to good hoganas, bulls, \$6.25@6.50; stock bulls, \$5.50@6; choice feeding steers, 800 to 1000, \$6.75@7; fair do, \$6.50@6.75; choice stockers, 500 to 700, \$6.50@6.75; fair do, \$6@6.25; stock heifers, \$5.50@6.50; milkers, large, young medium age, \$6@7.5; common milkers, \$4@5.0.

Haley & M. sold Costello 4 heifer av 572 at \$5.90, 2 butchers av 810 at \$6.25, 2 steers av 945 at \$7.25, 3 do av 797 at \$7; to Mich. B. Co. 1 bull wgh 1430 at \$6.50, 1 cow wgh 1000 at \$6, 16 steers av 766 at \$7.30, 1 bull wgh 900 at \$6.75, 1 cow wgh 990 at \$6; to Bresnahan 1 cow wgh 776 at \$4; to Mason B. Co. 2 heifers av 590 at \$6.75, 1 cow wgh 990 at \$4.75, 10 steers av 743 at \$7.25, 2 cows av 975 at \$5.15; to Thompson Bros. 2 do av 1075 at \$5.75, 1 heifer wgh 670 at \$6.65, 16 butchers av 766 at \$7.15; to Kull 26 steers av 871 at \$7.50; to Gerisch 20 do av 1043 at \$7.40;

Spicer & R. sold Mich. B. Co. 4 steers av 790 at \$7.25; to LaBoe 1 do wgh 620 at \$6, 1 cow wgh 960 at \$5.75; to Bresnahan 1 do wgh 810 at \$4.50, 1 do wgh 1040 at \$5.25; to Mich. B. Co. 11 steers av 904 at \$7.30, 1 bull wgh 1360 at \$6.65, 8 steers av 946 at \$7.40, 1 bull wgh 1290 at \$6.65, 13 steers av 891 at \$7.40, 1 do wgh 1140 at \$8, 1 bull wgh 1140 at \$6.65, 2 cows av 1340 at \$6.50; to Mitchell 5 stockers av 708 at \$7; to Merritt 3 cows av 970 at \$5.35; to Sullivan P. Co. 4 steers av 1000 at \$6.25, 4 do av 895 at \$7.25; to Hammond, S. & Co. 1 bull wgh 1600 at \$6.60; to Mich. B. Co. 12 steers av 800 at \$7.50; to Rattkowsky 1 cow wgh 1700 at \$6.65, 2 do av 890 at \$5.35, 1 do wgh 1150 at \$6.50, 1 bull wgh 1490 at \$7; to Mason B. Co. 7 cows av 1093 at \$6.25, 9 steers av 905 at \$7.40; to Thompson Bros. 2 cows av 1005 at \$5.25, 16 steers av 860 at \$7.35, 7 do av 943 at \$7.60, 1 do wgh 1020 at \$7.60; to LaBoe 1 heifer wgh 750 at \$6.75, 1 steer wgh 1040 at \$7.50; to Fruitchey 34 stockers av 356 at \$6.65, 4 cows av 790 at \$5.35; to Heinrich 12 steers av 1076 at \$7.60.

Veal Calves. Receipts 582; market active and 75¢@1 higher. Best \$11.50@12; others \$7@10.75.

Bishop, B. & H. sold Nagle P. Co. 4 av 150 at \$10, 6 av 135 at \$10.50; to Sullivan P. Co. 5 av 120 at \$10.75, 3 av 150 at \$11, 1 wgh 130 at \$9, 2 av 120 at \$10.50, 5 av 150 at \$8, 16 av 155 at \$10.75, 3 av 170 at \$11.50; to Thompson Bros. 5 av 145 at \$11, 6 av 135 at \$11; to Hammond, S. & Co. 5 av 125 at \$10.50, 10 av 147 at \$11; to McGuire 4 av 130 at \$9.50, 21 av 150 at \$11.75; to Mich. B. Co. 14 av 135 at \$11.75; to Sullivan P. Co. 8 av 130 at \$11.50, 5 av 150 at \$12, 4 av 175 at \$8.50, 7 av 135 at \$11.50, 10 av 159 at \$11.75, 7 av 140 at \$11.75, 6 av 155 at \$12; to Parker, W. & Co. 3 av 170 at \$12, 5 av 140 at \$10, 4 av 145 at \$11.50, 4 av 110 at \$9, 8 av 145 at \$11.50, 8 av 140 at \$11.25, 11 av 125 at \$11, 2 av 140 at \$8.50.

Sheep and Lambs. Receipts 3462. Market strong. Best lambs \$8.25; fair to good do, \$7.50@8; light to common lambs, \$7@7.25; yearlings, \$7.25@7.50; fair to good sheep \$5.75@6; culls and common \$4@5; clip lambs \$7. Spicer & R. sold Young 26 lambs av 80 at \$7.50; to Mich. B. Co. 10 do av 55 at \$7, 36 do av 78 at \$8, 38 sheep av 120 at \$6, 4 do av 110 at \$4.50.

Haley & M. sold Parker, W. & Co. 18 lambs av 70 at \$8, 10 do av 59 at \$7.25.

Bennett & S. sold Newton B. Co. 30 lambs av 95 at \$8.

Hogs. Receipts 5883. None sold at noon; prospects 10¢ higher or \$8.80@8.85. Bishop, B. & H. sold Parker, W. & Co. 2000 av 200 at \$8.85, 410 av 180 at \$8.80.

Roe Com. Co. sold Sullivan P. Co. 107 av 200 at \$8.85, 91 av 160 at \$8.80.

Haley & M. sold Hammond, S. & Co. 885 av 200 at \$8.85.

Spicer & R. sold same 350 av 200 at \$8.85, 100 av 170 at \$8.80.



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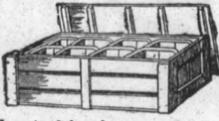
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Horticulture.

The Early Spring Spraying.

