

MICHIGAN FARMER

AND LIVE STOCK JOURNAL.
PUBLISHED WEEKLY.
ESTABLISHED 1843.

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

VOL. CXXXVIII, No. 3.
Whole Number 3583.

DETROIT, MICH., SATURDAY, JAN. 20, 1912.

\$1.00 A YEAR.
\$2.75 5 YEARS.

THE FOUNDATION of AGRICULTURAL SUCCESS.

THE three crops which in future years will stand as an enduring monument to mark the permanent success of our agriculture, are clover, alfalfa and corn. Clover has been and must remain at the foundation of permanent success in Michigan agriculture, not alone because of its wondrous power to appropriate the free nitrogen of the air to its own use as a plant food and to leave a valuable store of this costly element of soil fertility as a heritage to succeeding crops, and by adding a large amount of needed vegetable matter to the soil through the medium of its extensive root system, which also promotes good soil drainage and aeration, but as well because it provides the most palatable and nutritious of forage for the live stock maintained upon the farm.

That clover is for these reasons the most valuable of all crops grown in the rotation, so far as its influence upon the permanent success of our agriculture is concerned, is now conceded by every farmer. There is right now a great shortage of clover hay and of clover seed, and there is not a flattering prospect that this shortage will be appreciably lessened during the present year, as the fine clover seedings which were formerly the rule upon Michigan farms are quite the exception over large sections of the state this year.

Of course this condition may be quite largely attributed to the unusually severe drouth of last summer, yet in this cloverless desert—if that term may be properly used in connection with this otherwise fertile land—there is an occasional oasis where an excellent seeding of clover was secured, notwithstanding the unfavorable weather conditions which prevailed. Also, notwithstanding the general shortage of clover hay last season, due to somewhat similar conditions the previous year, there were some brilliant exceptions to this general rule. The accompanying cut shows a portion of a field of clover hay which produced three and one-half tons per acre.

That there was not a better crop of clover hay in Michigan last year and that there are not now more good seedings of clover which will produce similar yields next year, every Michigan Farmer reader will concede to be most unfortunate. Every thoughtful reader will also concede that every effect is traceable to one or more primary contributing causes. It is a safe assertion that no Michigan farmer could more profitably employ some of his spare time than in figuring out the causes which have led to a shortage of clover hay upon his farm, or the failure of the clover seeding which may produce it in the future, in order that these causes may be eliminated, and this handicap to the maintenance of soil fertility as well as the profit-



"King Corn" on Farm of Franklyn Kent, Oakland Co.

able maintenance of live stock upon the farm, be thus removed.

Undoubtedly, the high price of clover seed has contributed to some extent to this effect, since upon the stronger soils which are producing good crops of timothy and other grasses at a lower cost for seeding, clover seed has not been sown as generally or as liberally as it should be for best results. But on the soils which need the clover seeding most there are other contributory causes which are less easy to recognize and more costly to correct. On many of the lighter soils the humus or vegetable matter content of the soil has been depleted by constant cropping, thus placing the soils in a poor mechanical condition and making them so little retentive of moisture that it is almost impossible to get a clover seeding in the ordinary way on this account. On such soils no time should be lost in finding some method which will again cover the land with a much needed carpet of clover.

Whether this be done by seeding alone without a nurse crop on well prepared soil; whether it is brought about by the plowing down of some suitable crop for green manure to supply vegetable matter to the soil; whether it is accomplished by the purchasing of feed stuffs from outside sources to feed live stock maintained upon the farm and thus provide humus and plant food through the medium of stable manure; whether it be attained by thorough culture and a liberal use of commercial fertilizers, with the application of lime to sweeten the soil and restore its balance of this element where necessary, is an individual problem in each case. But that some means to the desired end be devised in each and every case is essential to the permanent success of agriculture as a profitable industry in that case.

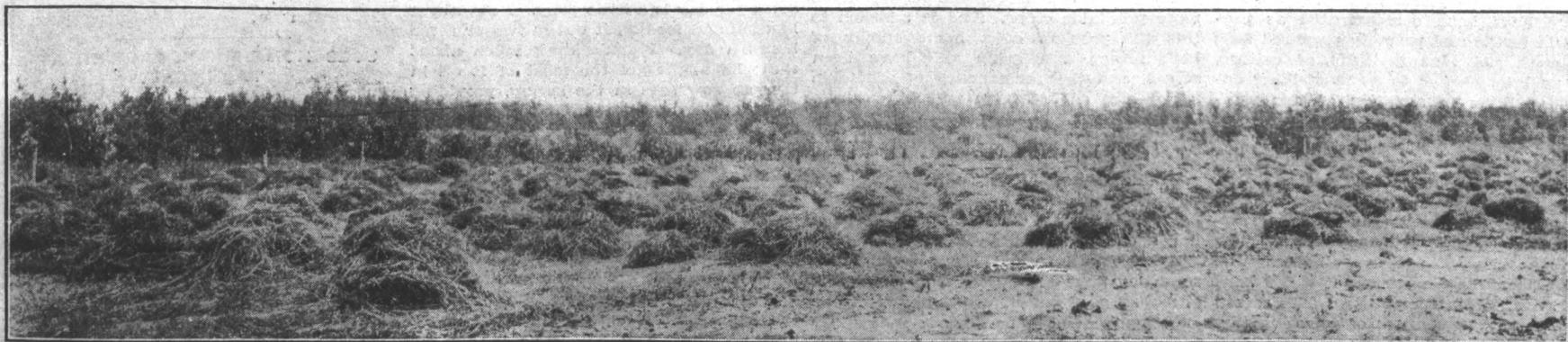
While clover is the base of our successful agriculture, there has been recently introduced into Michigan another great leguminous forage crop, which is destined to become another important stone in the

foundation of future agricultural success. While it has not and probably will not attain the importance of clover, alfalfa is certain to become an important factor in the solution of the problem of securing a dependable supply of nitrogenous forage for our live stock. It is also a valuable crop for soil improvement, but cannot take the place of clover for this purpose, as it is not so well adapted to use for a rotation of crops, which is an important means to the end of maintaining soil fertility, and at the same time get maximum results from our land.

Alfalfa is a very deep rooting plant and, when well established, more independent of climatic



Second Cutting of Alfalfa on the Farm of Wm. Oppenlander, of Eaton Co. A Good Dry Season Yield.



Three and One-half Tons of Clover Hay Per Acre, Grown on the Farm of R. A. Woodburn, of Oceana Co. A Good Foundation for Future Crops.

conditions than any other leguminous forage crop which can be grown upon our farms. The small field of alfalfa shown in the first page illustration is an example of this fact. This four-acre field of alfalfa was sown in the summer of 1909 without a nurse crop. The illustration shows the second cutting in 1911, in which season three cuttings were made, the first yielding eight large loads, the second five loads and the third two loads, a total of fifteen loads of hay from the four acres in a season which was anything but favorable for a maximum yield.

While this was not an exceptional yield and did not approach some yields from older stands of alfalfa, which have been reported in these columns in recent months, yet it was a far better yield than could have been secured from even a good stand of clover.

A feature of this picture, which does not show plainly in the cut, is worthy of special mention. The men in the picture are each holding up an alfalfa plant which was removed from the ground intact and the roots of which are about four feet long. This accounts for the fact that a fair yield was secured at the second cutting, notwithstanding the dry season. As the stand increases in age these roots go deeper and deeper into the soil, making the crop more and more independent of moisture conditions and insuring a more certain supply of the most nutritious and valuable roughage that can be grown upon our farms.

Each year there are more examples of success with alfalfa in Michigan. The problem of its successful establishment upon our farms has been practically solved and in another column of this issue will be found advice in regard to its culture which is in line with the experiences of many Michigan farmers who have succeeded with alfalfa. We may say with confidence that the experimental stage in alfalfa culture in Michigan has been passed and that good results can be obtained with reasonable certainty in seeding alfalfa in the greater majority of cases where the sum of this successful experience is taken as a guide in the cultural methods used.

No Michigan farmer should permit another season to pass without sowing at least a small area to this valuable forage crop and thus take another step toward solving the double problem of maintaining the fertility of his farm and supplying needed home grown forage for his live stock.

Corn the National Complement of Clover and Alfalfa.

While the crops above mentioned will in future years become more generally recognized as the foundation of successful and profitable agriculture, the great American cereal, corn, the natural complement of these other basic crops, will retain its legitimate place as a capstone of the monument of crops which will mark the permanent success of our agriculture. Truly, corn is our "king" crop. It enables us to utilize the available fertility in our soils, which has been conserved and stored up by the clover and supplemented by the stable manure which results from the feeding of clover and alfalfa in connection with previous crops of corn, to be turned into marketable animal products and the residue returned to the soil to aid in the production of future crops of clover and corn with a minimum loss of the plant food elements.

As above stated, corn is the natural complement of clover and alfalfa, growing to greater perfection following these crops and furnishing in connection with them the needed elements of animal nutrition in a well balanced form and at a minimum of cost. With the recent interest in corn improvement, which has been manifested throughout the country, the possibilities of this king of crops have been revealed in a startling manner. Marvelous yields of both grain and forage have been demonstrated as possible in fertile and properly prepared soils and with judicious methods of culture. Let us briefly refer to some striking examples of the possibilities of this wonderful crop.

The Possibilities of "King Corn."

During the last two years the United States Department of Agriculture has been stimulating interest in corn growing in the South by means of corn growing contests in which only boys under eighteen years of age are eligible. The past season there were about 60,000 boys who entered this competition. The record crop among the winners of prizes in this competition was made by Bennie Benson, of Mississippi, a little red-headed

lad of eleven years. His yield for a measured acre selected from a field of corn which he grew was 227 bushels of shelled corn, grown at a cost of 14 cents per bushel. Close to him in competition, and more remarkable in some ways, was the crop grown by Junius Hill, an Alabama boy, who grew 212 bushels of shelled corn on an acre at the remarkable cost of 8 3-5 cents per bushel. This record of cost was so remarkable that a special agent of the Department of Agriculture was sent to investigate the case, but he reported that the figures were correct and that the local committee vouched for the fairness of the competition. There were twenty-five boys among the prize-winners from widely scattered states, a number with yields exceeding 200 bushels per acre and few below 100, with the cost of production ranging from 8 3-5 cents per bushel in the case above mentioned to as high as 34 cents per bushel.

Michigan Also Produces Big Corn.

Such yields are phenomenal and so out of range with ordinary yields in Michigan that the reader will be inclined to look upon them as possible only in especially favored sections. Yet the fact remains that they were made by boys and that their authenticity is adequately vouched for. Quite equally wonderful results have been secured in corn growing right here in Michigan. In competition for a prize offered by an eastern seed firm, Mrs. H. Will Harris, of Lenawee county, Mich., last year produced a yield of 70 tons of silage corn on an acre of land. The method of determining this yield was by the selection of four separate square rods in the acre, from which the corn was cut and weighed by disinterested persons, the corn from these four square rods weighing 3,500 pounds, and this record, which is duly authenticated, was made by a woman right here in Michigan.

The upper of the three illustrations on our first page shows a field of corn grown by Franklyn Kent, of Oakland county, in which a phenomenal growth was secured. As will be noted from the picture, the man standing on the back of a horse and reaching upward with his hand is unable to reach to the top of the tall stalks, while ears are borne higher than the horse's head.

Better Average Yields Should be Secured.

The examples cited are, of course, exceptional. The corn was grown on exceptionally rich, fertile soil and such yields cannot be attained by the average farmer. However, these illustrations of the possibilities of King Corn should make the average farmer dissatisfied with his average yield of corn and should induce him to make every effort to improve that yield in future years.

The Solution of the Problem.

In order to do this he must conserve and improve the fertility and mechanical condition of his soil by growing more clover. He must supplement the natural fertility with stable manure or artificial fertilizers, or both. He must use the best seed and adopt the best cultural methods, if he would make this crop a monument representing the highest success of his agricultural endeavors, first adopting the necessary steps to restore clover to its proper place in the crop rotation. He may profitably supplement his supply of nitrogenous forage with alfalfa, thus making this supply of forage larger and more certain. Then, by growing better crops of corn and feeding it to live stock upon the farm to help in the production of more clover and more corn in future years, will the best foundation for permanent success of our agriculture be laid.

If this individual problem of more clover and better corn is successfully solved by the reader, no matter what his other special crop may be, that crop will be more remunerative. If he grows potatoes or sugar beets he will have larger yields. If he grows beans or grain he will have more profitable crops. And in addition to this the problem of a home supply of both forage and grain will have been solved, and the permanency of profitable agriculture on his farm will be assured.

LAYING TILE IN QUICKSAND.

I noticed in your paper a few weeks ago where a subscriber asked how he should proceed to lay tile in muck land where it had a quicksand bottom.

Mr. Lillie answered him, saying that most any kind of land could be drained if he had a good outlet, which has been our experience. But if he tries to follow Mr. Lillie's advice where he tells him he can lay tile in quicksand by digging his ditch

and scooping out and grading the bottom for a considerable distance first and then start in at the lower end and lay his tile, backing up and laying the tile in front of himself and walk in the ditch and not step on the tile, he is going to have trouble, I am afraid.

Now we have had several years' experience in laying tile in all kinds of ground and where we have encountered quicksand we have found it necessary to excavate a ditch ten or twelve feet wide. We dig it about six inches lower than we want our tile. Then we have a load of gravel handy and fill in to grade with gravel, lay our tile on this gravel and cover it carefully with more gravel, then fill in carefully with top soil a foot more and then shovel or scrape in what we had previously shoveled out.

Quicksand heaves and runs like water. It has no body. It won't lay still long enough to allow you to grade your ditch as you would in other soil. I have seen places where ditchers have tried to and invariably they have to raise their tile an inch or more above the one previously laid and soon run too shallow and in every instance, to my knowledge, even when they did this the sand ran in at the joints and soon displaced the tile. The tile sometimes even goes right down so far you can't find it.

But while this seems a great task to lay your tile in gravel I have never found a quicksand pocket over two or three rods long. Sometimes only three or four feet long. Quicksand is the worst thing a ditcher has to contend with. Lots of people call water sand quicksand. Now, if the inquirer's trouble is water sand it can be handled easier. Water sand won't heave. It just caves in when you go into it to deep. But by picking out a dry time you can dig a spade deep in it, allow it to drain out, take out another six inches and allow that to drain out, until you have gotten down to where one spading with an 18-inch tile spade will bring you to grade. Then you can do as Mr. Lillie says, grade a few feet and lay your tile, being careful not to step on the tile, cover with sods or straw for the first six inches and be sure of a satisfactory job. We have usually found water sand under muck. Quicksand pockets are found in any land, but as a rule are not very plentiful.

Montcalm Co.

SUBSCRIBER.

INTENSIVE VS. EXTENSIVE FARMING.

I wish to make some comments upon Mr. B. F. Washburne's articles in The Farmer of December 23 and 30. Being a farmer myself, in reading his letters I became somewhat interested, especially in the saving of labor.

First, I wish to refer to his first experience in raising corn in Michigan. I will not refer to the methods used in Illinois, as I was never there, but he marked his first 16 acres in about two days, which was two fair days' work, besides "busting" the marker. Then he planted it in six days with a hand planter, or stabber as they are sometimes called, which should have been done in three days with one man, but did not discover that his corn was not covered until his attention was called to it. That indicated that his ground was not properly fitted or too wet. Now, he should have discovered that he was not doing a good job during these six long days planting the 16 acres, but he was "as tired as a government mule."

Now, I find in The Farmer of December 30, how he claims he can raise 100 acres of corn in 79 days, or with 79 days' work; but he adds that he can do two days' work in one, which he would have to do, for 150 days' work is nearer the time it will take to fit, plant, cultivate and cut and shock 100 acres of corn. Cutting the 100 acres in 12 days is reasonable, but shocking it in seven days, or 14 acres per day is a little fishy. Now, about hauling and feeding it out in two or three hours a day. I don't know much about that; he might get the most of it off in time to sow oats in the spring, providing he didn't have to go too far to haul it and the snow or mud didn't get too deep.

Now, what I wish to get at is that it is not possible for one man to do the amount of work that Brother W. marks out in the 79 days. Neither is farming on such a large scale practicable. Michigan is better adapted to diversified farming. A few farmers might raise all corn and others all wheat and so on, but what the farmer needs most is to do his work in time and do it well, live within his means and not get so crazy after the al-

mighty dollar that he would have to do two days' work in one.

I am a farmer in a small way, that is, diversified farming. I raise wheat, oats, corn, potatoes, hay, sheep, cows, etc., but I would not like to tear down my fences and make only three or four fields of 112 acres. I am aware that fences take up some room and cause more turning, but we seem to have time enough to turn around. It is more convenient to have several fields that you can shift your stock around in than it would be to have only one or two fields.

I suppose that Mr. Washburne carries on farming on a large scale—and that may do for him and a few others, but the average man has got to be content with less acres and take better care of what he has got, for there is not enough land for every man to have several hundred acres.

Now, in conclusion, brother farmers, don't any of you try to raise 100 acres of corn with 79 days' work, for it will be too much for you or your hired man. Try 50 acres, or less, but take good care of it and do not let the weeds get the start of your corn. The grain binder, mower, side delivery rake, loader and corn binder are all good. The drill is fast taking the place of a planter of any kind. The silo is taking well with the dairy farmer or for feeding beef cattle. You can feed more stock on less acres by having it in ensilage, and with much more comfort than to have to go into the field every day and haul enough to feed a lot of cattle out in the field.

Now, Brother Washburne doesn't claim that he raised the 100 acres with 79 days' work, but when the time comes and he or any other man has accomplished the feat, please let us know about it. I wish Brother Washburne and any other farmer success in any experiments that will be for the betterment of the common farmer.

Ingham Co.

L. B. SMITH, SR.

PLANNING VS. WORKING.

I have read with considerable interest what Mr. Washburne says he could do with 100 acres of good corn land in 79 days. Now, Mr. Washburne's theory is good, but were he able to do one-half the amount he speaks of he must arrange his work so that nothing but corn would take up his time. He must work at that corn just when it needs it, no matter if his neighbor's barn does need raising or election day arrives, or a hundred other things come up to take him away. He must be deaf and blind to everything but corn. In this respect I believe a good many of us could get a lesson.

How many farmers there are who try to do the planning and carry on all the business of the farm and do a day's work in the field at the same time. One or the other must suffer, usually both. Up until two years ago I took care of the live stock every winter. When there was nothing to take me away I could do it better than anyone I could hire, but every once in a while I was compelled to leave the farm. When I did a new man had to be told what to do, (if one could be found on the spot), and everything suffered and in the end the stock did not do as well as I thought it ought. Finally we decided we would hire a chore boy. It seems rather extravagant to hire your stock taken care of when a good share of your time you could do it yourself, but our stock is fed now by the watch. That man hasn't a thing on his mind but to look after that stock. No matter how badly we need him for something else, we just get someone else or let it go undone. That man just does those chores and splits wood between feedings and our stock can't help but thrive. Now, the same with Washburne's corn. By having a man for every team and have him drive that team ten hours a day every day and look after your hand work just as though you didn't have a teamster you could call on to help, it is surprising the amount of team work you can get done.

Montcalm Co.

SUBSCRIBER.

USES HOME-MADE BLOWER ATTACHMENT.

Having had my attention called to an item in the issue of Nov. 18, 1911, page 430, will say that I have such a machine. I made a blower for my cutting box two years ago this winter, and it works to the satisfaction of myself and others.

This machine, when driven by a 3½ h. p. gasoline engine, will deliver cut fodder 30 or more feet from the machine. The pipe is equipped with a flexible hood so that fodder can be delivered in any direction.

Hillsdale Co.

G. L. HOUSMAN.

KEEPING UP SOIL FERTILITY.

The man who farms, whether it is forty acres or four hundred, and allows his soil to become depleted, and lacking in plant food, is not making a success of his occupation. He may make a living for many years, but the man who does no more than make a living on the farm, can hardly be called a successful farmer. It should be the aim of every farmer to make every acre produce as much as possible, but to so manage that it will be in better shape to produce larger crops each year. The farmer who does this is on the high-road to success, whether he is, like Mr. Washburne, able to produce one hundred acres of corn, unaided, or not.

In the issue of December 16, last, I notice a question by O. C. M., of Montcalm county, in regard to keeping up the fertility of an eighty-acre farm, and the reply of Mr. Lillie. I do not agree with the latter when he says it is impossible to keep up the fertility of the farm unless one buys feed for the stock that is kept, or that the fertility cannot be kept up by what the land can be made to produce if it is rightly managed, and I think there are a good many farmers in Michigan who will agree with me. Of course, it will take good management, and a proper rotation of crops to do it. The farmer who sells his hay and grain, instead of feeding them out on the farm, is not going to improve his land, but where enough stock is kept to consume all the roughage and most of the grain produced, and a proper rotation is followed I hold that the soil can not only be kept up, but improved from year to year. Too many of our farmers are growing hay as a cash crop, and that is certain to deplete the fertility of the soil. Where a crop of timothy hay is cut year after year, for several years, and the hay sold, it does not take much figuring to show that fertility is taken from the soil. On the other hand, if red clover is sown with all grain crops, like wheat and oats, and the clover cut for hay the next year, and possibly for seed later in the season, then the next year the clover sod turned under and corn grown on the land, then wheat or oats, and clover again; and then, if all manure is carefully saved, liquids as well as solids, and returned to the soil and catch crops to protect bare lands, like rye, sown in the fall to be turned under in the spring, are grown whenever possible, to supply humus, and improve the mechanical condition of the soil, that land is going to improve, no matter if not a pound of concentrated feed is purchased outside. I am not saying, mind you, that it does not pay to buy concentrated feed to be consumed on the farm, or that the soil conditions could not be improved more rapidly if feed was purchased. Almost anyone could tell that this would be so. But I do contend that the fertility of our farms can be kept up, and improved without purchasing feed grown on some other land. What would the country come to in the end if, as Mr. Lillie contends, the fertility cannot be kept up except by going outside and purchasing feed grown on some other lands? If we must keep up the fertility of our farm at the expense of one belonging to someone else, then the other man must rob a third, or let his land deteriorate, and the third must rob someone else, and so it would go on, and what would the end be? In time all our lands would become exhausted.

It will take good farming to keep up and increase soil fertility without purchasing feed grown outside. Slipshod working of twice as much land as can properly be cared for will not do it. Few men are properly equipped physically or otherwise, to work one hundred acres of land as it ought to be worked. I think that most any man can find plenty to do on a forty-acre farm, if the work is done as it should be, and the less number of acres a man tries to work the better chance he has to keep up and increase the fertility, for if his acres be few he will study to keep up and improve each one.

We have as good soil in Michigan as there is in any state in the Union, and with good management and the right kind of farming we can not only keep up the fertility of our lands but can improve them from year to year and make them still more productive without purchasing feed grown in other states.

Of course, we might grow some crops and profitably exchange them for what is grown elsewhere. We can raise the best of beans, but it would not be economy to feed them out on the farm, when we could sell for good prices and

buy a feed which would give better results, and it is the same with other crops which our soils produce. But that does not change my contention that we can keep up the fertility of our lands without being dependent on other lands for so doing.

Eaton Co.

APOLLOS LONG.

THE PROPER WAY TO SEED ALFALFA.

Taking the state of Michigan as a whole, experience has generally shown the farmers that alfalfa is not to be sown on poor soil that requires to be built up considerably before it will produce normal crops. Many farmers have failed to grow alfalfa on poor soils, while the successes on fairly fertile soils have been general and very encouraging. The best soil for a beginning in alfalfa growing has proven to be a deep, sweet, rich and well-drained loam. Such a soil if seeded properly will give the best results. Very few failures have been known where alfalfa has been tried on this kind of soil and where the seeding has been done properly.

If we suppose such a soil is to be used and the alfalfa is to follow a crop of corn, then the following method is the one that has given excellent results. If the soil is quite heavy, plow in the fall to break up the stubble and give the soil a chance to settle in the early spring; or if the plowing is done in the spring, the roller should be used to settle the soil. In either case the cultivating should begin as early as possible in the spring to start the weeds germinating and to kill them and also to conserve the moisture. The alfalfa plant requires plenty of water and the critical point in this respect seems to be just after the seeds have germinated. Some seedlings have been lost by having a drouth soon after seeding and the soil not properly supplied with moisture in the beginning. The field must be frequently gone over with the harrow from the time the soil can be worked in the early spring until the time of seeding.

If the soil contains a large amount of clay and is apt to puddle, a nurse crop is preferable. The nurse crop prevents the soil from drying hard on the surface and the small alfalfa plants can then push their way through. Beardless barley makes a good nurse crop because the straw is stiff and will stand up better and matures early. Oats and bearded barley are good, but the beardless barley is the best. Three to four pecks of barley seed and 15 pounds of alfalfa seed sown at the usual time for barley makes a good seeding. Some alfalfa growers advocate the sowing of more seed, but the above amount will give a good stand if the other conditions are right. If the soil does not bake as mentioned above the nurse crop is undesirable, because it robs the alfalfa of water and plant food. When the nurse crop is not used, sow the alfalfa seed as soon as the ground is warm enough to germinate it properly. When the alfalfa and barley seed are sown together, use the drill for the barley, sow the alfalfa ahead of the drill and let the drill cover both. When the alfalfa seed is sown alone, cover with a light drag. It is better to sow the alfalfa seed broadcast than to sow it in the drill rows.

If there is plenty of moisture in the soil during the growing season, let the nurse crop stand to harvest as grain; should the season be dry, cut the nurse crop after the alfalfa comes up and if heavy cure for hay, but if light let it lie on the ground as a mulch. This method of seeding alfalfa has given the best results over other methods.

Nothing has been said so far in regard to inoculation and lime. Inoculation is always advisable whether done by using soil from an inoculated field or with the pure culture. The pure culture produces results in the majority of cases, is easily and cheaply applied and there is no danger of getting weeds from some other farm. Alfalfa should not be tried on an acid soil without the use of lime. Use the form of lime that can be spread on the field with the least outlay of labor and money, but put it on if you think the soil needs it.

Ingham Co.

C. H. SPURWAY.

The value of alfalfa as a forage crop is so great that every farmer should try it out on a small scale at least. There are comparatively few farms upon which a suitable soil cannot be found. In fact, it will grow well on a great variety of soils, if well drained and properly fitted, with proper inoculation and an application of lime where needed.—Eds.

This Spreader Costs Less Per Year Than Any Other

YOU must figure the cost of a manure spreader by the years of service and the kind of service you get out of it—adding the cost of repairs. It's the cost per year that counts. That is the basis on which we build the Great Western. It costs more to make a Great Western than any other spreader, therefore it may cost you a little more at the start than one of the "temporary," troublesome, light weight, heavy draft spreaders. It is the few extra dollars in quality that has made the Great Western known everywhere as the spreader that stands the strain.

The Great Western is used and endorsed by 100,000 practical farmers—also by the U.S. Government and State Experiment Stations. We guarantee every Great Western Spreader to stand 50 per cent more strain and require 50 per cent less repairs than any other spreader. Write it in the order if you want to. We know that there is more oak—hickory—malleable wrought iron and steel in a Great Western than in any other spreader.

Great Western

The massive construction of the Great Western makes it the lightest draft spreader. You can't put on a load heavy enough to make any part "give" or "bind." And it is not the weight as much as the "binding" that causes draft. Figure it out along this line and you'll soon see why the ordinary spreader uses up horses, causes more trouble and soon costs more for repairs than it is worth. The Great Western has fewer parts, too, than any other spreader. That means less friction—less draft—less wear. It is the original Endless Apron Spreader, easy rolling because it has three sets of extra large rollers, positive feed constantly; absolutely automatic, simple, mistake-proof.

Write For The Proof

Don't let anyone persuade you to buy a spreader on snap judgment. Read our big spreader book first and learn how to really test a spreader. See the letters from those who know. You want this book whether you buy a Great Western or not and we want you to have it. Send name today. Address

ROCK ISLAND PLOW COMPANY,
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There is a difference between fruit growing and forestry

yet most of the directions for fruit growing are directions for producing rapid wood growth only.

This means coming into bearing late and irregular bearing on account of lack of enough available mineral plant food to raise a crop of fruit and to set strong fruit buds in the same season.

POTASH

Two years before the trees are expected to come into bearing the annual application of minerals should begin, using 50 to 100 pounds Muriate of Potash and 100 to 200 pounds of bone, acid phosphate or basic slag per acre.

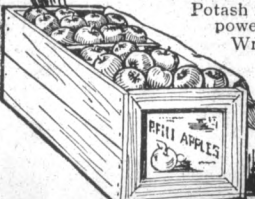
Potash improves the flavor, shipping quality and keeping power as well as the yield of fruits.

Write us for Potash prices and for free books with formulas and directions.

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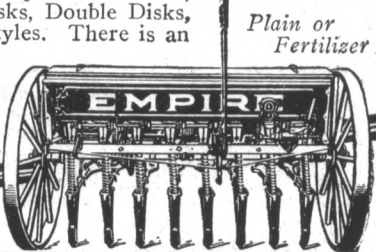


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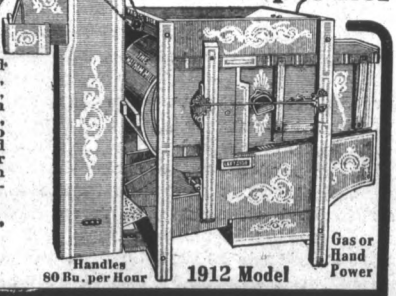
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FEEDING CATTLE AT A PROFIT.

There are many different methods of feeding and fattening cattle for the market. But the method we should be most interested in is the method which will produce the greatest number of pounds at the minimum of expense. We all know that it is quite an easy matter to fatten a hog because he will always eat, as his name implies. But cattle are much different and it requires years of experience to successfully feed cattle to a profit. However, from what experience I have had and what I have learned from successful cattle feeders, "well bred" beef type in cattle is one of the most important factors to start with. The best feeder on earth cannot make prime beef from an ill-formed, poorly bred steer, and the only successful way to deal with such stuff is to rough them through the winter to the best advantage and turn them on good pasture. They will pick up pretty good this way and in early fall may be disposed of with a prospect of profit, as they have been produced cheaply. Of course, no matter how careful one may be in sorting and selecting their feeders he will get some mean ones that will not feed as good as the average, and instead of keeping these culls around to damage the looks of the whole herd I believe it pays to dispose of them for what they will bring or carry them over on grass, as above stated. I never knew it to fail, if there are a few undesirable steers in a bunch when a buyer comes, that they did not stand in plain view all the time and hide those of better quality, and naturally the buyer will condemn the whole lot.

There is nothing about a farm more interesting and fascinating than feeding a big drove of cattle that will take hold and eat and make a good daily gain. Chicago is one of the very best feeder markets, from the fact you have a good selection and can get just what you want. Of course, there is always a keen demand for the well-bred kind and they are usually high at all times of the year. I believe it pays to buy good cattle because of the fact that they gain faster and command a better price, aside from the consolation that they look well in your yards. Beef cattle are fast approaching a high figure and the time is not far ahead when a good 1,000 to 1,200-lb. steer will sell for \$100 on foot.

Corn Belt Feeding Methods.

We all know that corn makes beef but the question is to know how to feed it in order to get the best gain at the least possible expense. The successful feeders in Illinois seem to think the more corn you can put through a steer the more you will make, and this is true, since, if a steer will eat heartily he will always gain. The cattle are usually fed there in large yards, which include rough, open sheds for shelter. They have large racks built to hold several loads of hay or straw for roughage. A successful feeder there told me that after 30 years' experience in feeding, he believed that good straw was better for feeding cattle than hay, as they would not eat as much straw and would consume more corn, while if they had good hay it filled them up and they would not eat as much corn, consequently would not gain as rapidly, as the hay will not make beef like corn. The corn is hauled into the yards and shoveled on feed tables which will accommodate 10 to 15 steers. Some have self-feeders which are small cribs built upon feed tables. They will hold several big loads of corn and when the cattle are on full feed, or six to eight weeks after they are started, they are allowed all they can eat. This saves much time, but I would rather feed just what they will eat at each feed. When an animal of any kind has an appetite it will fatten faster. Some feeders prefer to have snapped corn, in preference to husked corn, as they eat it slower and masticate it better and, as a portion of the husk is swallowed with the corn, it is raised and chewed again and digested better. I have seen as much as 5,000 bushels, 10,000 baskets, of snapped corn piled up near the feeding yards. They generally cover it with straw to keep the snow off and haul it as required to the feed tables. It is less expensive to snap the corn from the stalks as it stands in the field than to husk it, as a man can harvest nearly twice as much in a day. I have snapped as high as 200 bushels, or 400 baskets, in a day and shoveled it on a

high pile. Of course, there are men who have husked over 200 bushels, 400 baskets, on a wagger. But the average husking is 80 to 100 bushels (56 lbs. shelled corn), per day.

Perhaps it looks wasteful to most Michigan farmers to see a lot of steers fed in this way, as they do waste quite a large portion of the corn. The ears are large and hard to masticate. But there is always a dozen hogs after those ears that the steer can't eat and in this way the feeder gets his hogs fed gratis. The feeding yards there, especially in the spring, are a sight. Some of them look more like a lake of mud than anything else, and the hogs almost have to swim to navigate them. But the cattle are fat, the hogs are fat, and the farmer smiles with his rubber hip boots on. The high price of corn has discouraged cattle feeding in Illinois and there are many farmers there who used to feed quite extensively that don't keep a hog or a steer on their farms now. They figure that the corn pays them more and with less expense and trouble. This is another reason why beef and pork demands such high prices.

Michigan Conditions Are Different.

Conditions are much different here in Michigan in the matter of feeding cattle. There are not many fed to start with, and what are fed are generally fed in the most expensive way. It is said "when you are with the Romans do as the Romans do," but deliver me from fattening with the expensive and unnecessary methods most farmers employ here in feeding cattle and caring for their stock in general. If I did not figure out how to save time and labor it would necessitate several extra men here to look after all my stock, while as it is I get along nicely alone and when I have grain to deliver to market or any extra work to do I also do that in connection with my chores.

Stall, vs. Yard Feeding.

Do not tie your cattle up by the neck to feed them. Give them their liberty, as they enjoy it as much as a human being. If you have a large drove and some of them do not do quite as well as the others, divide them up in separate yards. Let them have shelter and keep them well bedded. Then, in the spring you will have a valuable lot of manure, which you can pitch directly into the spreader and not have to handle over several times for nothing. I had about 550 loads this spring in one of the 100 bushel machines, and a good man and myself covered 50 acres in less than 30 days. This is where some of the profits are derived from feeding cattle. I am feeding a fine bunch of Angus and Shorthorns and they are making a good gain. My corn all stands in the shock and is in fine shape. Some of the farmers here put their corn in barns and stacked it when it was not fit, consequently they were to a useless expense and their corn and fodder is damaged badly. I have a special rack built expressly for hauling the corn from the field. I hitch onto this rig in the morning and feed the steers and usually haul enough for the night feed also. It requires about 40 to 60 minutes to do this and my cattle are well fed on both grain and forage. The fodder takes the place of hay or roughage and the cattle do well on it.

Shock Corn an Economical Feed.

Now after feeding many years I can truthfully say that this is a most economical and profitable method of feeding cattle here in Michigan. I think perhaps that cattle should have a little extra corn the last few weeks on feed, since, if you make them clean up the fodder well, they don't get quite enough corn. But to overcome this if you have some stockers or cows they could be let in the feeding yard and clean up after the fattening cattle and in this way you could feed them all the corn necessary and not lose and fodder. My feed racks are built parallel with the fence inside the yards and I drive along outside and pitch the bundles into the racks. One may think that the stalks would bother when hauling manure in spring, but they do not, as the cattle tramping over them all the time breaks them up and one would think they had been threshed. It may look tough for some to see 50 acres or more of corn standing in the shock at this time of year, but as a matter of fact, it is much better standing there in those big substantial shocks than to have it stacked up or put in the barn where the rats can feast in it. Of course, you can have some on hand for reserve in case of a severe storm, but as yet I have never seen many days that I could not haul from the field, and would rather do it

than from a stack. Some men think nothing of it when they want a plug of tobacco or a glass of beer, to drive eight or ten miles in a storm for it, but it is a terrible exertion to go out in a near-by field and haul up a little corn every day. These big shocks that are bound in bundles will not freeze down like the small shocks that are generally flat on the ground early in the fall.

Some Cost Comparisons.

I had much rather cut and shock the corn and feed this way than to go in the field and husk or snap it as they do in Illinois. It can be done quicker, easier, and is much less expensive all around, besides saving a great amount of valuable feed, which is mostly wasted by husking from the hill as they do in the corn belt. I had 80 acres of corn this season and cut and shocked the same alone. Now this corn has cost me nothing as far as labor is concerned only my work, with which I got along nicely. Let us figure out what it would have cost me to have hired the 80 acres of corn harvested and fed to cattle as most Michigan farmers do. Of course, I can not tell how much the corn would yield, but I threshed about seven acres and got over 300 bushels of shelled corn. We will say it would yield 90 baskets per acre, which is 7,200 baskets. It would cost \$1.50 per acre to cut and shock by hand, or \$120. The expense for husking and placing in crib would be around five cents per basket, or \$360. Hauling up stalks and stacking, \$50. Hauling to mill and grinding, four cents per basket, or \$288. We have now paid out \$818 to place the corn meal in the bin ready to feed, which is advocated by many farmers as the most successful method of feeding cattle and in fact all stock on the farm. Now, I wish to have some farmer who entertains this idea to "show me" where the profit comes in. I will agree to take cattle, cows, sheep, or any animal that consumes corn, and get better results from them in feeding this 80 acres of corn in the bundle and will have the \$818 to my credit besides. Of course, all farmers can't have 80 acres of corn, it is true, and if they did have would not care to work quite as hard as Washburne to produce it. But any farmer ought to take care of 30 to 50 acres here in Michigan and do it easily, by following the method I do, and would save a nice lot of cash that is foolishly paid out.

The Silo is Economic Storage.

I believe that the silo is a very economic way to have a good supply of feed and if I were in the dairy business I would have one. But before I would pay the exorbitant price they demand for husking corn I would fence off a portion of my corn field and turn in the cattle and hogs and let them harvest it. A dollar saved is two earned and it's mighty easy for us to pay out all we make. This is why some farmers are financially the same as they were 10 years ago. It would pay much better to get a few lead pencils and cypher out some of these problems than to work year after year for nothing.

Washtenaw Co. B. F. WASHBURN.

DOING CHORES.

What is usually called, "doing chores," is something that must be attended to on every farm. A great many boys and hired men dislike this part of the farm work, and in many cases there is a good reason for this, according to some of the observations of the writer. This is because the caring for stock, the milking, etc., is done so late at night on many farms, that the evenings are very much shortened for the boy or hired man. In many cases I am convinced this is more a habit than a necessity. In the winter when there is not much else to do but chores, the feed and bedding can be gotten ready in the afternoon for night and morning. So at night the feeding, etc., can be done before dark and in the morning there will not be half as much to do before daylight. The milking can be done the last thing at night and before breakfast in the morning.

Ottawa Co. JOHN JACKSON.

A short time ago the University of Illinois bought in the Chicago market nine carefully selected steers to be fed and used this winter in the animal husbandry classes, paying from \$4@6 per 100 lbs. Each steer was purchased separately to represent a certain class type, and each cost a different price.

The federal government meat inspectors condemned more than a million carcasses and portion of carcasses at Chicago during the past year, mainly because of detection of tuberculosis, and 21 million lbs. of canned and cured products were condemned.

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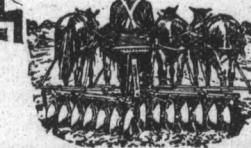
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BREEDING HORSES ON THE FARM.