ONE of the chief objections to fruit growing is that the work involved in the care of the orchards comes spasmodically throughout the season. From the middle of April to the middle of July three applications of spray should be made and also the orchard soil should have been in good cultivation and put to cover crops for winter protection. Within those three months nine-tenths of man's work of assisting nature in the production of fine fruit is done. Spraying, the most important factor in the production of good fruit, comes thick and fast during that time.

We will refer here only to spraying before the blossoms, as others will be taken up later. This spraying should be applied to nearly all tree fruits, the peach being the only exception. It is applied almost entirely for fungicidal purposes, although on the plum it is quite important in the control of the curculio, and occasionally on the apple and pear it is valuable in controlling the bud moth and spring canker.

Important as a Fungicidal Spray.

It is probably the most important fungicidal spray we have and should be applied in all cases just before the blossom buds open, to get the best effect. On the core fruits, the apple and the pear, it should be applied within ten days before the blossoms open for, if applications are made before that time, the blossom clusters are not sufficiently separated to cover the stems with spray material. It is quite important that these stems are covered, as often there is a fungus trouble which attacks the stems and so weakens them that the blossoms drop off shortly after they have bloomed. This is in some seasons often the chief cause of not getting a good crop of fruit.

The Best Spray Material.

There is still some discussion among fruit growers as to the value of the various mixtures for spraying, the lime-sulphur and the Bordeaux mixture being the two spray materials on which there is the difference of opinion. Some growers are entirely satisfied with the lime-sulphur for the applications after the blossoms, but think that an application of Bordeaux is preferable before. They consider the Bordeaux a little better fungicide. However, Bordeaux injury, which was the chief cause of changing from Bordeaux to lime-sulphur, is just as liable to be caused by an application of Bordeaux at this time as after the blossoms. Therefore it is not advisable to use Bordeaux at all on apples, especially varieties which are liable to russet. Of course, on the other fruits it does not matter with reference to russet whether Bordeaux is used or not. However, from experiments and also in ordinary practice we can find no reason for using Bordeaux mixture on any of the tree fruits at this time, as lime-sulphur has given entire satisfaction and should be used because it is the most economical and handy to use.

Strength of Lime-Sulphur to Use.

At this time the lime-sulphur can be used stronger than later in the season, as the foliage seems to withstand the burning effect of the spray better than later in the season. It is entirely safe to use it at one to 25 or 30. In fact it is preferable to use it at either of these strengths as the fungicidal effect will be better.

Circumstances may make it such that one can only put one spray on before the blossoms, and the scale spray, and the application just before

the blossoms will have to be done together. In such cases, wait with the scale spray until the leaf buds are most open and apply the spray at one to eight or nine as you would when applying the regular scale spray. There will be no injury if ordinary care is used, as lime-sulphur at one to ten has been applied just before the blossoms opened, without injury. It is not a practice which can be recommended as the scale can not be thoroughly controlled because the foliage interferes with the thorough spraying of the limbs. There is also danger of burning the foliage if care is not taken in making the application. A little too much material applied in one place will cause injury there. The best results can be had if the scale spraying is put on early in the season, in March or early in April, and then the before blossom application made as suggested above.

The Poison to be Used.

It is recommended to use poison with the spraying just before the blossoms and if one wishes to be entirely on the safe side it is the best thing to do. In the spraying of plums it is best to use it in the control of the curculio. In well-kept orchards of other tree fruits the poison has often been left out and good results obtained. The spring canker worm and the bud moth, which are the main insects to use poison for, do not get much foothold in orchards where the poison is used in other sprayings, thoroughly done. The only poison to use with lime-sulphur is arsenate of lead. If bordeaux is used for and purpose, paris green, arsenite of lime or any of the other poisons may be used.

Spraying the Peach.

The pre-blossoming spraying of the peach should be done early in the season. The object of this application is to control both the scale and the leaf curl. On account of the latter trouble it is necessary to get the spraying done early enough. This is a fungus trouble which winters under the bud scales and begins development early in the season. It causes the well known pinkish contortion of the foliage. To control it it is absolutely necessary to spray for it before there is any sign of the buds swelling. The usual spraying directions state that it should be done before the first of April. There are years when the season is so advanced that it is necessary to spray before the middle of March. This season, on account of the backward spring, good results may be had by spraying any time before the second week in April, unless there should be a decided change to warmer weather. To be sure of good results any season, do the work early in March. Lime-sulphur, used for the control of the scale, is also an absolute preventative of the leaf curl if the material is applied thoroughly. If a limb or a twig is missed it might develop the leaf curl while the other parts of the tree would be free from it because they were protected by the spray.

The prevalence of the leaf curl varies with the weather conditions of the season at the time the buds are swelling. If it is damp and cold it is likely that there will be considerable curl show up later on. Some seasons even unsprayed trees are entirely free from this trouble.

The popular slogan, "Safety First," may well be applied to the control of diseases and insects. Spraying is a preventative and not a cure. Therefore, to be safe, spray first, not afterwards.

THOSE EVER-BEARING STRAWBERRIES IN EMMET COUNTY.

There surely was something the matter with that Emmet county ever-bearing strawberry patch, which gave us only about four quarts of berries for the season of 1913; but there was no obstacle in evidence other than what one is likely to be up against every season in this section, namely, a preponderance of cloudy weather, accompanied by comparatively low temperature, during the late summer and fall months.

The Van Buren county man who commented upon my results last fall, must consider that there is considerable difference in latitude between Van Buren county and Emmet county, and that the conditions prevailing in his section, are far more favorable for the production of all crops requiring comparatively high temperature, with plenty of sunshine. Where these conditions prevail, in the presence of ample moisture, I see no reason why these ever-bearing sorts may not be made a source of considerable profit.

Returning to the question in point; added to the factors of low temperature and cloudy weather, there was deficient rainfall during late summer and fall months, last season, and, against such a combination a strawberry crop is, of necessity, on the losing side. Why not irrigate?

With the small trial plot of last season, the purpose was to determine just what these sorts would amount to under ordinary field conditions, and ordinary field conditions does not include irrigation. The season of 1912, we had, approximately, one-seventh of an acre of these ever-bearing plants under irrigation, and the yield was, approximately, \$25 worth of berries, the same selling at 22 cents per quart box. Our grocer retailed them at 25 cents. Now, \$25 in cold cash may look pretty good, if we don't look beyond the silver dollars and make an estimate of how much those dollars cost us. It appears to me, then, that those \$25 dollars cost us as much, or a little more, than the value represented. There is no pleasure in working just for the fun there may be in it, that is, not as a regular employment. It certainly is not good business sense to establish, as a regular feature, a line of operations not returning commensurate reward for the expense and labor involved.

If these ever-bearing sorts are to be judged strictly on their merits, there is one feature in their culture that should not be overlooked, which is the length of the ripening season. As will be seen, the fruiting season of these plants extends over a period of 12 weeks, more or less, or nearly four times that of the June (only) sorts. It must necessarily follow, therefore, that the labor of harvesting the former is considerably greater than that required with the others.

Then, too, in this region, the weather during late summer and fall is not commonly agreeable to the work of picking strawberries. During the months of September and October there are many times when fingers would get mighty stiff and numb, if obliged to continue long at the task of picking. Strange as it may seem, there were many nights of frost when the fruit was frozen, but the plants went right on with the work of growing and developing the green fruit; however, it is only fair to say that the fruit ripened under such conditions, had neither the high coloring nor the exquisite flavor of strawberries ripened under a June sky.

While I say that it appears that there is nothing in the ever-bearing strawberry for us in Emmet county, I do not wish it to be understood that I am sure that there is nothing in them for others. On the contrary, I am sure it will pay any grower, located in our section or elsewhere, to try them out for himself in a conservative way, for as yet, propagating

stock is too high, and results uncertain, to permit planting unreservedly, unless conditions are exceptionally favorable. It is unquestionably true that these sorts will supply berries for the home table, either in this county, or farther south where conditions are much more favorable, providing they are given proper care, cultivation and plant food.

Emmet Co. M. N. EDGERTON.

TROUBLE DEPARTMENT.

Girdled Fruit Trees.

Having had several young apple trees girdled by rabbits this past winter, I would be pleased if you could suggest any method to save the trees. Muskegon Co. J. B. A.

If the girdling injury done by rabbits, mice or other animals is not very bad, the girdled portion of the tree should be treated in the same manner as any other opened wound of the bark of the tree. In most cases the girdling has not been done entirely through the entire bark of the tree, that is, the outer bark of the tree has only been gnawed off. If so, the wound will heal up if given the proper care and attention. All loose and injured bark or wood should be cut away so that what remains is solid and healthy. It would be well, then, to apply some disinfectant, such as a weak solution of carbolic acid, after which paint the entire wound with pure white lead and raw linseed oil, or grafting wax if preferred.

If the girdled place is over four or five inches in diameter or if it has been done deep enough to go through to the wood, the safest method is to bridge graft the trees. This can be done by taking shoots of last season's growth, which are about three inches longer than the girdled portion is wide, and cutting each end wedge-shaped, and then inserting these ends under the bark about an inch above and below the girdled portion. These should be put in quite close, having them not more than an inch apart. A strip of cloth should be banded around the tree at each end of the grafts. Warm or soft grafting wax should then be thoroughly applied so as to saturate the cloth and entirely seal the wounds made by the grafts. The girdled portion should also be either painted or covered with grafting wax as suggested above.

Worms in Onions.

We have been bothered with worms in onions. Kindly suggest a remedy. Ottawa Co. B. S.

Last year my onions were full of small white worms, so I did not get any for winter use. Can you tell me what is the cause of the trouble and what to do to prevent the same this year?

Oceana Co. A. M.

The worms in onions are caused in most cases by the onion maggot, which is one of the most serious drawbacks to onion culture in this country. The maggot injures the onion by eating into the bulb and the decay resulting from this injury often entirely destroys the onion.

This insect is closely related to the cabbage and seed corn maggot, and like them, the adult closely resembles the house fly. The adult lays its eggs in the leaf sheaths and the maggots work their way down into the bulb. There are from two to four generations of this insect in a season.

No very satisfactory method of control has been found. Several deterrents have been used fairly successfully. Among them are some of the commercial fertilizers. Of these, kainit, nitrate of soda, and chloride of potash give the best results. They should be used as top dressings and will be of little value unless used just before or after rain, as their effect will not be strong enough when slowly dissolved. Besides their deterrent effect these fertilizers act as stimulants to plant growth and therefore assist in recuperation from the maggot attack. Tobacco dust, plentifully sown along the rows, has also been



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used with success in some cases. Carbolic acid emulsion, diluted about 40 times, and hellebore are recommended by some.

For preventative purposes the onions should be planted in fields as far removed from the previous season's planting as possible, and care should be taken not to use organic fertilizers, such as manure, on the ground for a year or so before the onions are set, as they make infestation more possible.

Varieties of Strawberries.

I have been greatly interested in your articles on strawberry growing, in the Michigan Farmer. I will be setting from one-half to an acre to strawberries in the spring, and would like your advice as to the best varieties to set, and the best place to buy the plants. We plowed up the old bed of mixed varieties, after picking, last summer, which the former owner had set.

Emmet Co. F. & S.

In regard to the first proposition, I am not sure there is any best place to buy plants. The proper way to get plants, I think, is for each grower to raise his own plants in special propagating beds; purchasing in a small way, when it is necessary to procure new, or desirable varieties. The best advice I have to offer to this correspondent and others in similar situations, is to secure catalogs from several reputable plant growers, whose address may be found in the columns of this paper, and then make his choice, trusting to good fortune for results.

As to the second proposition; perhaps I may be able to advise more definitely, and to greater purpose; and yet, when all has been said, the choice of varieties must ever be modified to suit the requirements of individual tastes, market requirements, and adaptability to soil; and standards vary with localities, and change with the times.