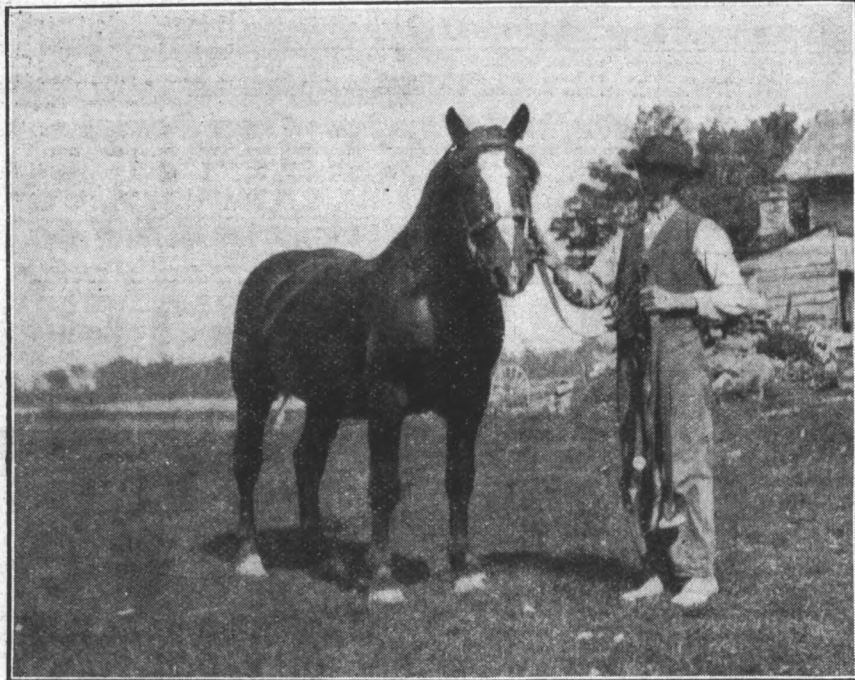
There seem to be but a comparatively few who raise and handle the stock on the farms, that realize the full benefits of the farm animals to the human race. It is only in those countries where live stock breeding, and improvement, has reached the highest degrees of excellence, that we find the highest types of humanity, and consequently the highest form of civilization. No other farm animal has been capable of attaining so firm a hold on the affections of human beings, or has had so great an influence in molding the character of men, and holding them to so high a standard of excellence, as has the horse. The horses of a country may, in a general way, be taken as an index to the character of the people, especially in the rural districts. From the earliest dawn of civilization in Egypt, Persia, Babylonia, and succeeding civilizations, when the countries were at their zenith of glory and prosperity, the horses were held in the highest esteem and were nurtured with the tenderest care.

In our own country we are approaching a higher degree of excellence in horse breeding and rearing than we have ever attained before in the history of the country. We are profiting by the use of what are termed pure-bred animals, that have been brought up to a high degree of excellence by painstaking men in the countries of the old world. We have at our command the results of the efforts

mare should be larger than the stallion. We have followed the opposite rule of using large stallions on medium sized mares and have made marked improvements in both size and general conformation. At present we realize that the offspring from a large stallion and a medium sized mare will not attain to the size and weight of the stallion, and consequently we select a stallion about 200 pounds heavier than we expect our geldings will weigh after they have matured.

Besides size in the stallion we should have a good bony frame, well covered with a good set of muscles well developed by vigorous and persistent exercise. The right kind of bones and muscles should make up a large percentage of the weight of the farm horse, as well as the heavy horses to be sold in the markets. A large amount of adipose membrane, (fat), may add to the weight of the animal, but not greatly to its efficiency when at work or traveling on the road. Much fat is a detriment in hot weather. The stallion should have a wide, deep chest, which goes with a large heart and insures ample room for expelling the air from the lungs. Of course, no man of ordinary judgment would think of using a horse unless he has a good set of legs and feet. Bones, muscles, nerves, vital organs, good wind and good limbs and feet, are primal elements that should not be overlooked.

On the farm the mares that are kept for service are generally the ones used



A Pure-Bred Draft Sire of Quality Should be Used in Breeding Farm Mares.

of many centuries, and it would be a lack of good business sense if we were to neglect to avail ourselves of the improvements already made, for the same can be had at a very moderate cost, when the real value is considered.

At the present time, the man who has a just estimate of the influence of a pure-bred draft sire, would not think of recommending anything else to cross on the mares on the farm for home use and market, when profits are considered. When we hold in mind the fact that the sire imparts to the progeny, in a great degree, the external form, and that the pure-bred has the ancestral backing of many generations of sires and dams of recognized excellence, we may begin to anticipate the beneficial influences that can be secured if we avail ourselves of the use of them.

All pure-bred sires are not possessed of equal merit. In the past some have left a marked improvement on the stock which they have sired, and added many thousands of dollars to the value of the stock in the communities where they have been freely used, while benefits shown by the stock from others were less pronounced. After the breed to be used is decided upon, then the conformation and disposition of the sire selected should be closely studied. Like the mind in men, the influence of the mind of the animal has much to do with making the character of the animal good or bad. Good life, and as high style as can be had with a compact, closely built animal, is desirable, but a high temper should be avoided. A good shaped head, high at the poll, wide between the eyes, an open, mild eye, and medium sized ears, are among the things that should be sought after and secured, for we want intelligence and a tractable disposition.

Our forefathers used to say that the

as breeders. To use such is generally considered a matter of economy. The use of pure-bred stallions, of any of the draft breeds, usually brings a class of young horses that sell about as readily as fattened steers; size and general conformation very often fixes the price. If the breeder has been wise in his selection of both sire and dam, he not only brings profit to himself, but is a benefit to the horse interests of the country.

There are defects in many of the mares used on the farms that should not be overlooked. Among the most prominent defects which, in the long run, are a great damage to the horses that go from the farm, we will mention that of a narrow chested mare. It is no longer disputed that the mare wields a great influence on the internal structure of the colt. The colt from a mare that has a narrow chest, which means small heart, stomach and lungs is pretty likely to inherit some of the weaknesses that are concomitant with such a makeup. The fruits from such a combination is a horse that sweats and catches cold easily, has disordered digestion, an abnormal appetite and broken wind. No other one thing detracts from the usefulness and the value of a large percentage of the horses raised on the farms of this country, than heaves. Of course, bad management and improper feeding has much to do in hastening the diseases mentioned, but it is a well known fact that some families of horses have an inherited tendency toward heaves and its attendant disorders.

Another defect that causes trouble and detracts from the value of the horses raised is, too deep walled hoofs. While we realize the weaknesses following flat-footed horses, we must admit that there is less danger from breeding a flat-footed mare to a good draft sire, than there is

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sional Horse Trainers with the aid of the simple, safe, humane Beery System. Take for example the case of Emmett White, of Kalona, Iowa, who has followed the Beery System and become a professional Horse Trainer. Mr. White says: "I would not take \$500 for what you have taught me. You may judge of my success when I tell you that I have been able to buy a home and an automobile solely through earnings from training horses as taught by your excellent methods. I am proud of my profession."

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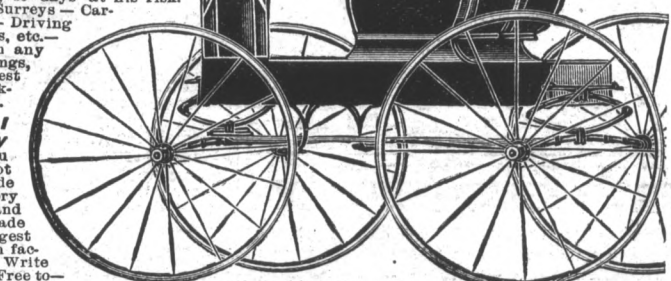
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breeding a mare with deep walled feet. Sore fore legs, founder, general stiffness, are among the evils that follow the deep walled feet. Such things cut short, to a great degree, the usefulness of the animals, and yet they are very frequently found among horses of excellent conformation, and what is called good breeding. Stiffened, sore-footed horses are altogether too numerous in this country where we lay high claims to a general knowledge of the laws of inheritance and subsequent tendencies.

At their best, horses are animals of a complex nature, and under the artificial conditions to which they are subjected, are prone to vices, diseases, and blemishes that greatly detract from their usefulness. While we are engaged in their general improvement it is well to avoid perpetuating as many of their weaknesses as our knowledge and surrounding conditions will enable us to, and realize, as best we can, a close resemblance to our cherished ideals.

Wayne Co. N. A. CLAPP.

LIVE STOCK NOTES.

Better times for sheepmen have been experienced in western markets recently, holiday supplies falling off to much lower proportions, and the predicted upward movement in prices has been verified, although there are the best of reasons for saying that the advance has not anywhere near reached its limit. Sheepmen should remember that much less feeding is being carried on this winter than usual and that in all probability the men who stick to their flocks and make first-class live muttons will be well rewarded. This applies especially to owners of good lambs, but there is a chance of overdoing it and making lambs too heavy in weight to meet popular favor. It cannot be said that poorly fattened flocks are making money for their owners, and sacrificing them in the way some are doing, is extremely foolish.

The importance of the loss of the British army and navy purchases of canned meats from the Chicago packers while the present trial is pending in the federal court is magnified in some quarters. Great Britain is an important customer, it is true, but Russia, Germany, France, Italy and Japan are also heavy buyers, both through their respective governments and dealers who supply the people of these nations. The withdrawal of British government purchases affects only the poorest class of cattle, these being used for canning purposes.

Clay, Robinson & Company's Live Stock Report has the following in a late number: "Some of the largest cattle feeders in Nebraska, it is stated, are not feeding this year, and others who usually feed every year are out of the game." I. S. Byers, the well-known and successful cattle feeder of Nebraska, along this line, writes: "I think it is a good time to feed a few cattle when others stop. If corn and hay is high, I believe cattle of good quality will pay their board if handled right. There are very few stockers and feeders in this country. I have lived here 26 years and have never known as few cattle on feed in Hamilton county. From what we can learn, it is that way most all over the state."

The Canadian cattle export season that started off the first of last May closed with aggregate shipments of 45,526 head of cattle from Montreal to England, showing a decline of 37 per cent from such exportations a year earlier and of 41 per cent compared with two years earlier. This illustrates in a measure the constantly increasing scarcity of matured cattle in Canada cattle districts and to a constantly lessening dependence of England and Canada. The United Kingdom is receiving rapidly growing supplies of chilled and frozen beef from Australia and South America at lower prices than can be equalled for live or dressed beef in this country or Canada.

Not long ago a prominent stock feeder of central Iowa sold on the Chicago market a car load of 20 head of good fat steers that averaged 1,470 lbs. for \$7.80 per 100 lbs., and they netted him above all costs and expenses about \$34 per head. The cattle were purchased three months earlier on the South Omaha market as feeders, at which time they averaged 1,170 lbs. and cost \$5.35 per 100 lbs. They came from the range country and showed fully as good gains as native cattle could have done, gains having averaged 300 lbs. per head. They were fed snapped corn on bluegrass, corn in that section being worth about 55 cents a bushel. Another stockman from the same place marketed in the same city at about the same time 120 head of Angus steers that he had bought in South Omaha three months ago after feeding them for a period of 60 days. They had cost him as feeders \$5.75 per 100 lbs.

Late reports from the railroad officials indicate that about 80,000 cattle are to be full fed this winter in Texas and Oklahoma, or twice as many as last winter. They are fed mainly on cottonseed meal and hulls, and most of them will be marketed at Fort Worth, Kansas City, South St. Joseph and East St. Louis.

Bell Bros., of Wooster, Ohio, announce the arrival of a new importation of Percheron, Shire, Belgian and German coach horses at Wooster, Ohio, January 3, 1912. The greatest care possible was exercised to obtain the best that are produced abroad and the types of horses that are best calculated to give the best satisfaction. They extend a general invitation to old customers and prospective purchasers to come and see this grand lot of horses.

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VETERINARY

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

Barren Cow.—For the past two years my nine-year-old cow has failed to get with calf and as she is an extra good milker we would like to use her for dairy purposes. O. J. H. Leslie, Mich.—As she does not come in heat it would indicate that her ovaries are functionless and if so she will always be barren. Give her 2 drs. ground nux vomica, 1/2 oz. powdered capsicum, and 15 grains powdered cantharides at a dose in feed three times a day. She should be fed plenty of stimulating food.

Blackleg.—A two-year-old heifer and a yearling heifer of mine died within six days and out Vet. calls the ailment blackleg. He vaccinated all my other cattle, since then I have not lost any. My Vet. recommends that we have our cattle vaccinated again and if you advise it, we shall have it done. C. H., South Shaftsbury, Vt.—I agree with your Vet. It is always advisable to re-vaccinate for it will do no harm and if the first application failed to act, the second dose may prove effective. You had better be guided by your Vet., who is in close touch with the cattle.

Choking—Fits.—Have two pigs about 11 weeks old that seem to have a sort of fit when they first commence to eat and this spell does not seem to last more than two minutes. When they come out of this convulsive fit they appear to be stupid and lie on belly. These pigs continued having these spells for ten days, then died. I was feeding them ground oats made in a slop, fed them corn twice a day and some sugar beets. What can I do to prevent my other pigs getting sick? F. J. B., Shepherd, Mich.—Feed your pigs warm food and swill, also keep them clean, dry and warm. Their bowels should be kept open.

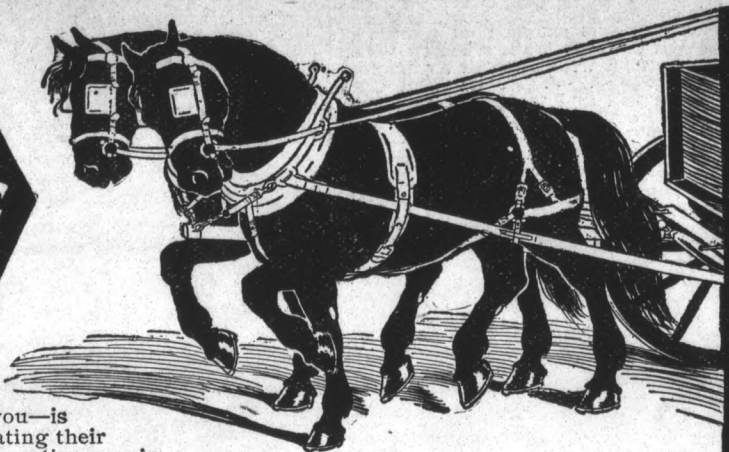
Nodular Disease—Scours.—I would like to know what caused the death of my sheep. Have lost four two-year-olds lately, the first symptom is scouring and then fever sets in, followed by weakness and death. I am feeding cornstalks, mixed hay, oat straw and oats once a day. Are given plenty of water and are well salted. They are sheltered during storms. C. D., St. Louis, Mich.—I am inclined to believe that your sheep die of a parasitic bowel ailment called nodular disease. When in the advanced stage it is incurable; however, you will obtain some results by giving them small doses of powdered sulphate of iron with their salt. Five grains at a dose two or three times a day is a small dose. They should be well fed, but if many of them are affected and are fleshy, it might be a good plan to make mutton of them.

Sore Mouth.—My lambs that are being fattened are troubled with sore mouth and are seemingly suffering from cold. This may be the result of keeping them in a draft. Have changed feed from oat straw and timothy hay to clover hay and think this has caused sore mouth. G. H. G., Bellevue, Mich.—I am inclined to believe the clover or some irritating weed which is mixed with it is causing sore mouth in your lambs. Investigate to ascertain the cause and remove it. Perhaps you can pick over hay and remove the irritant. Dissolve 1 oz. borax in one quart of water and apply to sore mouths or lips twice a day. It may be necessary to change their feed.

Roup—Contagious Catarrh.—Some time ago I had a flock of 175 fairly nice fowls. Lately they have become diseased, ten have died, ten more are sick and I have 155 left that seem to be healthy. The first symptom of sickness they show is a watery discharge from one eye, the eye soon closes, later nose and mouth discharges a sort of matter-like stuff, grow more dumpy, mope around a few days then die. I furnish them a pan of sulphur and ashes to dust themselves in. They have been fed a food mixture of food stuffs, they have a room 16x24 feet to roost in and another large room to scratch in and so far as I can tell have good care, but am at a loss to know what ails them. I fear it is a contagious disease. Mrs. W. M., Mt. Clemens, Mich.—I am inclined to believe your fowls suffer from roup or infectious catarrh and the sick should be segregated. Keep healthy fowls away from diseased ones as prevention is the best treatment, also bury or burn all those that die. Sprinkle the premises with a five per cent solution of carbolic and use permanganate of potash in drinking water. The most convenient way to give it is to make a saturated solution then put a teaspoonful of it in six quarts of drinking water. It is no bad plan to let your well chickens drink this kind of water. The sick birds should have no other kind of drinking water. If an abscess or pouch forms, open it and touch its center with tincture of iodine once and apply boric acid daily. Keep in mind that cleanliness is what must be observed.

Canine Distemper.—We have a dog 18 months old that has a thick discharge from both eyes and must have some ear trouble for his hearing is somewhat affected. F. B., Pellston, Mich.—Apply one part calomel and eight parts boric acid to eyes once or twice daily. Give him one or two grains of quinine at a dose in feed or any other way you please. He should be kept warm and be well fed.

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Exostosis on Shin.—Last summer one of my horses was snagged on outside of shin and it has left quite a bunch which I have blistered with Spanish fly without reducing it any. J. H. S., Bad Axe, Mich.—You will find it difficult and tedious to reduce a bunch of this kind very much. Apply one part iodine and eight parts lard every two days.

Sweeny.—I have an old horse that is badly sweened in both fore shoulders; this case is of long standing. In the fall of 1910 he injured left shoulder and you prescribed cerate of cantharides and in a few days he went to work. Last December he injured same shoulder and I have applied same treatment, but he is slow to recover. Will his shoulders ever fill out? I. O. S., Henderson, Mich.—If you will persist in applying light blisters and exercise him some he will slowly recover. If he is much lame exercise will do him harm.

Lumps on Skin.—Surfeit.—Have a seven-year-old mare that has quite a number of small lumps in flank and under belly which seem to be of an eruptive nature, but she is not sick. Her skin must itch for she rubs. J. A. W., Elsworth, Mich.—Give a dessertspoonful of Fowler's solution at a dose in feed three times a day. Also salt her well, groom her well and feed some roots.

Indigestion.—Worms.—I have two two-year-old colts which are in poor condition. Have fed condition powders, but without results. Have noticed a few worms in dung they pass and I also have a brood mare that is in an unthrifty condition. C. C., Monroe, Mich.—Your colts should be well groomed twice a day, kept warm and fed more nourishing food. Give 1 dr. ground nux vomica, ½ oz. ground gentian, 1 oz. ground ginger at a dose in feed three times a day. This same medicine will help your brood mare. They should have each a dessertspoonful of salt at a dose in feed night and morning.

Nail Puncture.—One of my horses ran a nail in hind foot a few days ago and our local Vet. treated it, but he thinks the bone of foot may be fractured. D. D., Greenville, Mich.—It is no easy matter to tell whether bone of foot is fractured or not; however, this sometimes happens, the result of puncture. Keep the animal quiet and if wound is still open, apply one part iodoform and 10 parts boric acid twice a day, covering sore with oakum.

Feeding Brood Mare Salvage Oats.—Will you tell me if it is dangerous to feed brood mares salvage oats? On account of them being burnt I am told they are apt to cause abortion. These oats are seemingly free from any musty smell and are dry. E. E. T., Flint, Mich.—Ergotized grain or grasses fed to pregnant mares or cows frequently produce a miscarriage; however, I do not believe you are running any great risk in feeding the oats you mention. If you should notice any of your mares showing any of the symptoms of approaching miscarriage, discontinue feeding salvage oats.