The strawberry, that is our mainstay; the one that makes us the most money, is the old, well-known Warfield. It is a handsome berry, firm, and deep red to the center, a most excellent canning berry and shipper. Exceedingly productive under right conditions; but not a drouth resister; this variety is, however, too acid to make a desirable table berry, or to eat out of hand. I never eat them if there are less acid sorts obtainable, such, for instance, as the Nick Omer, Marshall, New York, or Sample. It has been our experience that the finer sorts mentioned, and others of this class, do not bring enough extra to make them highly profitable. There is more money in the Warfield, selling at \$1.50 per case, than in the others at \$2.50 or \$3.00 a case. As a companion to the Warfield, which is a pistillate, I prefer the improved Wilson. The improved Wilson is not as deep a red as the old Wilson, but it is a larger berry and much more productive. Many use the Dunlap with the Warfield, and it is said to be nearly or quite its equal in productiveness. Such has not proven to be the case in our locality, with us.

The Sample, with the Marshall, as a pollinizer, might prove to be a good combination. The Marshall is hardly to be excelled for quality, while the Sample has quality above the average and is very profitable.

It was good wisdom to plow up the old bed, with its nondescript collection of varieties, starting anew with known, standard sorts.

Emmet Co. M. N. EDGERTON.

Starting an Asparagus Bed.

I want to start an asparagus bed. I would like to know where I could get the plants and how to set them.

SUBSCRIBER.

During the past few years the culture of asparagus has been simplified, and to grow a good bed does not need expert work. The old way was to dig a trench about three feet deep and then fill in with a half foot of broken stones or bricks, on top of which was put a layer of well rotted manure,

leaving enough space for about six inches of soil to put the plants in. The new method consists of digging a trench of about 16 inches in depth in which three or four inches of well rotted manure is put, and then a layer of soil, also about four inches deep. On this the asparagus roots should be set with the root fibers well spread out. Then the trench should be filled in to the level of the garden soil. This will leave the crowns of the plants about five inches below the surface of the soil, which is about right.

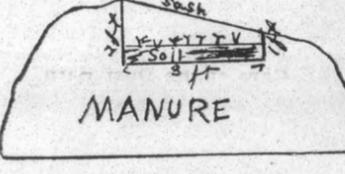
The best method of starting a bed is to use one-year-old roots which can be bought of most any nursery. The rows are usually about three feet apart and the plants set about two feet apart in the row.

The soil best adapted for this vegetable is a fairly loose, easily worked loam. The heavy, stiff soils are not usually of much value for this purpose unless a fairly deep trench is dug and loose, fibrous soil filled in.

THE FARMER'S HOTBED.

It takes such a little while to make a hotbed, but there is nothing that will give so much satisfaction. The early plants you grow, to say nothing of a few square feet devoted to the growing of early radishes, lettuce, etc., will, in a financial way, repay all effort in making it. I never made an elaborate hotbed, nor have I made it two years in succession in the same place.

The accompanying cut shows the most practicable and easily constructed hotbed that can be made. Select a spot where there is some protection from the north wind, and where water will not stand. Go to the stable and haul out enough fresh manure to



Cross Section of Hotbed.

cover a space twice as large as the hotbed is to be, to a depth of two feet. Let the manure remain undisturbed till the frame for the bed is made.

If a small hotbed is to be made, take one board a foot wide and six feet long, for the back, another of the same length and half as wide, for the front, with sloping end pieces three feet long. It will take only a few minutes to make this frame, though as high as the dimensions given, a better frame will be had. Rake the heap of manure off till flat on top and about two feet deep; set the frame thereon, and then draw the manure remaining outside of the frame, around it until it reaches the top. Fill the frame with loose garden soil to a depth of four to six inches and in two days, when the first excessive heat of the manure is past, the seed may be sown. Cover it with a sash or oiled canvas, and dig a ditch around it to carry off the excessive water.

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Slate Inspected Seeds—Golden Glow corn. Breeding Clovers, alfalfa, pedigreed oats and barley. Catalog and samples on request. **Michels, R. 7, Malone, Wis.**

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The White biennial. Also Alfalfa, Red, Timothy, etc. Sample and booklet telling "How to Know Good SEED". FREE. **O. M. Scott & Son, 126 Main St., Marysville, O.**

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Pure, Dry and Disinfected.

THREE words whose importance in the care of poultry are not sufficiently recognized on the farm. Too often the flock has a poorly covered, poorly ventilated, seldom cleaned house to roost in, a filthy and wet feeding ground, and dust baths that are never given disinfection. Not only is this true of the old hens, but the chicks are allowed to roost in boxes and coops that do not exclude the water, and are never cleaned from the time the chicks take possession until they are large enough to vacate for larger quarters or the market.

Pure Drinking Water Important.

The drinking water is probably of first importance to be given attention, for infection from this source is so easy. Pure drinking water is of great moment, and it is as difficult to be provided on the farm under the usual existing conditions as it is to keep the poultry from drinking out of every filthy pool in the barnyard, which, you will understand if you have ever tried it, is about on a par with the perpetual motion problem, never has been done and probably never will be. The pigs, the geese, the dogs and the sparrows all have a special regard for that one particular vessel of water, and they leave it but a trifle purer than the pools in the barnyard. You cannot keep the water clear, probably, but you can reduce the danger to your fowls greatly by disinfecting it. There are many good drugs for this purpose, and probably the most popular is the old reliable carbolic acid. From 10 to 15 drops to a teaspoonful for a gallon of water, using the pure acid, will not injure the chickens, and I have found it a good cure for throat troubles and bowel troubles. My little chicks had what I took to be the gapes, and were getting pretty badly infected, when I began using carbolic acid in the drinking water, about five or six drops to the quart, and the infection seemed to be checked at once. Those that had shown but light traces were soon as well as ever. I sprinkled a disinfectant in their coops, but I had done that before I gave the carbolic acid, and it did not seem to help the infected ones any. I have not given the treatment enough of a test to be certain it will cure even the light cases, but that is the way it seemed to me when I used it, for I did cure a large percentage of them somehow.

A Good Disinfectant.

Permanganate of potash is now highly recommended for use in the water to disinfect it, and I am using it, but I have never used it enough to know just how it will do in curing slightly diseased conditions. It is a good disinfectant, and should be used strong enough to color the water a clear violet red. I should say about what would lay on the first half-inch of a table knife blade would be enough for a ten quart pail of water, at least that is about the strength I use it. When I bought my first permanganate the druggist asked me how much I wanted. I told him about a quarter's worth, I guessed. When he had brought it out I explained that I had never used it but that the instructions were to make the water red, and that I wanted to use it in probably a bucket of water a day, and asked him if he thought that would be enough to last awhile. He laughed and told me I had enough to color the Missouri river red. I have been using it some time but have not made a dent in my supply yet, so you see it is much less expen-

sive than carbolic acid, and undoubtedly as efficient.

Dry is a little word, but it has a mighty significance when applied to the roosting place of your fowls. There are many reasons why this is so. Fowls sleeping in a damp, germ-laden atmosphere are not apt to come out of it with good health. Colds follow quickly and soon develop into roup. This is only one result, but it is the quickest to show up, and the rapid death rate is apt to cause us to lose sight of the other and less active troubles. Droppings that are on damp ground give off their rank odors and distribute disease germs which the moisture in the air causes to propagate rapidly. Moldy straw and other material gets in its deadly work, and the general disability of the flock makes it an easy prey to any disease that may be bred in the favorable surroundings. Keep the floor dry; if you can not keep it entirely dry be sure you keep it thoroughly disinfected. Spray the walls, the roosts and the ground under the roosts with a solution of crude carbolic acid or some of the creosote preparations for the purpose. Sprinkle lime, thoroughly air slaked until it is a palpable powder, liberally and frequently, and clean out all droppings often. Such frequent cleaning out will not be necessary if the floor is dry and there will be no sick fowls if lime is used freely and the whole inside of the house sprayed with creosote preparation or crude carbolic acid several times during the summer.

Care of the Dust Bath.

The dust bath is another place that requires considerable attention. Fine sulphur, insect powder, and air-slaked lime are all good, and should be used rather freely. In the dusting place of my little chicks last summer I often sprinkled some kerosene and mixed it with the dust, not enough to make it sticky in the least, but yet enough to show in the dust, and keep it from rising in the air. It helps them to keep the lice in check.

The feeding troughs should be kept as clean as possible and it is best to scald them once in a while. The straw that their scratch feed is thrown into should never be wet and moldy, and when the droppings begin to get thick enough to show much it should be renewed. Of course, where the hens have the range of the farm the scratching shed is not so important as where they are shut up in lots, but I am certain it will pay any farmer to give his hens a good dry scratch shed and dusting shed as well as roosting and laying quarters. It is the neglect of these things that cuts down the farm average of winter eggs.

L. H. COBB.

VIGOR IN FARM POULTRY.

When we see the farm birds beginning to droop and mope around we hear the farmers saying, "What can I do to make my flock strong and vigorous?" The question is easily answered, but it takes some time to accomplish the project. Increase the vigor and vitality of the birds and watch the results. Constitutional vigor is necessary for health, vitality and stamina that is common to the strong and well-bred birds. Birds that lack these qualities make poor breeders and unprofitable egg producers, and no one practice would result in better birds and more profit than mating and selecting breeders for high vitality if for no other characteristic. A good hen is expected to

lay five times her body weight in eggs in one year. This means that she must lay one egg every three days and in order to do this she must consume and assimilate 25 to 30 times her own body weight in food. The laying hen has to be a vigorous and healthy bird to stand up under such a task.

Causes of Lack of Vigor.

Too close inbreeding without regard to vigor and increased productivity without proper care, help to contribute to the lack of vitality in the flock. Too many farmers use the pullets instead of the mature hens for breeding and in a short time the birds will begin to lack in size and stamina. Other causes for lack of vigor are heavy feeding of foodstuffs that aren't easily digested, excessive crowding of breeding stock, lack of exercise for breeding and laying stock, careless and improper methods of hatching, and failure to select breeders of high physical vigor. Use male birds that possess a strong body and have plenty of action. The loud and frequent crowing of the male and the cackling of the female are indications of high vigor and vitality.

The physical condition of the flock is best indicated by the action and movement of the birds. The physically weak are inactive, dull and generally mope around rather than to get out and search for food or scratch for the grain that is fed in the litter. Grain is placed in the litter for the purpose of keeping the birds busy and to give them plenty of exercise. Invariably the weak birds are the longest on the perch, going on early at night and coming off late in the morning. In extreme cases they spend a greater part of the day sitting on the perch instead of getting out and earning their salt. The bird that gets off the perch the first in the morning and is the last one on at night, is the one to keep for breeding and laying purposes. A flock composed of birds of this nature is a winner and will make themselves profitable for the farmer to have on the place.

Symptoms of Lack of Vitality.

The bird that has a long, thin neck, long beak, narrow head and a long slender body without any depth, shows a great lack of vigor. Long legs and thighs that give the bird a stilted appearance, and sunken eyes are also indications of lack of vigor. Last summer I visited several farmers and took particular notice of their flocks. At one place the birds had been hadly neglected. Their heads and bodies showed lack of vitality and vigor, the legs were long and loose-jointed and the eyes had a depressed look. Such birds should not be allowed to exist. Sell them off, if you can, or better yet, kill them and get them out of the way. Get healthy and vigorous looking stock and begin right. The poor birds that lack vigor will eat more than they are worth and never bring in any returns. The strong bird at any age should have a bright, prominent eye, well developed body that has width and depth, glossy, neat plumage, bright comb and wattles, erect carriage and should be active in all its movements. Make a careful selection of your breeding stock and eliminate all those showing traces of weakness and low vitality. Mate the strong and vigorous looking cockerels with mature hens and watch the vitality of your flock increase.

Indiana.

T. W. HARVEY.

There are about a million people in the United States who keep bees, of which about 5,000 make bee-keeping a means of livelihood. The value of the bees' product amounts to approximately \$25,000,000, which means some honey and beeswax is produced. It would take a train 50 miles long to transport the bee products of one year.

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REDUCING MARKETING COST.

(Continued from page 406).
and horses by carrying so much of the freight at times when very little other traffic occupied the streets. such a system would enable the city to establish municipal markets to serve some of the best residence sections, and farmers could ship their products to these markets. In this way the woman of means, who is willing to go to the market with her basket, could buy her supplies without walking through a crowd of fighting humanity, and then making two or three transfers from one car line to another before she arrives at her home.