Liver Disease.—I would like to know what is wrong with my ewes. First symptom is dullness, followed by standing with head against wall and when removed would groan as if suffering pain. When walking the head was jerked and each sick one is inclined to pass a whole lot of urine. J. D. A., Saranac, Mich.—I am inclined to believe that the liver may be torpid and the circulation of blood through body sluggish. Give 15 grains nux vomica, ¼ grain calomel at a dose three times a day for two days, then give 1 oz. of epsom salts every 12 hours until bowels move freely. If the head is much affected and much dizziness present give 5 grs. bromide of potash at a dose every two hours. If any of your sheep die examine them after death; this will give you a better understanding of their ailment and be sure to examine the liver and bowels.

Heart and Kidney Disease.—I make a business of fox hunting during the winter months and am now puzzled to know why my six-year-old fox hound gives out. He has been a valuable dog to hunt until lately. Sometimes he works industriously all day and at other times he seems to give out and lay down. He is losing flesh and never drools at mouth, his body gives off a very offensive odor and I have been wondering if his kidneys are not bad. He is larger than medium size and I have not given him any medicine. J. S. M., Luzerne, Mich.—If his bowels are constipated give him 1 oz. castor oil and 2 ozs. olive oil at a dose to clean out stomach and bowels. Also give him four drops fluid extract nux vomica and 30 drops fluid extract of buchu at a dose three or four times a day. Also give him 10 grs. bicarbonate soda at a dose in feed three times a day.

Lameness.—We have a horse that has been lame for some time and has shown trouble in cords, knee and shoulder; he has been swollen in all three parts. Have applied liniment to shoulder and knee; also blistered tendon, but he is yet lame. Have poulticed foot with cow dung. When standing still he is inclined to point foot out in front of body. M. S. G., Rapid River, Mich.—Mix together equal parts turpentine, aqua ammonia and olive oil and apply to sore parts three times a week. Give him a teaspoonful powdered nitrate of potash at a dose in feed once or twice a day.

Indigestion.—For the past 12 months my seven-year-old horse has been out of condition; he could not be called sick, but is unthrifty. Our local Vet. has prescribed for him, but fails to help him much. This horse is inclined to gnaw mangers and wood whenever given an opportunity. He eats plenty, but keeps thin. C. H., Perrinton, Mich.—Give him 1 oz. ground gentian, 1 dr. ground nux vomica, ½ oz. ground ginger and ½ oz. salt at a dose in feed three times a day. Feed him enough well salted bran mash, silage or roots to keep his bowels open.

Nasal Gleet.—Nasal Polypus.—I have a mare 12 years old that has been troubled more or less with discharge from left nostril for the past three years. My Vet. tested her for glanders, but she showed no re-action. Naturally I thought she had cold or sort of distemper and in a short time she seemed to get over it. After a short time it appeared again, the discharge having an offensive odor. Our Vet. examined her teeth and found them all sound. Sometimes the discharge is mixed with blood. J. H. R., Monroe, Mich.—If you will examine nostril looking high up you may find a nasal polypus which, when removed, she will get well. It may be necessary to trephine through bone of face and treat nose from above before a cure can be effected. These sort of cases require the attention of a competent veterinarian.

ONE GAL. LON

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SPECIAL SALE on Poland China Boars, Sows Bred horn Bull Calves. **ROBERT NEVE, Fierston, Mich.**

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THE DAIRY

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RATION LACKS PROTEIN.

I have noticed several grain rations advised, and the mixture was usually to be fed at the rate of one pound to every four pounds of milk or one pound to every pound of butter-fat per week, but this ration is always with silage. Now, we have no silage and wonder if one pound to every four pounds of milk is enough. Please advise me as to feeding cows giving from 24 to 32 pounds of milk per day. We have clover hay, cornstalks, corn and corn meal and bran.

Montcalm Co.

R. R.

The trouble, I think, with this ration is not that one pound of grain per day for every four pounds of milk or one pound of grain per day for every pound of butter-fat a week is not a sufficient amount but the fault is that this grain ration doesn't contain enough to make a balanced ration. Consequently I would not expect the cows to give a maximum flow of milk unless you fed them more grain than you could afford to. In other words, in order to get enough protein you would have to feed more grain than would be necessary to supply the proper amount of carbohydrates, and that would be waste. Now I should say that you discontinue the use of wheat bran and put oil meal in the place of it and feed the same number of pounds as you did of bran, or if you will mix corn cob meal with cottonseed meal, 2 to 1, 200 lbs. of corn and cob meal with 100 lbs. of cottonseed meal, I believe you will find that the prescribed ration of grain will be sufficient. I would prefer to substitute oil meal in place of part of the cottonseed meal but the oil meal is a little more expensive.

SILAGE FROM CORNSTALKS.

I would like to ask through the columns of your paper, whether or not it would be profitable to build a silo and husk the corn with a power husker as soon as the ears are hard enough to put up in a crib, and blow the cut stalks into the silo, together with the shelled corn? This would give me all the hard corn to feed and if properly wet down I think the stalks would make better ensilage to feed than to blow it into a mow and run the risk of having the stover mould.

Macomb Co.

J. M. S.

You cannot make as good silage from dry cornstalks as you can from mature green corn. There is no arguing on that point. And yet there is considerable food value in cornstalks, and you get a large per cent of this value if you feed them dry, providing they are properly cured and fed. Unless conditions are very favorable when they are shredded at the time of husking with a machine husker some of them will spell. We all know that. Now the proposition is to husk them and run the dry cornstalks into a silo. Of course, a large amount of water would have to be mixed with the cornstalks to get them to soften so they would pack and exclude the air to prevent dry mould or rot. Certainly these stalks would be more valuable in this way than they would any other way. Whether there would be enough extra value to pay to put up a silo for this purpose is a question that I am unable to answer. I am positive that where one has a silo and does not have it full of good ensilage corn and has cornstalks, that it will pay him to finish filling it in this way, but to build the silo on purpose for this, I don't believe anybody knows whether it would be a paying investment or not. There is another thing to consider and that is if we were to handle the corn crop in this way the stalks ought to be cut instead of shredded because they would pack in the silo much better. They do have huskers with knives on the head instead of shredders so this could be done. Then another proposition comes up. Is there a shredder on the market that will blow these cut stalks into a silo? I never saw one that I thought would. To be frank about this matter, I have thought about this same proposition myself, but machine men tell me that there is no shredder made that will blow the corn into a 40 ft. silo. They are not built on the right principle. You can't run the blower stack up straight and it has to be run up straight in order to blow the stuff high enough to go into the silo. They are simply intended to blow the corn fodder into a mow. You have to have an especially constructed blowing machine in order to blow the ensilage up into a silo. Of course, this could be accomplished. The manufacturer could make a machine that would do

the business, and if we had one I certainly would like to try it.

Of course, we can get exactly the same results by husking the corn by hand and then running the stalks through an ensilage cutter into the silo, but here we have to husk by hand and we know that in a great many instances it is almost impossible to get help to do the hand husking. Everything must be done by machinery. Men like to run machinery but they don't like to do common hand work. The whole thing is worth studying and it will be tried out sometime. If J. M. R. tries it out we should be pleased to know with what result.

SOME SILO PROBLEMS.

I have been keeping an eye open all of the fall to see if someone would bring up the subject of silo building. Was much interested in W. S., of Cheboygan county questions, as well as the answers and I would like to ask a few. I am thinking of building a silo in the spring. Everything has to be bought, except the stone, and water. What kind would cost the least money, and be of good service? How large ought one to build for a good 120-acre farm? Can one, where everything has to be bought, a mechanic hired to do the work, put up a silo any cheaper than to buy one all ready for use? Are most silos plastered? If not how are they kept from freezing when built outside? Our barn has a ten-foot basement with 18-ft. posts, making 28 ft. from basement floor to eaves. How would it do to build a silo in the barn? How much more would it save than the paint and roof? Would it be any cheaper, and as good, to put up a frame on a wall, as you speak of in answering W. S., put siding on outside, having it put on around, and lath and plaster the inside, than covering in any other way? Are cement silos usually a success? What is their expense compared to others?

Eaton Co.

S. R.

Local conditions are of so much importance in the cost of any particular kind of silo that one from the outside cannot make a very accurate estimate as to the cost. Of course, it is understood that a man can make his own silo, a stave silo, by getting out the timber, if he has it, and get it sawed in 2x6 inch strips or staves. He can get these jointed at a planing mill and by using iron hoops make his own silo that is serviceable and practical and will last for years. But he can buy a better stave silo from firms who make a business of manufacturing these silos. Then again, a man can make a lath and plastered silo and do much of the work himself, and then comes the cement silo, the cement block silo, and the tile silo, and a steel formed silo, and I don't know how many more. I don't think it will be proper for me to tell anyone just what kind of a silo they ought to have. They ought to use their own judgment and take into consideration their own conditions and then select the one which they think will be the most practical for them. If I were going to build a silo on a 120 acre farm I would build it 15 ft. in diameter and 40 or 50 ft. high. If you don't need this amount of ensilage the first year why you don't have to fill it full. If you need more ensilage in a year or two you have your silo already built. Of course, you could build it of less height and then in a year or two more if you wanted to you could put an extension on top of a lath and plastered silo and do it very nicely. I have done the same thing myself.

Probably the majority of silos in general use are the regular bought stave silos. They are the handiest to put up, they are good, durable silos and purchasing one of these ready-made silos is the easiest way to get one.

No one attempts to keep a silo from freezing. In extreme cold weather the silage will freeze around the outside of the silo but it doesn't do any harm, let it freeze. Just as soon as the weather warms up a little bit this silage cleaves off from the wall and falls into main body of silage and it will be warmed up and you can feed it and no harm has been done.

I would not, upon any consideration, build a silo inside the barn. You need the barn space for something else. You can't make the silo fit on the inside of the barn and economize space. Never build anything but a round silo and a round silo don't fit good in a four-cornered barn. You want it outside where it will be handy and out of the way. Built it on the outside of the barn and have the silo chute open into the feed alley. You could build a lath and plastered silo by covering it with board siding on the outside and lathing it on the inside and plastering it with cement, and there is nothing about it to decay or give out. It may be that after a number of years the plaster on the inside will become soft-

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DAIRY ASSOCIATION CO., MFRS.
Lyndonville, Vt., U. S. A.



ened by the action of the silage juice. If it does all you have got to do is plaster another coat of mortar right over that. If you have a cement silo it is the same thing whether it is built of solid concrete or whether it is built of cement blocks. You must plaster them on the inside and the plaster on the inside of a cement silo will last no longer than it will on the inside of a lath and plastered silo. If you keep the lath and plastered silo painted on the outside it will last forever.

Cement silos are certainly a success. How can they help but be a success? If they are well put on a good foundation laid so that they will not settle out of shape, and then if they are plastered on the inside with a rich coat of cement mortar they can't help but be a success.

MATERIAL FOR LATH AND PLASTERED SILO.

I am thinking of building a silo next year and have been reading everything pertaining to silos, etc., but have a question I would like to ask. I believe a lath and plastered silo will be the kind I shall build, because I can get the stuff almost entirely from my farm. If green elm, lath, one-half by two inches, is used is there any danger of the cement plaster cracking from the lath drawing and warping as they season? If I use sheathing lath can it be bent for a 12 ft. silo or must it be cut at each stud? Would it be practical to steam the sheathing lath so as to bend it?

Branch Co.

J. N. H.

I don't believe there will be any trouble at all from the elm lath warping after you get them onto the studding which are only 16 inches apart and the lath nailed to each studding. They will have mighty little chance to warp and after you put the plaster on I don't believe they can warp at all. The plaster will hold them and it will take but a short time for these lath to season out after they have been put onto the studding; but if you had any doubt about it you could wait a few days before you plastered until they had seasoned a little and then plaster them and there will certainly be no trouble.

You cannot bend regular sheathing lath to fit the studding without steaming them. They will have to be cut so that you can nail to each studding but it isn't so much of a job as you think. By piling the boards on top of each other, marking them off and taking a cross-cut saw you can cut these so that they can be put on rapidly. In fact, they can be put on much more rapidly cut short than they can when left long. If you had a suitable steam box fixed up and a steam boiler to furnish steam, these laths could be easily steamed so they would spring to fit the walls; but I think it would cost more than it would to put them on the other way and after they are once on they are just as good. Don't forget to use wires around the outside of the silo between the doors to reinforce the silo. If you do this, you will be perfectly safe.

SETTING STUDDING IN CONCRETE FOR SILO.

Would like to know about lath and plastered silo. Have got elm and soft maple. My idea is to have sawed about 50 soft-maple 2x4's, 16 ft. long, build foundation up to within four inches of ground surface, put 2x4's end for end with cleats on each side at joint, well nailed, then set 2x4's on foundation with couple of laps of heavy fence wire at bottom and then continue foundation up to a little above ground, putting in bottom at same time. Will use fence wire every three feet for hoops, and for lath will get sawed elm strips 1/2 in. thick by 2 in. wide. For outside covering will use corrugated steel roofing and for roof will spike rafters directly to ends of studding covering same with steel roofing. What I would like to know about it summer shrinkage. We know that staves contract and expand. Would like to know what to use for doors, what kind of hinges to use on same. What ought to be a fair cost for silo complete?

B. E. B.

Macomb Co.
I am sure that it will be a mistake to set the ends of the studding into this concrete wall and it is absolutely unnecessary. Water will get in around the studding and the ends of the studding will rot. If you build the wall up above the ground a foot and then put on a circular sill and then toenail your studding to this circular sill it will be cheaper and require less labor. You could put a wire around the bottom which would be a good thing but the circular sill will hold against all pressure.

The clapboards on the outside will shrink a little in the summer time but this will do no harm. The plastering on the inside will not shrink.

Use common matched flooring for the doors, make them double with tarred paper between. Have them running crosswise. You don't need any hinges. The great potency. In the western range

doors are made to fit inside and you put them in their place as you fill the silo and take them out as you feed down the contents. To have the doors on hinges would be a nuisance. Not only that, but the iron hinges would rust out in a short time. As I have stated many times before, it is almost impossible to figure out the cost of a silo because one does not know local conditions.

HEATING WATER TANK WITH STEAM.

We are at present using a tank heater to heat the water in the stock tank. We have a boiler in the creamery. Would it pay us to pipe steam from boiler in creamery to stock tank, 150 feet, and how could it be done?

Kent Co.

A. S. B.

It would be a simple matter to heat the water tank with a steam pipe from your boiler. You would want to put it under the ground where it would not freeze and run it up into the water tank and then have a return pipe. Simply put in an elbow and turn the pipe back down through the bottom of the tank and back to your boiler again. Now the steam would circulate through this pipe and would warm the water in the tank. This is exactly on the same principle as heating a house with steam. Steam is forced through a pipe up to the radiator in the room to be heated and then a return pipe takes the steam back again to the boiler. This would undoubtedly be a good way to heat a water tank but it would be much more expensive than it is to heat it with your tank heater. By running the pipe so far lots of the steam would condense and it would take a lot of fuel to furnish the steam to heat the water tank. While just a little fire every day in the tank heater will keep the water warm enough so that it will be all right for the stock. Of course, after you got it rigged up once it would be less bother to heat the tank with steam and you wouldn't forget to build a fire in the tank heater. It would also do away with any danger of fire. It wouldn't take a very large amount of steam to keep the water tank from freezing and consequently only a small pipe would be necessary.

DAIRYING IN THE FRUIT BELT.

In the matter of land values in Michigan there is certainly no attempt to violate the Sherman anti-trust law for the value of farms are exclusively variable. Prices oftentimes seem to depend quite as much on real estate agents as the inherent value of the soil and location.

In the fruit belt of Michigan it is not always the land that grows the fruit but the adjoining land which should be lower in altitude to afford air drainage. The prices of these lower, or valley lands, however, do not decline with their lower altitude. When the winds tempered by lake Michigan reach the fruit land there must be some place for the cold air of the land to go so it hikes down hill into the valleys and hollows where it does not interfere with the fruit trees nor anything else for that matter. These valley lands make valuable soil for general farming and particularly dairying. Oftentimes a man discovers he has not the fruit growing temperament and he builds a silo, gets a dairy herd and lives happy ever afterward. The fruit man has more of the speculative disposition and if living in the city would invest in a few highly speculative stocks just to have his blood tingle when the market was favorable. The dairyman prefers the "safe and sane" surething methods, for what he feeds today he harvests and sells tomorrow. With the fruit man one hears of lime-sulphur, Bordeaux, baskets, the yellows, the commission man, and the question of securing help. With the dairyman it is butter-fat percentage, balanced rations and breeding associations and from his conversation the dairyman feels that he has just a trifle better hold on the industrial ladder than the fruit growing neighbor whose bank account often bulges with large deposits as compared with the dairyman's smaller but more numerous accretions. That statue, the wounded lion, that was erected in memory of the Swiss guards, might have its duplicate in industrial life in Michigan in honor of the work done by our officials in establishing breeding associations; only the lion should be a bull, not wounded, but very much alive. The interest and good work in these breeding associations is manifest now and will become more and more so as years go by. In Oceana county some excellent judgment has been used in securing not only good individual sires but blood of the great potency. In the western range

country stockmen are willing to spend money for good bulls and this seems to be Article "A" in the covenants and agreements of the breeding association.

Mr. Dooley said at Newport you must not only have the money but you must look to have it, likewise these bulls not only have the pedigrees but they look to have it. I started to write about some of these valley farms in and between the fruit ranges where some good herds of Jerseys are found. J. B. McCloud, an old time neighbor of Joe Wing, of Champaign county, Ohio, has a well bred herd of Jersey cows which are also good producers under good care and management such as daily weighing and careful testing. The stable fittings are entirely home made and ingenious to an extent beyond most manufactured articles. Photographs of Mr. McCloud's cattle are taken near a pond which imprints on the negative not only the original but the reflected image on one plate, thus making two pictures. Some way these dairymen dealing with animal life in all its phases seem to be more sympathetic and, as musicians say, have a more "delicate touch" than those engaged in other occupations.

There is a portion of Oceana county south and west from Shelby, settled largely by Norwegians. From this community many sons and daughters have gone to the Agricultural College and other institutions of learning. When it comes to modern farm homes and up-to-date farm methods this section has them. Co-operative cash feed buying, a breeders' association, cows in the advanced registry, tuberculin testing and a co-operative creamery, are all in evidence. G. O. Anderson has a barn with the King system of ventilation, model stalls, covered manure shed, silos, gasoline engine, running water and a fine herd of recorded cattle kept in most excellent condition. Mr. Anderson grows alfalfa, that marvelous plant which seems to mean so much from a feeding standpoint. Dow, of Midland, the manufacturing chemist and eminent as a horticulturist, says: Alfalfa and apples will work the redemption of the light soils in Michigan. In England any man who achieves distinction or confers blessings on his fellowmen by his attainments is designated as "Sir," a title of nobility. I always feel that any man who successfully introduces alfalfa into his community deserves well of his fellowman and confers a blessing. Just what title of nobility may be granted to make the title fit the achievement remains to be determined. "Sir" seems to be totally inadequate and just extraordinary. Ordinary governors are alluded to as "his excellency," so some other title must be chosen. In many places in Oceana county marl is abundant and promises to be a feature of soil improvement. "Out there in Kansas" it was Co-burn who co-ordinated corn, alfalfa and meat into such wonderful possibilities and in Michigan the men of vision see the possibilities of wealth in the marl to make alfalfa flourish to agglutinate the light soil particles to hold moisture and to act as a nitrogen fixer. It is the protein in food that costs. All children like the albuminoid of eggs and lean meats because their growth calls for muscle making foods. The dairy cow, the calf, pigs and sheep find that same element in alfalfa and hence are so eager for it. One of Remington's western pictures, that artist so much admired by Roosevelt, depicts the prospector with faithful pack animal and dog accompanying him, searching the rocks and sands for gold. Just now gold is not so important to the world as the protein foods. It is for this reason that the Michigan prospector sees in the marl deposits that will make the legumes or nitrogen gatherers flourish and grow and who also sees in the alfalfa the greatest possible producer of the albuminoids of any plant now known to us. Shiawassee Co. JAS. N. MCBRIDE.

DAIRY NOTES.