Professional Dealer Would be Handicapped.

With trolley freight terminals in various parts of the city the woman with her basket could meet the farmer or his agent in clean and sanitary places and know that her food products had not been in the hands of hucksters and dealers who are not any too particular in storing and handling such products. Besides these markets in various parts of the city would make it difficult for the professional dealer to get control of all the products brought into the city, ship all of the best to other markets, and dump the cull stuff on the home market. I doubt if one reader in ten realizes that the bulk of the really good produce that reaches the average large city market finds the tables of the consumers in that city. The best products are repacked and shipped by fast freight and express to big eastern market centers and the inferior stuff sold to the retail trade in the home city. If we had better systems of distributing farm products after they reach the city terminals such conditions could not continue.

The Way it is Now Done.

What would such a system of trolley distribution mean to the farmer and market grower? A truck grower lives twenty-five miles from the city, to which he hauls two or three loads of produce each week. He leaves home along in the afternoon and gets to the market around midnight. Going to bed for a few hours, he is up early the next morning to sell his products. The start back home will be made before noon, and he arrives home in time for supper. With a schedule like this he must spend four days each week going to market and only two days on his farm. His horses are hardly fit for two days' work on the farm. He ought to have a bed and warm meals in town. The total cost for team, board and his time for each trip runs somewhere from six to eight dollars. Then, too, there are many times when he does not sell his load before the rush of city purchases are over, and he finds himself with the bulk of his load on his wagon. At such times he is practically at the mercy of a certain ring which demands his load at their own price, which he must accept or haul it back to his farm where it will be practically worthless to him.

How the New Plan Would Work.

Suppose this same farmer lives on a trolley line running its freight cars into a city having advanced market facilities such as I have above outlined. He may live 50 or 100 miles from the city instead of 25. He, and some of his neighbors can load a trolley car with the products of their farms in a few hours, send the car out early in the evening so that it will be on the terminal early the next morning. He can go to bed at his home, get up early the next morning, board a passenger car bound the same way, and be at the same terminal to meet his car the next morning. After disposing of his products he can reach home in time to load another car the same day. In this way he could deliver a car of his products to the particular section of the city desired for less cost per ton than

he now can a two to five hundred shipment.

In some cities that now have advanced trolley facilities the cost of shipments amounts to from eight to 16 cents per hundred pounds, according to distance and classification. The farmer ships a ton of produce for from two to three dollars, and his fare for the round trip at commutation rate will amount to about another dollar. As he need not miss more than one meal at home, and spends only the mornings each week going to market, the cost need not exceed five or six dollars, including time. His team is at work six days a week on the farm; he works four and one-half days at home.

Where the Middleman is Hardly Needed.

In every locality and in every class of business, experts are busy devising means to shorten the route from producer to consumer. The results of much of this work have, as yet, had slight effect upon the consumer's prices because the bulk of farm products take the old round-about route after they reach the city terminals. The hope of the future is that through proper activity on the part of city, state and public-spirited transportation companies, the shorter route which will remove the middlemen may be made the standard for all farm products.

If the city authorities would cooperate with transportation companies, consumers and farmers in the establishment of chains of municipal markets the problem of reducing the high cost of living would be in a fair way to be solved. There are many so-called city markets, but they are not markets in which the producer and consumer meet. They are controlled by groups of professional city dealers. Farmers do not play any important part in selling and distributing food-stuffs because the markets are not in residence sections, so that they can meet the woman with her basket. The modern housewife does not like to seek the distant market, and when she does go to market it is because she wants to meet the farmer, or his agents, in a clean and sanitary place. **The Place of the Dealer is Limited.**

The commission dealer and produce broker will always play an important part in the national distribution of farm products, however, their services are not essential in selling in the city the products raised in the surrounding country. The possibility of reducing the costs of food distribution lies primarily in increasing and bettering facilities for handling the products in the city. The shorter route between farmers and city dwellers will then become a means for adding to the farmers profits as well as increasing the purchasing power of the city dweller's dollar.

Would such a system of advanced trolley service benefit the city dwellers in other ways than reducing the cost of farm products? Why not? Other freight could be taken on and delivered from one of the city terminals to another in a different part of the city. A car of potatoes, fruit or other products received from a long distance by a steam road could be handled from their terminals by the trolley to the various markets. It would be necessary, however, to regulate the service and limit the kinds of materials that could be handled by the trolleys, as well as to limit the hours for this traffic.

The foregoing is simply an outline of the possibilities of such a system of city distribution of farm products. The movement is sure to characterize the distribution of such products in the future. The only question will be whether the movement will be undertaken by organizations wholly within the cities, or by farmer's cooperative unions. The shorter route ought to mean higher prices to the farmers and lower prices to the consumers.
W. MILTON KELLY.



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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.

Strangles—Rheumatism—Cow Has no Appetite.—My seven-year-old mare is suffering from distemper, abscess formed between jawbones, broke open and some of the throat glands remain hard and swollen. She has shown some lameness in hind legs when starting, but it has about disappeared. I have a cow that does not eat well, no matter what kind of food is offered to her, and she is losing flesh rapidly. I suspect she is hungry, but food may distress her after it is eaten. L. B. Cheboygan, Mich.—Apply one part iodine and 20 parts fresh lard to swollen glands once a day and continue using a three per cent solution of carbolic acid to wound twice a day, and give her a teaspoonful of hyposulphite of soda and a teaspoonful of powdered nitrate of potash at a dose in feed three times a day. Give your cow 1 oz. of fluid extract gentian, 1 oz. fluid extract cinchona and 1 dr. tincture nuxvomica at a dose three times a day. Her stomach may contain one or more foreign bodies which have punctured wall of stomach and are now injuring internal viscera, and if so she will gradually weaken and die.

Obstructed Teat.—I have a cow that was stepped on, injuring one teat; now the lower part of quarter is blocked, and I would like to know what to apply. W. S., Lansing, Mich.—Apply one part fluid extract of belladonna, one part fluid extract phytolacca and four parts camphorated oil to quarter once or twice a day. You may find it necessary to use a milking tube.