Careful averaging has shown that a good dairy cow in the course of a year produces food equal to from 3,000 to 4,000 pounds of beef. This illustrates why beef production is confined to the frontier and dairying prospers on more expensive land.

Calves of the better class, so plentiful in the Chicago stock yards not long ago, are usually seen now in only moderate numbers, and prices have experienced some good advances.

A well-informed man in the butter trade accounts in great part for the prevailing scarcity and high prices of butter. "There is no shortage in the milk supply. But the Chicago milk dealers are paying \$1.55 per can for all of the milk delivered to them, and as farmers can do better by shipping milk to Chicago than by furnishing it to the local creameries, most of the milk is being shipped to the milk trade."

Build Your Silo of Concrete



On practically every modern and up-to-date farm in the country, concrete is the general choice for silo building.

A concrete silo is weatherproof, fireproof, ratproof—and practically everlasting. The airtight construction, together, with the perfectly smooth interior, allowing the contents to settle evenly, insures perfect silage. The acids formed by the natural fermentation of the silage which act quickly on wood or metal have no effect whatever on concrete.

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meets with the unhesitating approval of every man who has investigated the cement question thoroughly. It is undoubtedly the strongest, most durable and most economical Portland cement that has ever been placed on the market. It is the best cement for building barns, water troughs, corn cribs, fence posts, etc. The best dealer in your town handles Lehigh. Don't forget the name—Lehigh—make it a particular point to ask especially for Lehigh and be absolutely safe. Look for the Lehigh trade-mark.

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DAIRY FARMING ON RUN DOWN LAND.

One way of keeping up the fertility of a farm is to purchase fertilizers to replenish the stores of the elements that have been depleted by unwise cropping. In localities where a farm lies in close proximity to a city where manure can be obtained from the stables at a reasonable cost without any considerable sum added for transportation, the expense of keeping a farm up to a reasonable degree of fertility may not be great. Instances where this is practicable are the exception rather than the rule and to make profitable use of commercial fertilizers requires both cash and knowledge of just how to apply them to particular fields and soils so that the desired results will be obtained.

All of this may be necessary under some circumstances but where a farm is adapted to grazing and the conducting of a dairy, the purchase of materials for fertilizer need not be large. Of course, it must not be taken for granted that just keeping cows without using a little common sense will maintain the fertility of a farm. Dairy farming can be so conducted that the land will steadily degenerate until the place is on the verge of ruin or it can be made to improve the soil conditions year after year. Instances may be pointed out in almost any locality where dairy farmers have taken charge of farms that were almost too poor for any purpose and brought them up to a point where they were of real worth. The men who performed this seeming miracle were content to call the living which they annually took from the place and the increased value of the property their profit.

Keeping a dairy on any farm should mean that the fertility of that farm is being increased. And it will be if the work is carried out according to a sensibly arranged program. There should be a regular rotation of such crops as corn, oats, clover and timothy and in pasture one-third of the time. Every bit of manure should be saved and freely applied, both at time of planting and as a top-dressing. Commercial fertilizers can be brought into good play here if the soil has been depleted of its mineral elements. Fertilizers that contain the required elements must be used or one will be wasting their money. To rejuvenate a farm through dairying, care must be used to avoid over stocking the place. A farm that will support thirty cows will not keep fifty, and to attempt to keep more than a farm will support means that the cows will be starved or that feed must be purchased from outside and both of these plans are mighty poor economy. It is better to pick out the poorer members of the dairy herd and sell them and keep only so many as the farm will support and leave a little as a little bit over. It does not pay to farm up to the very limit of the soil. Do not take off all that the soil will produce but leave a little as a sort of a bank account.

One of the great mistakes in dairy farming is in having too much land. It is better to have a few acres and care for them properly than to own a large tract that is only half cared for. It is better to seed part of the land to grass and let it go until the remainder has been gotten into proper shape. Then more of the land can be taken in hand, more cows secured and then additional profits can be had. The proper carrying out of such a program as this will work wonderful results on many a run down dairy farm. Ohio.

SUBSCRIBER.

OLEO TAX HELPS CONSUMER.

We have seen customers purchase oleomargarine in five-pound lots and we have yet to hear a single one of them call for oleomargarine when buying this material. Most of them, in fact in nearly every instance when they go to the grocer ask for that special priced butter, and every act on the part of the dealer seems to be directed towards keeping the identity of the product as much as possible in the background. Uncolored oleomargarine is bought generally for what it is supposed to be, is just as palatable, is just as high in food value, in fact, is the identical product indeed minus the few drops of coloring matter for which the consumer pays approximately ten cents. To our mind the revenue tax of ten cents a pound does not materially increase the price on the colored article but if vigorously enforced will assist in securing the uncolored product for the consumer at a price which is within reason and which is reasonably near the cost to manufacture.

FLOYD W. ROBISON.

A Hold-Up

An Oppressive Trust.

Before the Coffee Roasters' Association, in session at Chicago on Thursday, Thomas J. Webb, of Chicago, charged that there is in existence a coffee combine which is "the most monstrous imposition in the history of human commerce."

There is very slight exaggeration about this statement. It comes very close to being literally true. There is a coffee combine in Brazil, from which country comes the bulk of the coffee used in the United States, which is backed by the government of Brazil and financed by it, which compels American consumers, as Mr. Webb said, "to pay famine prices for coffee when no famine exists."

The worst thing about this is that the consumers of the United States have been compelled to put up the money through which this combine, to further cinch them, has been made effective. There were formerly revenue duties imposed upon all coffee entering the United States. Those taxes were denounced as an imposition upon the people; as taxing the poor man's breakfast table, and the like. The taxes were removed. Immediately thereafter Brazil imposed an export duty upon coffee up to the full amount of the former customs taxes in this country. The revenue which formerly went into the treasury of the United States was diverted to the treasury of Brazil. The poor man's breakfast coffee continued to cost him the same old price.

But this was only the commencement. The "valorization" plan was evolved in Brazil. Through this plan the government, using the revenues derived from the export duties for the purposes, takes all of the surplus crop in a season of large yields and holds it off the market, thus keeping the supply down to the demands of the market and permitting the planters to receive a much higher price than they would otherwise have done.

The United States consumes more Brazilian coffee than does the rest of the world. We are the best customers of Brazil, and Brazil buys little from us. Now Brazil is promoting, financing and maintaining a trust designed, and working effectively for the purpose, to compel American consumers to pay an exorbitant price for the coffee they use. What is the remedy?—Seattle Post-Intelligencer—Nov. 19, 1911.

He did

"Compels"

tax Americans

get this clear

Then this

Standard statistics of the coffee trade show a falling off in sales during the last two years of over two hundred million pounds. Authenticated reports from the Postum factories in this city show a tremendous increase in the sale of Postum in a like period of time.

While the sales of Postum invariably show marked increase year over year, the extraordinary demand for that well-known breakfast beverage during 1911 is very likely due to a public awakening to the oppression of the coffee trust.

Such an awakening naturally disposes the multitude who suffer from the ill effects of coffee drinking to be more receptive to knowledge of harm which so often comes as a result of the use of the drug-beverage, coffee.—Battle Creek Evening News—Dec. 19, 1911.

POSTUM

is a pure food-drink made of the field grains, with a pleasing flavour not unlike high-grade Java.

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ESTABLISHED 1843.

THE LAWRENCE PUBLISHING CO.

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The Lawrence Publishing Co.,
 Detroit, Mich.

DETROIT, JAN. 20, 1912.

CURRENT COMMENT.

Michigan's Wool Product. That the farmers of Michigan have a very considerable interest in the contemplated revision of Schedule K, is shown by the statistics of sheep and wool production in the state recently published by the Bureau of the Census. These statistics show Michigan to be ninth among the states of the Union in the number of sheep maintained.

The number of sheep in Michigan of shearing age in 1910 was 1,545,241, as compared with 1,625,930 in 1900. The average number of sheep kept on farms, upon which sheep are maintained was 28 in 1910, as compared with 26 in 1900. The number of farms upon which sheep were maintained in 1910 was 54,865, or 26.5 per cent of the farms in the state, as compared with 63,339, or 31.2 per cent of the farms of the state in 1900.

The weight of the 1910 wool clip was 11,965,405 lbs., as compared with 12,202,844 lbs., in 1910. The average weight per fleece increased one-half pound in the ten-year period, being seven and one-half pounds in 1910, as compared with seven pounds in 1900. The value of the clip for 1910 was \$3,428,320, or \$2.15 per fleece, as compared with \$2,454,399 in 1900, or \$1.42 per fleece. This was due to the increase in the farm price for wool from 20 cents per pound in 1900 to 29 cents in 1910.

It will be seen from these figures that the farmers of the state found little profit in producing wool at 20 cents per pound, and that as a consequence the number of sheep maintained in the state shrunk considerably during the decade, while there is a marked decrease in the percentage of Michigan farms upon which sheep are maintained. Of course, the revenue from the lamb crop is a fruitful source of profit for the Michigan sheep owner, and the market value of that crop has a very considerable bearing upon the increase or decrease of the sheep industry within the state.

The fact that two factors enter into the cost of maintenance and the profit derived from keeping sheep also increases the difficulty in determining just what the cost of producing wool may be, but it would appear that no more fair basis could be fixed in determining the price at which farmers could afford to produce wool, than the fact that the number of sheep in the state decreased rapidly when

fleece wool of the average Michigan quality sold around 20 cents per pound. The last state census, taken in 1904, showed the sheep of shearing age in the state to number 1,385,530, a big drop from the figures of 1910, as shown by the national census.

Michigan is second among the states east of the Mississippi in its number of sheep, being exceeded only by Ohio, for which reason the wool growers of the state should appeal to their representatives in congress to exert every effort to protect this industry, by seeing that it is given a square deal in the contemplated revision of Schedule K.

It is not too early for the farmers of Michigan to be making their

plans for the ensuing year. It is essential that plenty of time and thought be given to the matter of planning the season's campaign since only by this means can the farm be made to produce a maximum of profit, giving due consideration to the important matter of conserving soil fertility.

A review of present market conditions shows that there is a demand for a wide range of farm products at profitable prices. A great many farmers, however, find themselves handicapped by the want of home-grown feeds to maintain the live stock kept on the farm. Where this condition prevails as largely as it does this year, the feed bill makes heavy inroads in the what would otherwise be profit from the sale of merchantable products.

In this issue we have sought to place prominently before the reader the idea that clover is the foundation of successful agriculture, and alfalfa a secondary crop which should receive attention from the farmers of Michigan, while corn is still "king," and with plenty of this great forage crop and an abundance of clover growing upon the farms of the state, the conditions above commented upon could not obtain.

So, whatever the campaign which is outlined for the coming season, provision should be made for the re-establishment of the clover crop in its legitimate place in the crop rotation, the growing of alfalfa, at least upon an experimental scale, and the growing of sufficient corn to provide plenty of feed for the animals maintained upon the farm. Present conditions are an unanswerable argument to the effect that it does not pay to limit the production of these crops for the growing of more cash crops upon our farms. They are the first essentials and should be first planned for in outlining a cropping system for next year upon every Michigan farm.

The High Cost of Living in France.

The high cost of living has been the subject of much agitation in France as well as in this country during recent years. So pronounced has been the public unrest on this account that the French government ordered an official inquiry for the purpose of discovering the cause of this disquieting state of affairs. No report has yet been made regarding the success of this inquiry, but an important publication was recently issued by the French general statistical office, which deals with the gravity of the increase in food prices and the causes of such increase, and also reveals the measures taken by the government to stop the continual rise of prices, which has been general since 1887 and very marked since 1904.

The bulletin of economical and social intelligence, issued by the International Institute of Agriculture, in its October number has an article based on this publication which summarizes the conclusion of experts investigating the matter with regard to the contributory causes of and best remedies for this condition. The causes to which the rise in price of food stuffs is attributed are, some of them, conceded to be temporary, such as the influence of disasters which have been affecting agriculture for two years, including floods, poor crops of wine and wheat, unprecedented drouths and epidemics raging among a large proportion of herds of cattle in the country. Also it has been ascertained that the price of many commodities has increased in proportion to an increased demand, such as milk, butter and eggs, which are consumed to a much greater extent than formerly, owing to an improvement in the condition of working classes, and also to some degree to a new medicine and hygiene fad, under which many persons are limited largely to a milk and egg diet.

Other points brought out as contribu-

tary to the rise in prices are the falling off in the stock of French cattle, the rapid increase in the wages of agricultural laborers and the reduction of their hours of labor. Also the old reason of the depreciation in value of precious metals due to an abundance of gold, is given as a contributing cause for the general rise in prices. The fact is also mentioned that the agricultural co-operative societies, which have centralized producing forces that were formerly scattered, may impose a regulating influence in commerce. The co-operative creameries are mentioned as a case in which stability of price is maintained, while at the same time improving the quality and quantity of production.

But the conclusions of the French government as to a remedy are perhaps more interesting in this connection. These measures looking to relief are: first, in facilitating the importation of cattle from other countries, principally Argentine and Canada, and rendering the transit of agricultural produce and fresh fish to inland markets easier and cheaper. Special regulations will also be applied to the importation of corn for feeding cattle. The institution of rebates in the tariff on goods brought into a city from outside sources, which is levied in France, and the study of the regulation of the markets and slaughter houses. The French government has also introduced a provision into the finance bill, authorizing the opening of municipal or co-operative bakeries, butcher shops, etc., for the purpose of regulating prices. In order to prevent disaster to existing commerce in these lines, the bill provides that only one such co-operative institution for each 5,000 inhabitants may be established.

This French investigation and its remedy will be watched with interest by the people of many other countries, where the question of the high cost of living is a serious one at the present time.

Rural Carriers to that through the influence of a sportsmen's organization in Western Michigan a ruling has been made by the postoffice department permitting the rural carriers to scatter grain for the maintenance of game birds, such as quail and partridge, the grain to be provided by the organization. Undoubtedly this measure will prove a means to the end of preventing the rapid decimation of these birds during the exceedingly cold winter weather when the ground is covered with snow, making it doubly difficult for such birds to dig up their own food supply.

While this beneficent move may be due to a selfish interest of these sportsmen in the future game supply, it is none the less commendable. It is a plan worthy of emulation by the farmers of the state in sections where hunting is discouraged rather than encouraged, as a means of preserving these beneficial game birds. Many a farmer could enable a flock of quail, which he may know to be "at home" on his premises, to live through the winter by supplying them with just a little grain at a critical time. Such an act would at once be good business economy, since these birds will eat many weed seeds and insects during the season, and a humane act which would be its own recompense.

The State Corn Show.—The eighth annual meeting and show of the Michigan Corn Improvement Association will occur at Kalamazoo, Jan. 29 to Feb. 3 inclusive. For particulars write Sec.-Treas. L. J. Bradley, Augusta, Mich.

HAPPENINGS OF THE WEEK.

National.

Postmaster Hitchcock has announced that he will recommend to congress that the government acquire the telegraph systems of the country. Mr. Hitchcock states that a statute enacted some forty years ago gives the government the right to take over the telegraph lines and that he believes such an acquirement could be worked to the advantage of the government, and also bring to the people of the country a superior service to that which is now rendered. The proposal was a surprise to the telegraph interests as well as official Washington.

The fight in Detroit over the street railway franchise is attracting attention in money circles. The establishment of a three-cent fare upon a franchise basis is a new departure in street railway financing and bankers are skeptical about the outcome, knowing that other cities will demand similar terms from their railway companies, which will necessarily diminish the earnings of money invested in this kind of property.

There is considerable talk and discussion of a coal strike throughout the anthracite coal region. The United Mine Workers of America will meet in Indian-

apolis this week. On the 31st day of March the conciliation board, which was inaugurated in 1903, following the strike of 1902, and which has aided in the settlement of some 200 disagreements between the operators and miners, will come to an end. Whether the board will be extended will depend upon the action of the miners at their Indianapolis meeting and of the employers' association. The probabilities are that should the miners refuse to continue this arrangement for the settlement of grievances that a strike will be called.

Thirty-four persons were injured, several of them seriously, on a Big Four train south of Corey, Ohio, Sunday. Two coaches were turned over and thrown down a slight embankment. The cause of the wreck was the spreading of rails.

Forty men, two women and four children on board a tug and four ice barges are in a perilous plight on Hudson river off the coast of Hastings-on-the-Hudson. The great ice flow renders the boats helpless.

A review of the iron and steel trade for the past year shows an unusual volume of exports during the past calendar year, the total amounting to \$285,000,000 worth. The United States ranks third in the amount of iron and steel exported, the United Kingdom and Germany ranking first and second respectively.

In the suit brought against the Chicago packers, Judge Carpenter, who is hearing the case, has allowed the prosecution the privilege of examining the books of the beef concerns.

Robert Isham, a farmer living near Gaylord, Mich., was frozen to death last Friday morning at the door of his home where he lived alone.

Mrs. Louisa Morey died at the home of her daughter in Adrian last Friday at the age of 102 years.

It is announced by the state tax commission that the rate of taxation under which railways, telephone and telegraph systems, and other public service corporations, are assessed is \$20.71 as compared with \$20.53 a year ago. This is the highest rate since the ad valorem system of taxing these corporations was started. The total taxes from all sources in the state is to be \$39,315,696.16, which is an increase of \$3,605,190.51 over last year.

The importation of Japanese laborers to take the place of Mexican laborers at Hayden, Ariz., resulted in a race war at that place, in which the Mexicans attempted to drive the Japanese laborers out of the town.

A bill has been introduced in congress, appropriating \$50,000 for the erection of a monument overlooking the Panama canal in commemoration of the four hundredth anniversary of the discovery of the isthmus of Balboa, in 1513.

Because a number of his appointments did not agree with his party organization, Mayor Shook, of Lima, Ohio, a socialist, was read from his party at a mass meeting January 7, and promises to resign his office.

Loss estimated at \$50,000 resulted from a fire in a manufacturing plant at Petoskey, Mich., January 12. Another manufacturing plant at Kalamazoo was destroyed in the same manner with a loss of \$25,000.

Foreign.

The Spanish Cabinet resigned Sunday. A difference with King Alfonso in regard to the execution of rioters who caused disturbances last September, is the cause for the resignation. The cabinet recommended that the sentence of death pronounced by the courts against seven rioters be commuted, except in the case of one, whereas the king asked that all be commuted. The radicals had, during the trial, attracted much public attention to the case in order to confuse and embarrass the government, which they evidently succeeded in doing. It is not yet learned of whom the personnel of the new cabinet will consist.

The thirteenth annual meeting of the convention of Canadian Forestry Association under the patronage of the Governor-General, will be held in the Parliament buildings at Ottawa, February 7-8.

An engagement between an Italian cruiser squadron and Turkish gunboats in the Red Sea ended in a victory for the Italian fleet, according to a recent report. All the Turkish ships were sunk.

CROP AND MARKET NOTES.

Eaton Co., Jan. 12.—Zero weather, and 15 below; some snow, but not enough for sleighing; badly drifted in places. Not much doing on the farm, except the necessary chores. Mercury has dropped to two above or several below zero every night for about ten days. It's the harvest time for plumbers and ice dealers. Wheat, 90c; beans, \$2.10; oats, 45c; rye, 90c; corn, 65c; potatoes, 85c; butter, 24c; eggs, 24c; hogs, \$5.25; cattle, \$3.50; calves, \$5.75; sheep, \$2.50; lambs, \$3.50. Local creamery paying 38c for butter-fat. The severe weather has cut down the supply of cream very noticeably, few stables being warm enough to keep cattle comfortable in such weather.

Saginaw Co., Jan. 3.—After the worst fall in several years we have settled winter weather, with hard roads and good sleighing. Many crops of beans are still in the field, while those who harvested them got little net return after paying expenses. Nearly all sugar beets are delivered. Those farmers who still have beets out are taking advantage of the good roads to rush them in. Poultry prices for holidays were good. Turkeys scarce and high. Eggs and butter extra high. Feed high. Many farmers sold hay at high prices in the fall, expecting to use bean and corn fodder, which was disappointing both in quantity and quality after wet fall.

Sanilac Co., Jan. 10.—Winter weather, with the thermometer several degrees (Continued on page 69).

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 twice a month. Every article is written especially for it, and does not appear elsewhere



Typical Peel Fisherman.

THE Isle of Man, that thirty-by-ten-mile fairyland of Nature in the Irish Sea, is the geographical focus of the British Isles. It is almost equally distant from England, Scotland, Ireland and Wales. A five-hour sail will encircle the island, and it can be quite thoroughly traversed in a summer holiday of a week.

Because of its charming scenery, its popularity as an English health and pleasure resort, and its equable climate, the Isle of Man has been called "a pocket edition of Nature bound in green and gold"—"the play-ground of the British Isles"—"a southern isle in a northern sea." It is said to be of earthquake origin and it would seem that old ocean has seldom, in a playful volcanic mood, tossed above its waters a more beautiful bit of island territory.

The scenery is not of the imposing, majestic order but is charmingly picturesque in landscape and shore, hill and waterfall, glen and sunset. There are all kinds of physical features, but in miniature. One of the legends in which the island abounds is that the Isle of Man was first formed as a home for the fairies, or "little people."

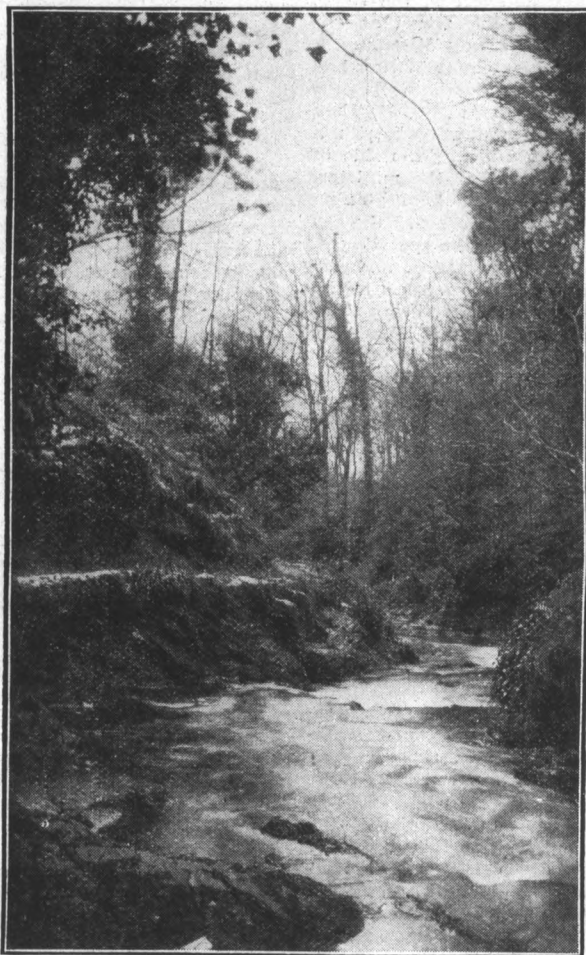
Snaefell, the highest summit is but two thousand feet. Tiny rivers lisp in under-breath through deep glens of fern and yellow gorse. Little farmsteads, with their whitewashed cottages, smile out from the soft plush-green of the slanting fields. It is for its glens that the island is perhaps the most noted.

Among these is Groudle glen which contains the Cliff Coast railway, the smallest

MANXLAND—THE BEAUTIFUL ISLE OF MAN.

BY ALICE JEAN CLEATOR.

"A Southern Isle in a Northern Sea."



Glen Maye—One of the Island's Many Charming Bits of Nature.

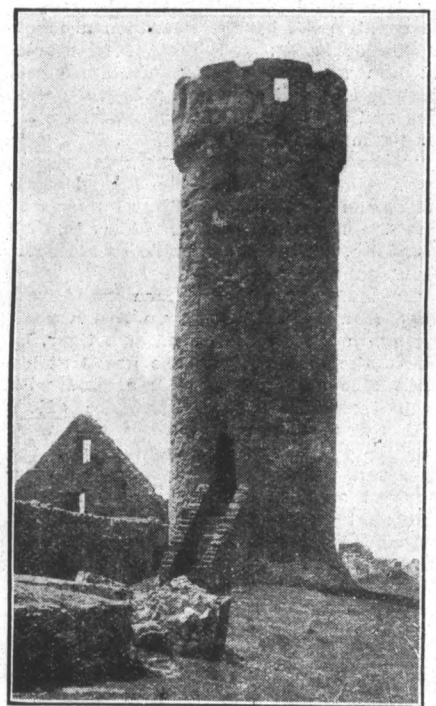
in the world. This glen is startlingly beautiful with its fern-embroidered canyons, mimic waterfalls and walks thickly fringed with fuchsia trees.

Sulby glen has been called the "Manx Switzerland." A day spent here lingers in memory like an enchanted dream. In

July its "curraghs" are pink with the

Adam and Eve flower. Its ravines look up to heather and gorse-covered heights. Up the glen is a long vista of two miles. It is from this glen that Hall Caine secured the "local color" for some of his most striking scenes in "The Manxman."

The Isle of Man seems to possess a flora peculiar to itself. English visitors are



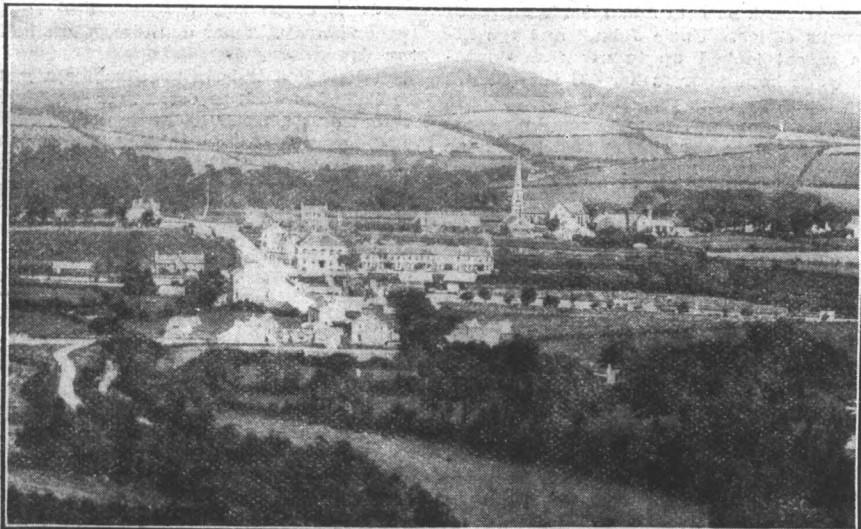
Round Tower of Peel Castle.

much interested in its profusion of flowers which are alien to the British Isles. Among its plants and flowers are the red fairy-flower, blue sea-quill, yellow gorse, red heather, sea-pinks, sea-campion, sheep's bit, wild sage and white-flowered sea-kale.

The Isle of Man is practically independent in government, for it has its own laws. Its Tynwald Court claims to be the most ancient representative assembly in all Europe. The English crown has but a very limited control over its government. Each fifth of July "Tynwald Day" is held at St. Johns, and from Tynwald Hill the laws are read to a vast assembly of the Manx people.

Douglas, the metropolis, is a modern little up-to-date city of twenty thousand. In summer, when the tide of English "trippers" is at its height, the population often reaches one hundred thousand. At that time the streets and promenades, with their crowds of pleasure-seeking humanity, are said to be one of the sights of Europe. The Palace ball-room is the largest in the world; its floor, which is laid in parquetry will accommodate one thousand couples. Its audiences often number ten thousand.

Peel, on the west coast is one of the most picturesque towns of Great Britain. It is the seat of the Manx fishing trade. With the exception of Cardiff, Peel is the smallest city of the British Isles. It is given this distinction by the Cathedral of Peel Castle, a massive ruin of antiquity. (Continued on page 63).



City of St. Johns, where Tynwald Celebration is Held.



Morning Scene in an Isle of Man Fish Market.

THE BACHELOR UNCLE

BY EVERITT McNEIL.

"There was a fire blazing at the guardhouse, and around it were crouched a half a dozen soldiers, shivering and cursing the cold and the rebels that made such hardships necessary. These all laughed loudly at the sight of grandsire, who looked the picture of a great country gawk half dead with fright, as he stood trembling between the two soldiers and stammered out his explanations to the officer of the guard as to how he had been to Boston to see his sweetheart and wanted to get back on the farm in time for the morning's milking, and thought he could sneak by the guard on account of the darkness; and how, if he would let him go, he would bring him some fresh butter and eggs and a bag of potatoes and a couple of chickens 'as sure as his name was—"

"Jonathan Delvin, the most dangerous spy in the rebel army!" said a sneering voice, and Lieutenant Wilton stepped out into the light of the fire and confronted grandsire, a triumphant smile on his dark countenance.

"At sight of the hated face grandsire's huge frame straightened up like a steel spring, and, with the bound of a tiger, he seized the musket from the guard at his right side and, swinging it around with such tremendous force that the officer and three of the startled guard were hurled to the ground, sprang over the fire, and vanished, with the speed of a terrified stag, into the darkness beyond. The next instant a great splash told the astounded soldiers that the daring man had plunged into the waters of the Charles River, on the banks of which the posts were stationed.

"Lights!" shouted Lieutenant Wilton, wild with rage. "To the boat! A hundred pounds to the man that will bring him in dead or alive! He can not escape! The man does not live who could swim the Charles River tonight!"

"Some of the soldiers seized torches, and, rushing to the river bank, held them high above their heads for their comrades to shoot by their light; others sprang into the boat moored near at hand, and pushed out into the turbid waters. The flaring torch lights showed the river filled with great cakes of ice; and even the hardened soldiers shuddered as they heard the groanings and crunchings of the ice and thought of the daring swimmer. Once the soldiers on the shore caught sight of a dark object, like a head, bobbing up and down between the ice cakes, and fired shot after shot in its direction, but the darkness was too great to know the result of their aim. The boat was soon forced to return to the shore, with its sides nearly crushed in by the ice.

"After a couple of hours' constant patrolling with lanterns and torches up and down the banks of the river, Lieutenant Wilton returned to the guardhouse, confident that grandsire's life had gone out in the cold waters. The sight of grandsire coming from Boston had sent a chill through his heart. Had grandsire seen Mistress Betty? Did he know of the wedding tomorrow night? From the first Lieutenant Wilton had feared the daredevil American, with the strength of a giant in his great frame. He would have preferred to have seen him hanged as a spy, but the icy water of the Charles River was not a bad executioner on a night like this! Now he had a pleasant story, the tale of the capture of and death of her rebel lover, to tell Mistress Betty on her wedding day. Lieutenant Wilton was happy, as a man had a right to be on the eve of his marriage with the woman he loved.

Chapter XI.

"At 9 o'clock the guests began gathering in the great house on the hill overlooking the Charles River, where Goodman Landys had lived with his daughter since coming to Boston. The rain still fell steadily, and the cold wind seized it and hurled it in sheets of sleet against all who ventured into the inky blackness of the stormy night.

"In her room sat Mistress Betty, dressed in her wedding finery and attended by her maids. It had seemed like a sacrilege to clothe herself in these garments, when her heart went not with her hand. There were hectic spots in the centers of her white cheeks, and she started nervously at every unusual sound from without. The wind moaned dismally and hurled the frozen rain violently against the window panes. In the lull of the storm she could hear the crunchings of

the ice cakes in the river, and the sound made her shiver, as if her own heart was being ground between the pieces. A wall of the wind louder than usual caused her to call out in fear. To her ears it had seemed a cry from the dark river. With unspeakable agony she had heard the cruel lips of her fiancé tell of the capture of grandsire, and of his mad plunge into the Charles River; yet in spite of all, her heart bade her hope. Had he not promised Aunt Dorothy that he would be at the wedding? And to keep that promise she almost believed that Jonathan would come from his icy grave in the river.

"There was a knock at her door. It was a message from her father. The bridegroom had come, the wedding guests were assembled, the minister was present; all were awaiting the coming of the bride.

"Mistress Betty went slowly down the broad stairway, and into the large room where the ceremony was to take place. As she entered the room the great clock in the hall began striking the hour of ten. Her eyes went quickly from one face to another until they had circled the room. He was not there! She felt that she would recognize him in any disguise.

"He was dead! Lieutenant Wilton had told the truth!

"For an instant her form swayed. Then she straightened up, and walked with a stately step to her station by the side of the bridegroom in front of the minister. In the hush that preceded the beginning of the sacred ceremony she heard the cry of the wind without, and the pounding of the rain on the window panes, and the far off crunchings of the ice cakes in the river; and, at the sounds, her heart shivered as though a cold, wet hand lay upon it.

"At the first words of the minister a chill swept through the room. All felt the cold, and the flames of the tall candles flared. Then the curtains of a window parted, and the giant form of grandsire stepped into the room. The water ran in streams from his clothing; his face was ghastly in its paleness; and there was a look in his glowing eyes before which the men fell back and the women covered their faces and shivered. Straight to the side of Mistress Betty strode the tall figure.

"I have come for my bride!"

"A moment the glowing eyes looked steadfastly into the face of Mistress Betty, who stood staring, white and trembling; and then the great arms caught her up and bore her swiftly toward the window.

"A pistol shot rang out. In the deathly stillness the sound was like a clap of thunder. 'My God! It is Jonathan Delvin! Seize him! Kill him! Don't let him escape,' and Lieutenant Wilton, dropping his smoking pistol and drawing his sword sprang toward grandsire.

"Then women screamed and fainted, and men drew their swords and rushed madly toward the retreating man and woman. Again the curtains of the window parted, and a pair of strong arms seized Mistress Betty and vanished with her; and Big Jonathan Delvin, a long naked sword in his right hand and a double-barreled pistol in his left, swung round and confronted the onrushing men. Two sharp reports, and two of the men reeled and went to the floor with heavy thuds; and then the swords of the British officers clashed against the weapon of the best swordsman in the Continental army.

"The pistol shot of Lieutenant Wilton had not harmed grandsire; and grandsire had not fired at Lieutenant Wilton, because he wished to meet the Tory lover of Mistress Betty, face to face, sword to sword. For the moment he was mad with the desire to punish the man who had wronged Mistress Betty and himself.

"With a swift sweep of his sword grandsire turned aside the weapons aimed at him, and with a quick cut and thrust sent two of the officers staggering backward, fatally wounded; and then his sword struck against the sword of Lieutenant Wilton, and the two men fought like two demons. For the space of a minute their swords clicked and struck fire, and then grandsire's blade leaped forward, and into the eyes of Lieutenant Wilton there shot a sudden look of mortal fear, and he reeled backward, the blood flowing from a cut in his breast. At that moment a loud whistle warned

grandsire that he had held the window long enough to give his comrades the needed time to get Mistress Betty without the danger zone of the house; and he turned and sprang through the window, and vanished into the rain and blackness without.

"It seemed as if the heavens sought to aid the lovers, for the rain now began falling in torrents; and when they sprang into the stout boat and pushed out into the waters of the Charles River the darkness was so intense that, although they could hear the shouts of their pursuers on the bank not twenty yards away, yet they were as effectually concealed from their eyes as if a stone wall lay between them, while the sound of the falling rain and the roar of the wind drowned the noise made by their muffled oars.

"After a perilous hour on the river grandsire and Mistress Betty reached the American camp in safety, where they were married at once amid great rejoicings. General Washington himself gave the bride away, and made her the happiest little woman in all America by placing in her hands a captain's commission for her husband and telling her of the heroic service he had rendered the cause of liberty the night before.

"And this," I said, laying down the manuscript, and rising and going to the cupboard, and taking therefrom an old sword, "this is the very weapon with which grandsire fought at the window, when he kept his troth on that stormy night and won again, even in the face of the British army, the bride he was about to lose; and here is a piece of the very dress your great-great-grandmother wore when she wed Jonathan Delvin," and I handed the old sword to Teddy, and gave the morocco case containing the faded bit of silk into the hands of Ellen.

Then I fell to wondering at the strangeness of the fate that had made the descendants of these two men again lovers of one woman; for Harry Rodney's grandmother was the only child of Lieutenant Wilton, and I was the direct descendant of Jonathan Delvin; Harry Rodney had robbed me of my love, even as Lieutenant Wilton had tried to rob grandsire; but there the similarity of the affair ended, unless— God help me! if I could but do as grandsire did and win Elsie even as he won Mistress Betty, and meet Harry Rodney even as he met Lieutenant Wilton, sword to sword, and—

"I am glad that Jonathan Delvin was my great-great-grandfather," interrupted Teddy, looking up from the sword he had been reverently examining. "for he was good and brave. But, Uncle John, did he really swim across the Charles River on that dreadful night with the water full of great cakes of ice? And how did he and his men get through the British lines when they carried off Mistress Betty? And who was the man in black? And how did he know when and where to meet grandsire? And did grandsire really knock down four men with one swing of the guard's musket? And did he really kill five men in the fight at the window? And did he—"

"Teddy," I interrupted, angrily, "I had the story from my father, who had it from his father, who had it direct from the lips of Jonathan Delvin himself; and I wrote it down as it was told to me. Now, if you—"

"Oh, Uncle John," broke in Teddy, his eyes shining, "I wish Teddy Roosevelt could have known my great-great-grandfather! My, he must have been almost as strong as Samson! And didn't he do any other great deeds after he got married? I want to know all about him. Did he really and truly swim across the Charles River? I don't see how he could when it was so cold and filled with great chunks of ice. Uncle John," and the little rascal looked up in my face doubtfully, "I hope your father did not tell you the Samson story, too. I—"

At that moment, to my exceeding great relief, for such questions would knock the romance out of half the great historical novels, there was a sharp rap on the door and Mary Jane came in.

"Jed Bingham just stepped in, and says you are wanted right off at Red Murdock's. Belle's took bad, and is calling for you all the time. She's dyin', an' kinder out of her head, Jed says. Poor girl!" and the tears came in the eyes of the kindly old soul.

"I'll go at once," I said. "Tell Jake to hitch up, and while I am getting ready, you had better put something good in a basket for little Joey."

The rain was still falling and the roads were very muddy, but I drove rapidly to Red Murdock's house, for I had a great anxiety to know why Belle Murdock had

sent for me. Could it be that she knew something that would give a clew to the reason for Elsie's treatment of me. At the thought I whipped the horses into a gallop. She might be dying, and I might reach her too late. When I came to the top of the hill, from which Red Murdock's house is first visible, I saw a man on horseback dash out of the yard and ride rapidly away. The distance was too great for me to be certain, but I felt quite sure that the rider was Harry Rodney.

I was met at the door by Red Murdock himself. "I am real sorry to have put you to this trouble, neighbor, an' it was right good of you to come, but Belle don't want to see you now," he said, standing in the doorway and regarding me sourly. "She's been out of her head, an' we thought she was a goin', but she's gone to sleep now, an' the doctor says she's not to be bothered for anybody. Sorry to have troubled you, neighbor, an' on such a ragged day, too, but doctor's say is law," and Red Murdock's shifty eyes looked everywhere but in my face.

"No trouble," I answered, wondering why I had been sent for, on such a day as this, only to be told that I was not wanted. "I was glad to come. Here is something that Mary Jane sent to Joey," and I gave him the basket of food. He took the basket and handed it to the Widow Thorpe to empty. When Widow Thorpe returned the basket she cautiously slipped a folded paper into my hand, at the same time giving me sundry warning winks with the eye not visible to Red Murdock.

The moment I was out of sight of the house I stopped the horses and unfolded the paper. The following words had been written hastily on it with a lead pencil:

"Belle Murdock has something terrible on her mind, and it concerns you, and neither her father nor Mr. Harry Rodney wants you to know it. I can't tell what it is, but it is making her dying a bed of misery. I overheard Mr. Rodney tell Red Murdock that you must not be allowed to see nor to hear Belle when she's out of her head. I'm not allowed in the room with her when she gets to talking wild. I'll keep my eyes and ears open.