Ringbone.—I have a four-year-old colt with ringbone on left fore leg situated low down. I applied red iodide mercury and cantharides once a week for three weeks, but he is no better. L. T., Clarksville, Mich.—Have him fired.

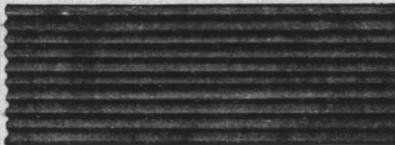
Glandular Swelling.—My seven-year-old mare had distemper and it left her with two hard bunches on lower jaw. W. B. S., Edwardsburg, Mich.—Apply one part iodine and nine parts fresh lard to bunches two or three times a week.

Collar Boils—Impure Blood—Garget.—I have a six-year-old horse that has been troubled with collar boils for the past few years and I am inclined to believe his blood is impure. I also have a cow that freshened in December that is troubled with caked udder, affecting one quarter. M. C., Kingsley, Mich.—Give your horse a dessertspoonful of Donovan's solution of arsenic at a dose in feed three times a day. Also give him a teaspoonful of powdered nitrate of potash once a day. Give your cow 1/2 oz. of hypo-sulphite of soda at a dose in feed three times a day. Gently hand-rub caked quarter once a day, applying one part iodine and 20 parts fresh lard to caked portion of udder every day or two.

Exostosis on Hock—Fibrous Growth in Calf's Mouth.—My seven-year-old horse has a small bony bunch on hock which does not cause lameness, and he also has two splints that do no harm. I also have a calf that has a growth in mouth which causes the lower lip to bulge out, caused, I imagine, by calf bumping pail. G. H., Rapid City, Mich.—Apply one part red iodide mercury, one part iodine and ten parts fresh lard to bunch twice a week. The growth in calf's mouth should be cut out, otherwise it cannot be treated successfully.

Suppurating Foot.—Driving mare went lame in fore foot, pus formed, heel opened, and now the entire foot is full of matter, and I think hoof will drop off. I have applied creoline, also zinc, lead and copper washes without helping her. W. U. N., Lake City, Mich.—The hoof will surely shed and it is doubtful if it will pay you to try to save her. The foot should be immersed in one part carbolic acid and 30 or 50 parts water and when she is out of tub, apply one part iodoform and 15 parts water to foot twice a day. There are many other healing solutions that will give you about the same results.

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to your pigs is guaranteed to increase your profits 20 to 50 per cent. For prices and full particulars, write WATLES & COMPANY, Box 13, Litchfield, Michigan.

100--4th Consignment Sale--100 OF REGISTERED

HOLSTEIN CATTLE

Wednesday, April 22, at 12 M. Sale will be held in the city of Howell, Livingston Co., Mich., rain or shine.

This is our 4th annual sale, and we aim each year to put up a better class of cattle. They are a fine lot of cattle, including many with A. R. O. records. They are from the best families of the breed, such as Hengervelds, DeKols, Pontiacs, King of the Pontiacs, King Segrin, Pontiac Korndyke, Grace Bang 23, 35.55; Sadie Yale Concordia, 30.64; Susie DeKol Paul, 30.46; Pontiac Clothilde DeKol 2d, 37.21; Queen Cantilla 3d, 30.71; Hillside Do Do, 31.94. Also bear in mind our consignments are all females, most all from or bred to such stock as mentioned above. Catalog April 8.

MARK B. CURDY, Secretary, OOL. PERRY & OOL. KELLEY, Auctioneers.

COLLIE PUPS A fine litter of pure bred puppies \$5 & \$8. J. E. HUNT, R. No. 1, Hillsdale, Michigan.

FOR SALE at Howell: Livery stock, horses, buggies, harness, etc.; also good brick livery barn. Stock and barn together or stock separate. Would exchange for good farm, William and Robert Jubb, Howell, Mich.

BREEDERS' DIRECTORY. CATTLE.

ANGUS CATTLE FOR SALE

We have on hand several choice pure-bred Angus bull calves which can be sold for immediate delivery. These calves are sired by Louis of Viewpoint, a Grand Son of Lucy's Prince, the International Grand Champion bull for three years in succession. We also have for sale a few choice heifers from this herd bull. Will make a price on Louis of Viewpoint as some of his heifers are old enough to breed. Address

GLENWOOD FARM, Addison, Michigan.

ABERDEEN-ANGUS

HERD FOUNDED IN 1900. Strains represented consist of Trojan Ericas, Blackbirds and Prides, only. Black Quality Itto, a bull of rare individuality and merit, heads the herd. WOODCOTE STOCK FARM, Ionia, Mich.

AYRSHIRES—One of the foremost dairy breeds. Bull calves for sale. Write for description. Michigan School of the Deaf, Flint, Mich.

FOR SALE—Reg. Guernsey Bull calf, five months old. O. B. UNDERHILL, New Hudson, Michigan.

HEREFORD BULLS 2 1/2 months old 1 1/2 months old ALLEN BROS., Paw Paw, Michigan.

For Sale—Choice Guernsey Bull calves, sired by Im'p Deantes Sequel 14531, out of Dams second to none. EDWIN MILLER, Birmingham, Michigan.

GUERNSEYS—Reg. Tuberculin Tested. Windsor Farm, Watervliet, Mich. J. K. BLATHEFORD, Auditorium Tower, Chicago, Ill.

GUERNSEY BULL CALF, nicely marked, 3 weeks of old, great grandson of Gov. Chene, \$50 takes him. AVONDALE STOCK FARM, Wayne, Michigan.

Registered Holstein Bull for Sale

Up-to-Date Victoria King Korndyke A 4-Year-Old Bull, With Unquestionable Backing

His sire is brother to the first 38-lb. cow and the first 27-lb. cow, while his dam is a full sister to the first 40-lb. cow, Valdesa Scott 2nd (41.88 lb.). His sire also carried 75% of the blood of Pontiac Korndyke, the only bull to have eleven 30-lb. daughters and the only one with a son having a 44-lb. daughter. Thus this young sire combines the blood of the two highest record cows of the breed, K. P. Pontiac Lass (44.15 lb.) and Valdesa Scott 2nd (41.88 lb.)