Hastily yours,

Mary Thorpe."

I drove direct to the house and went straight to my room, telling Mary Jane and the children that I was not feeling well and did not wish to be disturbed.

What did Widow Thorpe's note mean? I knew that she was somewhat given to romancing, and dearly loved a mystery, and was quite apt to magnify a molehill into a mountain; and yet I felt certain that here I had the beginning of a clew. Alas, that the other end was held in the uncertain hand of a dying woman!

All the remainder of that day until late at night I struggled alone with the problem; and when I went to bed I could see no end clearly.

There was not a hint of the gloom of the day before in the clear skies, the warm sunlight, the singing birds, the crowing cocks, and the cackling hens that greeted me in the early morning, when I arose from a restless bed and went out to the barn to help Jake with the chores. The trees and the grass and the flowers looked as if they had been newly varnished; even the skies had been washed, and something of the cheerfulness and brightness that made glad all nature found its way into my heart; and hope came back, and with it a renewed determination to try my uttermost to find out, before it was too late, who had maligned me to Elsie Lamont and what had convinced her of my unworthiness.

The actions of Harry Rodney and the note of Widow Thorpe made me quite certain that Belle Murdock had been in the plot; and that now Harry Rodney was fearful she might repent and confess, or betray, in her delirium, what had been done.

But how had it been possible for a girl like Belle Murdock to come between Elsie Lamont and myself?

I determined to go to Red Murdock's that morning and have Widow Thorpe tell me exactly what had caused her to write that note; and, if I could, to see Belle Murdock, and ask her why she had sent for me, and to get from her the thing concerning myself that was vexing her mind. I have always believed that a straight course of action is the shortest distance between two points of difficulty; and I like, when I know where the trouble is, to go and face it at once. Then, too, the thought that Belle Murdock might die suddenly, without telling what she knew, was maddening. For two years I had racked my brain to solve this mystery; and now that I was on the verge of its solution it was terrible to think

(Continued on page 65).

A SONG OF PROGRESS.

BY ALONZO RICE.

It is true the mill will never grind with water that is past;
But the showers still are falling, forming currents wide and vast!
And the wheels are gaily singing, in a chorus grand and high,
And we know the mountain torrents never, never will run dry!

Only once in each man's lifetime, opportunity will knock,
So be ready at the summons, quickly then the door unlock;
Let this adage, like the other, or as worthless chaff, pass by;
Nightly falls the dew from heaven, daily God lights up the sky!

For Creation, still unfinished, with each dawn is new begun;
With an honest, true endeavor let your race each day be run!
New occasions then are offered, aiding God in his design;
In His order of completeness, work is needed—yours and mine!

Put aside the "circumstances over which there's no control;"
For there is no bondage fashioned for the brave unyielding soul.
Should there be no way, then make one, and rejoicing onward go—
Tunnel mountains, bridge the rivers, level Alpine peaks of snow!

Weary-hearted, cease your sighing for the harvest that is past;
Spring returning, in deep furrows let the seed be freely cast;
To your heart take now the lesson of the seasons speeding by,
For they neither stop nor falter, so improve them as they fly.

And what is to be will be! Hush this theme of wild despair!
Man your vessel with true courage, and the open ocean dare,
And to harbors of high purpose turn across the stormy seas;
Leave the adage to the dreamer—you can sail against the breeze!

It is true the mill will never grind with water that is past;
But the showers still are falling, forming currents wide and vast!
And the wheels are gaily singing, in a chorus grand and high,
And we know the mountain torrents never, never will run dry!

DISPELLING THE SHADOWS.

BY ORIN E. CROOKER.

My soul was possessed that day with a nameless fear. The shadow of an impending disaster rested upon me. Even

"She says she's never afraid to trust her with me." The acceptance of responsibility in one so young centered my attention.

"You live near the park somewhere?" I ventured.

"Oh, no," he replied. "We live clear out on the coast. We're just visiting here. I took sister out for a walk and had just come this far when it began to rain. We might be lots worse off than we are, mightn't we?" he said, ruefully surveying the splashing rain drops that were fast wetting our feet. The lad's acceptance with a light heart of condi-



A Manx Beauty.

tions that were none too favorable or comfortable made me think of my own burden. To be sure, it was heavy and soul trying, but then—I had health and strength to carry it. I might be far less fortunate.

"I'm awfully glad we have even this little place to stand in," the boy spoke up, trying to shelter more effectively the wee child in his charge. How his words and spirit rebuked my own pessimism! Glad ought I to be for the many things which the presence of a mere passing trouble had eclipsed from my sight.

"I don't think it will last long; do you?" he asked, the very tones of his voice carrying confidence and hope.

"No, I don't think it will," I replied. "I think it is about over. In fact I see a patch of blue sky already."

The storm in my heart was indeed past

ped out of the shelter of the doorway, and I took a long breath of God's good, clear, well-washed air. Mentally I took a firm, new grasp on life.

"Good-by," said the boy, starting away leading the little toddler over the wet paths. "I hope to see you again some day."

"Good-by, and God bless you," I replied, watching him until he turned the corner of a nearby street and disappeared. Little did he know how his optimistic spirit had helped me to fight and win my battle. Somewhere, "out on the coast," I suppose his spirit is brightening the path of life and unconsciously helping others as it helped me. I hope so.

MANXLAND—THE BEAUTIFUL ISLE OF MAN.

(Continued from page 61).

uity. In this castle the beautiful Eleanor, Duchess of Gloucester, was imprisoned for several years until released by death. In the middle of the seventeenth century numbers of quakers were imprisoned here for non-conformity. Fenella's Tower of Peel Castle has been made famous by Sir Walter Scott's mention in "Peveril of the Peak." The Round Tower, fifty feet high, has been the cause of much wonder. It resembles in some respects the Round Towers of Ireland. They were generally used as a refuge in times of danger.

Ramsey in the north is famous for its glens and sea views. At Castletown in the south is Castle Rushen, one of the best preserved ancient castles in all Europe. A clock presented by Queen Elizabeth is in this castle and is still the "town clock," being in excellent order. At Laxey is the Laxey Water Wheel, one of the largest water wheels in the world. It was built for use in the Laxey lead mines and has a circumference of 227 feet.

Manghold is a most quaint little village with its whitewashed cottages. North Barrule Mountain overshadows it on the west. The churchyard of five acres is the largest ancient burying-ground of the British Isles. A fine old estate in Manghold is still called the Staff Land because formerly held on the tenure of holding in safe keeping the Staff of an early bishop.

The main roads of the Island are kept in fine order. The trial races for British motor cars, competing in the international race for the Gordon Bennett cup, were held on the Isle of Man in 1904 and 1905.

The Manx people are a blend of the Celtic and Scandinavian. They are a sturdy, healthy people, hospitable and kind hearted. They lack initiative, but are quick to follow a leader. Their optimistic turn of mind is reflected in some of their proverbs, two of which run thus: "There's gold on the cushag yet." "When one door sticks another opens."

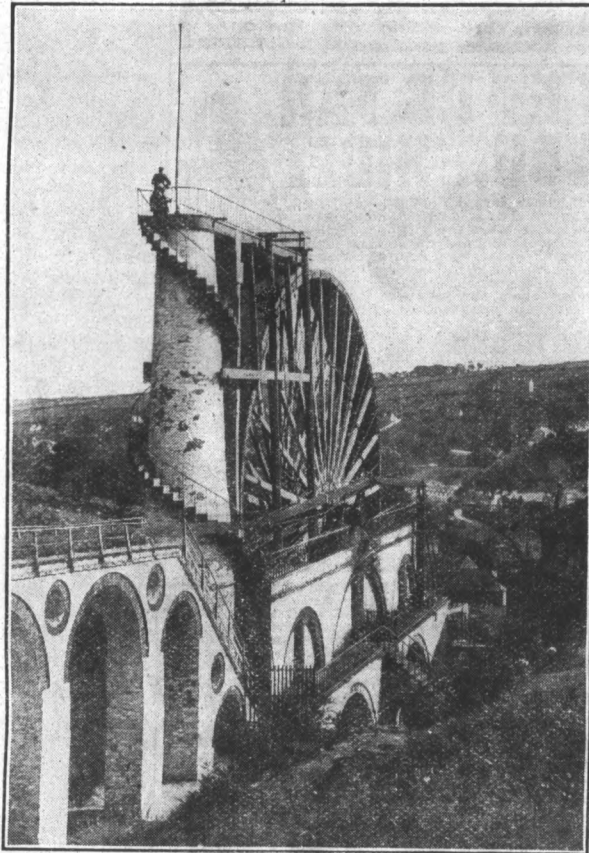
GETTING COAL OUT OF A RIVER.

BY E. I. FARRINGTON.

Dredging coal from the bed of the Susquehanna river is an important industry at Harrisburg, the capital city of Pennsylvania. For many years the coal has been washing down the river and its tributary streams from the great anthracite regions of the state and has lodged in pockets in the river bed. There are several large islands at Harrisburg, and the eddies created by them may be responsible in part for the fact that a large amount of this river washed coal is deposited there.

The coal is of the sizes known as buckwheat and mustard, both of which are, as the names imply, very small. This kind of coal necessarily sells at a low price and is used principally in the heating and lighting plants in and around the city of Harrisburg.

In the old days great banks of what was considered refuse and unmarketable coal were to be seen in the vicinity of



The Gigantic Water Wheel at Laxey.

the mines. "Culm" was the name by which it was commonly known. Many of these banks of waste coal were near the Susquehanna and smaller rivers and, when the periodical freshets came, they were carried away, to be dredged from the river bed now and burned many miles from the locality where the mines are located.

This "culm" is no longer considered a waste product, however, the great development of the industrial interests in Pennsylvania having led to its preparation for market by means of plants known as washeries, which produce over three million dollars worth of coal a year. The coal pockets in the river which were formed before these washeries were established still continue to yield a plentiful harvest, however, and no doubt will for several years to come.

The coal is sucked up by means of dredging pumps carried on flat bottomed boats driven by wide paddle wheels at the stern of the boat, the river being too shallow at times to permit the use of side-wheel boats. There is a considerable fleet of these boats at Harrisburg and a few at other places in the same county. In 1907 the amount of capital invested in boats and machinery for the carrying on of the business was \$25,000. Nearly 37,000 tons of coal were dredged from the river, giving employment to sixty-two people. Passengers on Pennsylvania railroads often see these curious boats where the tracks run close to the river, and no doubt often wonder what they are for.

It is surprising how practical duty enriches the fancy and the heart, and deepens the affections. Indeed, no one can have a true idea of right until he does it, any genuine reverence for it till he has done it often and with cost, any peace ineffable in it till he does it always and with alacrity.—Martineau.



View of Peel, the Seat of the Manx Fishing Trade.

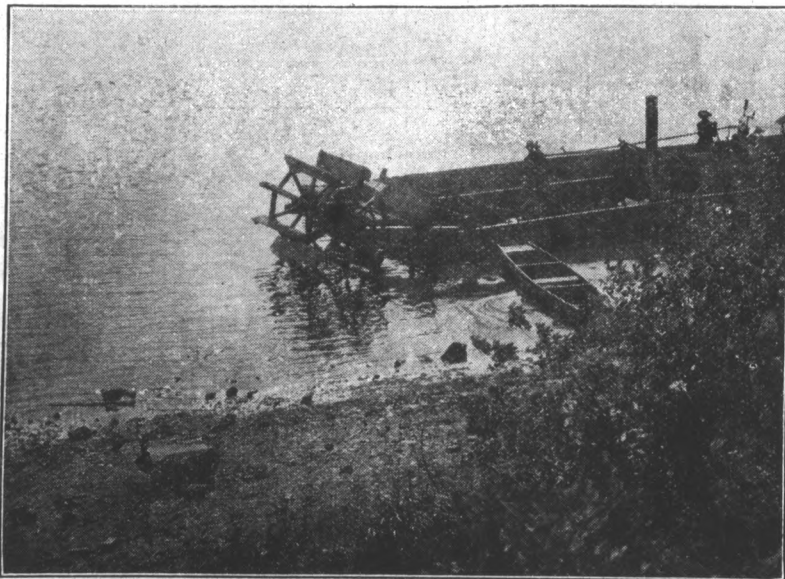
the brightness of the sun had no power to dispel the gloom that filled my heart.

In this state of mind I went over into the little park on the lake front where a towering monument marks the last resting place of Stephen A. Douglas, for whom the spot is named. A glimpse of old Lake Michigan, I thought, might revive my drooping spirits.

A sudden thunder shower that seemed to form out of the blue sky itself drove me into the narrow doorway of the monument for shelter. There were two others there before me, a boy of nine or ten and his baby sister, a wee toddler perhaps two years old. The three of us huddled in the small entry and close against the iron gate that separated us from the resting place of the dead while the rain drops splashed savagely about our feet as the wind drove the storm in upon us. A fitting climax, I thought, to the day's anxiety and the doubts and fears that weighed me down!

But here in the shelter of the tomb of the dead, with the thunder crashing heavily at times about me, I found the burden lifting from my heart. A few moments only were necessary to reveal the fact that I was in the presence of one of God's noblemen—a mere child, to be sure, but of lofty spirit none the less.

"I hope mamma won't be worried about sister," he said, as the storm swept around the monument with renewed fury.



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OLD-FASHIONED GAMES FOR WINTER EVENINGS.

BY DORA B. PHILLIPS.

The long winter evenings call for amusement for the young folks. Do you know the game of mimic? All go out except two, who seat themselves on a long bench or at one end of a row of chairs. There is a doorkeeper who brings in one at a time of those outside, saying as he does so, "I will introduce you to Mr. Mimic and his wife." Whatever gesture or word is made or spoken by the one brought in is faithfully reproduced by the two seated. Whenever he laughs, he must take a seat by their side and assist them in the mimicking. And so on until all are introduced. It is real laughable to see a whole string of people grinning or nodding at the last ones who come in.

For a catch game "hands on the wall" is good. You ask certain parties if they ever played "hands on the wall." If they answer no, tell them that you will teach them. Have all who have not played the game go to the wall. Place your hands on the wall, tell them to do the same, then say "Hands on the wall—that is all."

"Fruit basket" is an old game full of life. Someone goes around and names each person a certain kind of fruit, low so his neighbors can not hear. Then he calls the name of one thus, "Peach! Peach! Peach!" If "peach" fails to call his own name before it is spoken the third time, he must get up and do the calling; then if he fails to guess any of the names or to get a seat after calling as many times as there are players, he calls out, "Fruit basket," when all must change seats. Then the "caller" gets himself a seat in the scramble.

"Flying angel" or "Catch the handkerchief" is another game which all enjoy. The players are seated in a semi-circle, and the catcher stands facing them. A handkerchief is started at one end, and whomever the catcher gets the handkerchief from must get up. The kerchief is just pitched from one person to another or thrown from one end of the circle to the other, and if the catcher picks it up while touching anyone's clothes, this person must give up his seat and be catcher.

"Where are you, whom are you with and what are you doing?" is a laughable game for old and young. The players all except three are seated in a row; one goes around and tells each player where he is, another follows and tells him whom he is with, another comes along and tells him what he is doing. Then they begin at the first, and as each name is called, the owner of the name must reply according to the directions given him. For example, "I'm in Boston milking a cow with Jenny Jones." Some of the answers if not all, are sure to be ludicrous, because neither instructor knows what the other has said in distributing answers to the different people.

"Take home what you borrow" is another funny game. Someone names each player some article, as broom, bucket, etc.; another person tells each one whom he belongs to and who has borrowed him. The borrower must then get what he borrowed and take it home, saying, for instance, "I have brought your broom home."

To play, "What is your occupation?" the crowd is evenly divided and lined up on opposite sides of the room. No. 1 sends No. 2 over to No. 2 on the opposite side, who asks, "What is your occupation?" The one asked must go through the motion of performing some task, such as writing, combing the hair, eating, etc. If No. 2 guesses, these two are out, and others try it until all are out. The one who wins is the one who guesses the opposite side down. Three trials are all that are allowed for each guest.

"Shadow writing" is something like pantomime. A sheet is stretched over a doorway, one or two persons enter the room on the other side of the sheet, some member of the party writes slowly a word or message on the sheet with his finger or a long stick, the one on the opposite side follows the motion carefully, then translates if he can. The players may be evenly divided and a small prize given to the side making the most correct translations.

Mother—What are you doing, Harry? Harry—"I'm countin'." You told me when I got mad to count 100." Mother—"Yes, so I did." Harry—"Well, I've counted 237, and I'm madder'n when I started."

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THE BACHELOR UNCLE.

(Continued from page 62).

that all might be irrevocably lost. I gave little thought to the condition of Belle Murdock. I would see her and force the knowledge, even from her dying lips. She had no right to take it with her to the grave. Life is too short and love too dear to be over tender with the guilty conscience even of a dying woman. I felt that a crisis had come, that before noon I would know something definite; and it was with more hope in my heart than had dwelt in it for many a month that I stepped into my buggy after breakfast, and started for the house of Red Murdock.

It was still early in the morning when I drove into Red Murdock's yard; and I feared from the silent look about the house that I would find them all in bed; but, before I had tied the horses, the door opened and Red Murdock himself came out.

"Good mornin', Delvin," he said, taking out of his mouth the short clay pipe which he was smoking. "This is 'bout as fine a mornin' as the Lord makes, ain't it?"

I answered in the affirmative, and inquired how Belle was coming on.

"Well, I don't know," he answered. "She's uncommon dumpish an' sleepy, but Doc. says she'll pull through. She's tough, Belle is. Won't you come in an' see her, neighbor?"

The affability of Red Murdock surprised me; and I followed him into the house wondering greatly at what had caused the sudden change in his temper, but too anxious to see Widow Thorpe and Belle Murdock to make much note of the insolent look on his face. Afterwards I remembered the look. I had written on a slip of paper: "Tell Red Murdock that in the hurry of your coming, you forgot to bring all your clothes you need, or make some other plausible excuse to go with me. I must see you alone." I intended to hand this note to Widow Thorpe when I shook hands with her; and then take her with me to town and find out exactly what it was that had caused her to write to me as she had; and when I returned I would not let Red Murdock nor anyone else keep me from seeing Belle Murdock, if what Widow Thorpe told me convinced me that Belle had anything to do with the cause of Elsie Lamont breaking the engagement, or had any knowledge of why Elsie had treated me so unkindly. If necessary I would use force to reach the bedside of Belle Murdock; for I was desperate and did not intend to lose my chance of happiness for lack of prompt action on my part. When I entered the door I held the note closely folded in my right hand, ready for immediate delivery.

Little Joey sat in a corner, playing with his tin soldiers. He glanced up at me timidly, and I saw that his face was red and swollen with crying. He did not speak; but fixed his eyes on his father's countenance, with a look of terror in them that made me grind my teeth and ache to cowhide the great brute who could cause such a look on a crippled child's face.

Widow Thorpe was not in the room. Red Murdock walked to the bedroom and opened the door. "Come in, Delvin," he said. "There's nobody here but Belle an' th' nurse. Come right in. You'll not bother Belle," and his shifty eyes flashed a swift venomous glance into mine.

I walked into the bedroom, expecting to meet the Widow Thorpe and deliver the note to her; and was confronted by a strange woman, whose harsh features, small, cruel-looking eyes, and tall angular form seemed especially out of place in the hush of a sick chamber.

"You see Wider Thorpe wan't exactly satisfactory," explained Red Murdock, flashing a quick glance into my face; "and so Harry Rodney took her home last night, an' brought this one back. She's uncommon good at nursin', an' can handle a sick woman like you can a plow."

For an instant the summary dismissal of the woman I had hired made me very angry, while the first shock of the disappointment of not meeting Widow Thorpe was like a blow; but a glance at Red Murdock warned me not to show how I felt. He was watching my face with quick, furtive glances, and with a look in his eyes that told me to beware of him. I remembered how, some five years before, I had given him a well-deserved thrashing for cruelly abusing a dog; and I knew that he remembered and hated me for the good deed I had done. He was one of those men who never forget an injury, and never remember a kind-

ness. I determined to drive direct to Widow Thorpe's home, and see her in the privacy of her own house.