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REG HOLSTEIN BULL, 4 months old, mostly white. His sire has 12 A. R. O. daughters. His dam has 98 A. R. O. daughters, 4 above 30 lbs. His dam is an A. R. O. daughter of Margolyn 2d's Clyde DeKol, 6 A. R. O. daughters. Only \$95 delivered. Worth \$150. Write for pedigree. HOBART W. FAY, Mason, Michigan.

HOLSTEIN FRIESIAN CATTLE BREEDERS of high record cows. Young bulls at farmers prices. JONES & LUTZ, Oak Grove, Michigan.

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\$100 Buys a registered Holstein bull calf 6 mo. old 1/2 white, and a choice high grade heifer calf 1 mo. old, 1/2 white, not skin. B. B. Reavy, Akron, Mich.

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Offers for sale a 5-month old son of KING BEGIS PONTIAC HOWELL, grand son of King of the Pontiacs. Dam is a grand-daughter of Pontiac Korndyke. Price \$100. delivered. Write for particulars. HERBERT L. SMITH, Shiloh, Michigan.

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HERD No. 3—1 four months bull from a 33-lb. sire and out of a 21-lb. grand-daughter of Paul Beets DeKol. 5 three months old heifers from A. R. O. dams and by a 27-lb. sire. Bulls and calves always for sale.

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Bull Calves \$50 to \$200. An absolute guarantee with each purchase. CHASE S. FERGUSON, Owners. L. M. HATCH, ADAM E. OSBORN, Supt.

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JERSEYS—Two yearling bulls, well bred and well grown. Write for personal inspection. SMITH & PARKER, Howell, Michigan.

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is one of the most high-grade animals ever developed by man. The high-grade farmer demands the high-grade cow. No breed equals the Jersey for the economical production of high-grade milk and butter. No breed equals the Jersey for intensive farming. Send for information to THE AMERICAN JERSEY CATTLE CLUB 324 W. 23d Street, New York

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(Tuberculin tested. Guaranteed free from Tuberculosis.) Several good bulls and bull calves out of good dairy cows for sale. No females for sale at present. Satisfaction guaranteed. COLON C. LILLIE, Coopersville, Mich.

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SHORTHORN BULLS, 12, all ages. Best of breeding. Prices right. Also P. C. hogs and Oxford Sheep. C. W. CRUM, Socy., Cent. Mich. Shorthorn Breeders Ass'n., McBrides, Mich.

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IT PAYS TO BUY PURE BRED SHEEP OF PARSONS The Shepherds of the East. I sell and ship everywhere and pay express charges. Write for club offer and price list. Oxford, Shropshires and Felled-Delaines. PARSONS, GrandLedge, Mich. R1.

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I have started more breeders on the road to success than any man living. I have the largest and finest herd in the U. S. Every one an early developer, ready for the market at six months old. I want to place one hog in each community to advertise my herd. Write for my plan. "How to Make Money from Hogs." G. S. BENJAMIN, R. No. 10 Portland, Mich.

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O. I. C's—I HAVE A NICE LOT OF HAND. OTTO B. SCHULZE, One-half mile west of Depot, Nashville, Michigan.

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Chester Whites—Reg. Bred Gilts—Orders taken for spring pigs and Collie pups. Holstein Bulls at Bargains. FAY B. FARHAM, Bronson, Mich.

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Duroc-Jerseys—Spring boars from prize-winning strains. Set all ages. Brookwater Farm, R. F. D. No. 7, Ann Arbor, Mich.

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POLAND CHINAS—Both Western and Home Bred. Either sex, all ages. Prices right. W. J. HAGELSHAW, Augusta, Mich.

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Guaranteed to not die of Cholera. Prolific, long deep and well fleshed. Feb. and March pigs. Trios not skin. Boars, Cribbs Bros., Watervliet, Mich.

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The large, long-bodied, heavy-boned prolific kind. Sows and gilts bred for spring farrow, 60 head of September, October and November pigs. Prices reasonable. W. C. COOK, R. 42, Ada, Michigan.

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Spring gilts, splendid ones. Fall pigs, either sex. Gilts bred for Spring farrow. COLON C. LILLIE Coopersville, Michigan

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I don't ask you to pay me one single cent until you have fed SAL-VET for 60 days and seen with your own eyes it's wonderful merit. I don't ask you to send me a penny until I prove to you, on your own stock, the great value of SAL-VET as a worm destroyer and conditioner. I have shipped tons and tons of SAL-VET to readers of this paper who have accepted my "no money down" offer. I want an opportunity to show you who have not yet accepted it, that it pays, and pays big to feed SAL-VET regularly to all your farm stock — Hogs, Horses, Sheep or Cattle. You have nothing to risk — everything to gain.

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makes all animals thrive better, look better, destroys and expels intestinal and stomach worms which prey on the digestive tract, robbing your animals of vitality and strength and keeping them in an unthrifty, unprofitable condition. SAL-VET will put them in condition to get more good out of their feed—makes them thrive faster — stops your losses from worms, makes stock sleek in coat, vigorous in action, and far better able to resist diseases. Millions of dollars are lost every year by stock raisers who do not keep their animals worm-free, healthy, and in a condition to get all the benefits of the rations fed.

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When the SAL-VET arrived, our hogs were either all sold or dead with cholera. There were five little runts alive, which were considered as good as dead, but, thanks to SAL-VET they are the best looking hogs of their age in the neighborhood. My one regret is that we did not get SAL-VET sooner, as I feel that we could have saved the whole bunch." LeRoy A. Barrett, Oswego, Ills.

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"When we butchered our hogs, we found them entirely free from worms, although before we began feeding SAL-VET, one hog in particular seemed badly out of condition and was coarse and rough. When we butchered him, he was the smoothest and fattest hog in the bunch." F. H. Durringer, Rt. No. 8, Van Wert, Ohio.



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P.O.....

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