"Well, I am sorry," I answered. "I thought Widow Thorpe was a good nurse. Doctor Goldthorpe always gave her that reputation."

"I don't know about Doc. Goldthorpe, neighbor. He's home'pathy; an' I never did take no stock in sugar pills an' colored water an' I don't think he'd cure Belle in a dog's age; an' so Harry Rodney brought a doctor with him last night, who's took right a-hold of the case like you'd take a-hold of a team of horses; an' I guess you can tell Doc. Goldthorpe that he needn't come no more. Harry Rodney's been uncommon good to us since Belle was hurt; and so have you, Delvin, uncommon good an' uncommon interested in Belle," and he drew back his lips in a smile, like a cur before he bites.

I did not answer, but stepped to the bedside, intending to ask Belle, in spite of the presence of Red Murdock, why she had sent for me. As I approached the bed the nurse arose awkwardly from the chair in which she was sitting near the bed, and stepped a little to one side. Belle Murdock lay with her face turned toward me, her eyes closed, and her mouth partly opened. She was breathing heavily; and it needed but a glance, even of my inexperienced eyes, to tell that she was under the influence of some strong opiate, and as dead to the world around her as a log of wood. I glanced suspiciously at Red Murdock. I understood now why he had been so willing I should see Belle.

"That's th' work of th' new doctor," he said. "An' it's th' first real good sleep Belle's had since she was hurt. Harry Rodney's doctor knows his business, he does." Again that cur-smile.

I looked Red Murdock straight in the eye. "Yes, and sick people have died while under the influence of too strong a dose of opiates; and judges have been so inconsiderate as to call their deaths murder," I said, for a horrible suspicion had flashed through my mind that Harry Rodney and her unnatural father wished to hasten the death of Belle Murdock, or, at least, to keep her unconscious until the end, in order to safeguard their secret, and I wished to let the man know that he was treading on dangerous ground.

For an instant Red Murdock cowered, for the man at heart was a poltroon; then he said, speaking slowly, and resting his two bony hands on the footboard of the bed, and leaning slightly forward, and keeping his shifty eyes steadily on my face: "Murder is a hard word to speak, neighbor; an' them that use it without good reasons had best beware. Now, this bein' my house, an' th' sick gal my daughter, an' bein' that you have said that ugly word, you'd best take that big carcass out of our presence, an' not come pokin' that great nose of yours into things that don't concern you. Nobody asked your help, an' nobody wants it, John Delvin. There's th' door!" and the man pointed a quivering finger toward the door and drew his lips back, showing his big tobacco-stained teeth. "There's th' door!" he repeated. "Go; or I—"

I took two quick steps toward Red Murdock and my hands clinched themselves, before I remembered where I was. Red Murdock's face went white, for he had good cause to remember the weight of my fists, and he sprang back, his eyes gleaming in the half-darkness of the sick chamber, like the eyes of a wolf.

"I'll have th' law on you, if you touch me in my own house!" he threatened. "I'll have th' law on you, John Delvin! I'll have th' law on you!"

Without a word I turned on my heels and left the room. Little Joey's face was white as milk, and his thin limbs were trembling as if he had the ague. Even in my wrath I noticed the boy as I passed through the kitchen, and pitied his helplessness, and thought how cruel fate was to thrust a feeble, crippled child in the midst of such harsh surroundings. As I unfastened the horses Red Murdock came to the door, and stood on the threshold, his hands resting on the casings and his short clay pipe gripped tightly between his teeth, and watched me with insolent bravado as I drove out of the yard.

(To be continued).

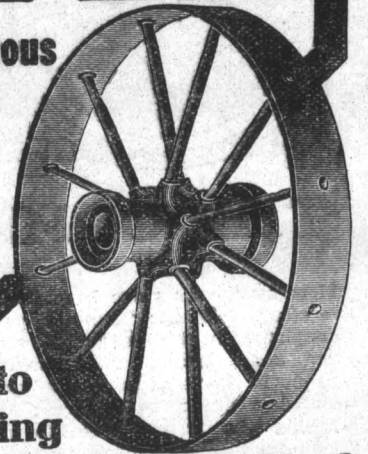
Little Willie—"Say, pa, according to this table of English weight and measure fourteen pounds make one stone." Pa—"Yes, that's right, my son." Little Willie—"But, pa, what I want to know is how many pebbles it takes to make a pound?"

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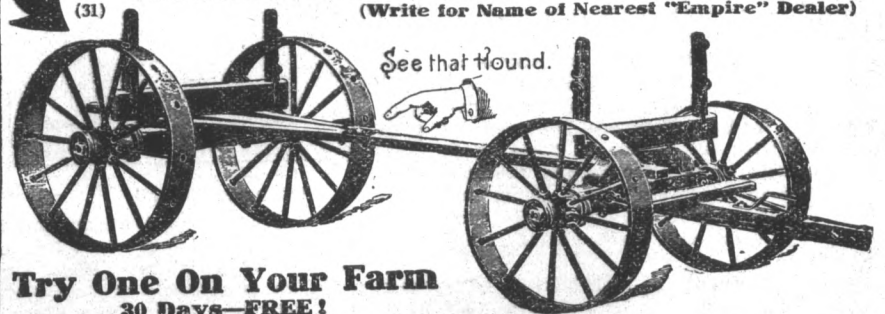
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Woman and Her Needs

At Home and Elsewhere



THE COMMON PROBLEM.

How many of us are honestly seeking the solution of our "common problem," as explained in the last part of the selection? Some, I know, recognize that life consists in "making fair" existing conditions, but are not the great majority fancying what a fine place life would be providing we could have things as we would like them?

Most of us, I fear, are planning for our happiness in the future. Next year when the children are a little older and we are not tied down so and have more time for reading and "pleasure," life will be fair for us. Next year when the mortgage is paid we can begin to be thankful, we haven't anything really to be thankful for now. If we could move out of this neighborhood we might be happy; there is no one who can understand and appreciate us here.

If we could teach school instead of doing housework; if we could have a nice home of our own to take care of, and our own children to train instead of having to spend our time in a schoolroom training other people's little ones; if we could have finer clothes, better fare, an education, a chance to travel, or perhaps a chance to stay at home, in short, if we could only have things different than they are, then life would be fair to us. This is the attitude of the larger portion of the human family.

But the thing we don't seem to realize is that we would be we, no matter what our conditions, and that the real heart of us would be unchanged, even though we could have every wish gratified tomorrow. We are creatures of habit, purely. Happiness and contentment are habits, habits grown into character, and our character would not change even if a fairy godmother should drop us into any spot we chose.

The thing for us to wish for, then, is not a change of conditions but a change of self. As a rule, we can not change conditions, even with an earnest effort. How futile, then, to think of changing them by wishing. But character we can change and this should be our task.

Are we, by virtue of our office as wife and mother, condemned to do housework all our life? Then make our task "fair up to our means" by doing it cheerfully, lovingly and well. Are we alone, without the love of family and the shelter of home, compelled to work for others? Then let us make life fair inside by doing every task with the one thought of doing it so well that no one could do it better. Are we among people whom we believe are not up to our standard? Let us not despise them and draw within ourselves, but recognize them as creatures from the same hand which created us, brothers and sisters with the same loves, hates, desires and ambitions that we possess, however crudely they may be expressed. We can not help them by standing aloof, and helpfulness is the great duty of man.

No matter what the surroundings, life may be glorified by the spirit within. And it is usually those who have the least in worldly possessions who learn this fact. A young man of 20 with both arms taken off in an accident sat on the pavement selling pencils and shoe laces a day or so before Christmas. It was cold, drizzly, discouraging weather. Everyone was hurried and cross. Shoppers hastened by the chap with only a glance. They needed all their change for buying presents for someone who didn't need them, and lead pencils and shoe laces wouldn't do for gifts, they really are useful sometimes.

I hurried by with the rest, bent on buying candy canes, Santa Clauses that would break to pieces at the first good, hard squeeze, and other equally "appropriate" things for the Christmas tree. I to, but as her aunt paid no attention to her precocity she forgot about it and believes that she is all the better for it. Indeed, Mrs. Deland does not believe at

going to have a tree with gew-gaws, and why not my family? Just as I passed, the chap began to whistle a cheery little tune. It was better than a thousand sermons. Here was this mere lad, with nothing that I could see to make life even bearable, and yet facing it with a bold front and a whistle. Condemned by the loss of both arms to depend for a living on the tenderhearted few who would drop a nickel or a dime in his hat, obliged to sit in the street and cry his wares no matter what the weather, day in and day out, year in and year out, and yet courageous enough to whistle! And here were the rest of us with health, sound limbs, livable salaries and warm, bright homes, all as grouchy as bears because of our exertions to celebrate the birth of the Christ-child.

We didn't have the candy cane, nor the glass balls that break when you look at them, nor the flying-machines and lanterns that decked the trees of our neighbors, because of that whistle. But the mother of the family had something far more valuable, the memory of a brave spirit, a spirit which could get above the blackness of what seemed to others a sunless life.

DEBORAH.

WOMEN WHO ARE DOING THINGS. No. 5.

Margaret Deland.

Those of us who have fallen in love with old "Dr. Lavendar" have already formed a pretty good opinion of his creator, Mrs. Margaret Deland. We are not a bit surprised to learn, then, that simplicity, graciousness, womanly dignity and sympathetic knowledge of life are her most marked characteristics, nor that she writes in a room redolent of flowers.

Mrs. Deland was born in Allegheny in 1857, which is a blow to us who have traced her New England ancestry in her



Margaret Deland.

books. She was orphaned at an early age and was adopted by her uncle, Bakewell Campbell, of Pittsburg. Here she grew up in an atmosphere of love, and books and fed upon Scott, Hawthorne, the "Spectator" and the "Tattler." At the age of nine she wrote stories, or tried to, but as her aunt paid no attention to her precocity she forgot about it and believes that she is all the better for it. Indeed, Mrs. Deland does not believe at

all in encouraging precocious children. She thinks that youthful geniuses who write poems and tragedies at ten and twelve usually burn themselves out before maturity.

Her education was at Pelham Priory, a school kept by English ladies. Here there were no dreaded "exams" and the girls studied or not as they liked. They were taught how to enter and leave a room with dignity, respect for elders and betters, fear of God, disregard of men, and deportment in manners and religion. After this education, which the modern college girl would consider none at all, she went one year to Cooper Institute and then taught drawing in the New York Normal College. In 1880 she married Lorin F. Deland, of Boston.

Her first writing was a few verses to go with a gift to her aunt, and these developed into her poem, "Succory." This was published in Harper's Magazine and for it she received \$10. After this she began writing seriously and we have as a result, "John Ward, Preacher," a book that set everyone talking and was translated into Dutch, French and German; "Old Chester Tales," "Sydney," "The Common Way," "The Awakening of Helena Ritchie" and "An Encore." She is a hard worker and makes it a rule to write every day from 9 a. m. to 12:30 or 1 p. m., whether she feels like it or not. Like most modern writers, she believes genius is the result of good hard work, and not dependent upon inspiration. "John Ward" she wrote four times and was two years in writing the book. "The Wisdom of Fools," another of her books, she wrote after an effort to reform and reinstate a working girl.

It is a surprise to her that the public are so fond of Dr. Lavendar.

THE CARE OF BEDDING.

BY MRS. SELMA NEW.

Now that we are through housecleaning, let us look after the bedding. It is surprising to me to find that some women are very neglectful about keeping the quilts and bed comforts clean.

Bedding that is in constant use should be aired out of doors often, and that of the guest chamber also. Although I have my faults in other ways, clean bedding and mattresses have been a hobby with me ever since I began housekeeping and I find that at least once a year there are some quilts or comforts about the house which should be washed.

For washing them, I always select a day when I am very positive that it will be sunny all day. A little breeze is preferable, too. Then have plenty of warm, perfectly clean suds in the washing machine. Put only one quilt in at a time and it is soon rubbed clean; then put through a warm rinsing water, then a warm weak blueing water.

Hang on the line as singly as possible and turn the edge on the line two or three times which makes it dry quicker and without streaking.

If I have no one in the house to assist me in running them through the wringer, which requires quite a lot of strength if a large comfort, then I arrange to wash them on a day when my husband can help for a little while and sometimes we afterward wash a horse blanket or two.

Some women think it spoils a comfort to wash it with the cotton in and think they must rip them apart, wash the covers and re-tie. This I never would do, it takes too much of a busy woman's time. Better wash, and when necessary spend your time tying a new one.

Now, about the mattress or featherbed. Some only have a sheet over these to sleep upon. This is a mistake, for in the night the sheet gets wrinkled and pulls away from the edge of the mattress, and in time the mattress is soiled.

A good way to protect it is to buy cheap factory, make a fitted sack and put the mattress in it.

Others use a clean, but thin quilt. Another good way is to use either outing

TRUE ARCHITECT OF HOME.

BY E. L. K. W.

Each mother in her busy life will find So much requiring patience skill and care;

Nor is it strange that in the daily grind, She sometimes feels 'tis more than she can bear.

Among the trials which to her befall, From duties which her willing hands employ,

In strenuous peals, her infant oft will call, While older ones may fret her and annoy.

'Tis said that "Woman's work is never done,"

Beginning in the early morning gray, Unceasingly, she toils from sun to sun, And still plods on, by lamp or candle ray;

And even in the wee small hours of night, When all, save her are wrapped in slumber deep,

To ascertain, if all with them is right, She often, at her darling ones, will peep.

While following this routine, your young life through,

Disheartened, weary mother! you may ask

"For all my toil, will aught of good accrue?"

Or, will it prove at last, a thankless task?"

An honored post of fame, you ne'er may grace,

But you have made your children's place of birth,

By words and deeds, and mother's fond embrace,

The dearest spot for your beloved, on earth.

In time, should children wander from the place,

True fame or fortune seeking from afar,

Their mother's counsel and her smiling face

Will ever serve them as a beacon star. Wise training of the youth, the man may save,

And whether it be palace, cot or dome, No higher title can the noblest crave,

Than this, "The architect of 'Home,' Sweet Home."

flannel or cheap ticking and tie with cotton just as for a quilt, except you make this pad just large enough to cover the top of the mattress without lapping. Then buy cheap unbleached factory, make a double sheet by sewing two sheets together instead of hemming. Lay this cross ways of the bed and it will tuck in well over cotton pad and mattress, making an excellent protection. The double sheet which is used under the regular sheet may be washed as often as necessary.

Now to keep your pillow ticks clean, take a pair of pillow cases that are beginning to get thin. Or if slits have already come in them, cut off about three or four inches from the closed end, use for patches then sew up the end again and slip these over the pillows. Then put the regular cases on. Wash these underslips often and you will see how much soil is saved from being on your pillow ticks.

THE CARE OF NUTS.

BY ISAAC NOTES.

The reason nuts are so nourishing is that they are a very dry, concentrated food. For example, cheese contains 35 per cent water, eggs 68.2 per cent, lean beef 75 per cent, bread 39 per cent, while pecans contain only 3.4 per cent.

It is when the new crop of nuts first comes upon the market that nut recipes and the concocting of dainty dishes containing nuts seem so appropriate, but the newness of the crop is really a small matter, for nuts will keep good and sweet a long time if managed right. Pecans and other nuts may be kept in cold storage for 12 months or longer, with but little deterioration in quality. They also keep well in storm houses and cellars, or they may be banked like sweet potatoes. A stone or brick house is good to bulk and keep them in. They should be sprayed occasionally in very dry weather, to keep the atmosphere somewhat damp. After pecans become a little strong or rancid, if soaked in clean water their freshness is restored in 24 hours.

Even if the nuts are fresh it is best to

give them a quick bath in clean hot water just before cracking, for this not only cleanses them of dust and dirt, but kills any germs attached to them. However, in the case of soft-shelled nuts, like almonds, paper shell pecans or English walnuts, it might be best simply to wipe them with a hot, damp cloth.

If pecans and other nuts are kept in a cool, dark place, in tightly closed receptacles, as in well made, paper lined barrels or boxes, they will keep for a long period, for the four causes of rancidity in nuts are sunlight, air, heat and extreme dryness. It is not to be understood that the atmosphere should be moist, but it is possible for it to be too dry.

The pecan is the most ideal nut, either by itself or as a component part of different dishes and confections. Some nuts are ahead of it in protein, as the peanut and the almond, but it is sufficiently rich in this element, while it is far ahead of the peanut and almond in oil, and it is a better balanced ration as regards every element necessary to the building up of the human body than any other nut. Pecans give 3,300 heat and energy units (calories), to the pound, and these heat units are derived from very well proportioned amounts of protein, sugar, starch, cellulose, fat, mineral matter and a little water, which is quite necessary as an aid to the digestibility of such concentrated food. Pecan kernels are almost as rich as pure butter, which contains 3,475 calories to the pound, but it is a better balanced ration than butter, because all the heat units contained in butter come from the one element, fat. After pecans the richest in nutritive elements are walnuts, both black and English, almonds, coconuts, peanuts and chestnuts in the order given.

Following are a few recipes for dainty dishes with nuts:

Pistachio Cake.

The pistachio nut, now grown extensively in California and on the Pacific Coast further north, but a native of Smyrna, Algeria, Sicily, China, Syria, and southern France, has long been prized by confectioners for its delicate flavor and attractive green color. The nuts are small and bean-like in size and shape, though more pointed. They should always be blanched before they are used.

To make a delicious pistachio cake, sift one cupful of flour three times before measuring and twice afterwards. Pour four tablespoonfuls of boiling water over one cupful of sugar, set over the fire until dissolved, then cool. To the prepared flour add one and one-half teaspoonfuls of salt. Blanch two ounces of the pistachio nuts, pound to a paste and press through a sieve. Mix all together, add the stiffly beaten whites of four eggs, and ten drops of vanilla. Beat steadily for ten minutes. Turn into a greased pan and bake half an hour in a moderate oven.

Nuts with Ice Cream.

The use of nuts with ice cream adds to its relish and flavor and very greatly to its nutritiveness. Those nuts are best for this purpose with white or pale yellow kernels—raw peanuts, almonds, chestnuts, pecans, filberts, English walnuts, Brazil nuts and beechnuts. Most of these nuts should be blanched first and their outer skins be removed. Nuts to be used with ice cream should be ground as finely as possible, and mixed with pure sweet cream in the proportion of about one pound of the nut flour to three pounds of cream. Sweeten with powdered sugar and freeze as for any other kind of ice cream. A little vanilla or chocolate may be added if the flavor is liked.

Nut Cookies.

Two eggs, beaten light with one cup of brown sugar, one cup pastry flour, one teaspoonful baking powder and one cup walnut meats chopped fine. Mix thoroughly, drop by teaspoonfuls on a buttered tin and bake quickly. Chopped peanuts may be used instead of walnuts. If you find the batter too stiff, add a spoonful of cream or milk.

Walnut Cake with Raisins.

Beat together one cup of sugar and one-half cup of butter. Add a half cup milk, two cups of flour which has been sifted with a teaspoon of baking powder, and two eggs, whites and yolks beaten separately. At the last add one cup of seeded raisins and one cup of broken nut meats.

To Blanch Chestnuts.

To blanch French chestnuts which are to be used as a vegetable entree or stuffing, score each shell, put the nuts into a frying pan with a tablespoonful of butter, and shake over the fire until the butter is melted. Then heat five minutes in the oven, and the skins will come off with the shells.

VALUE OF WATER.

BY CHARLOTTE BIRD.

There are very few people who thoroughly appreciate the value of water as a beverage or who know how to use it to the greatest advantage. The benefits produced by the drinking of water depend as much upon the manner in which it is drunk as upon the quantity. Cold water should not be swallowed in large draughts, nor should it be taken in large quantities with too short intervals between, else certain definite and less beneficial results follow than if the same quantities were taken by sipping. Sipping is a powerful stimulant to the circulation, which cannot be said of ordinary drinking. The heart action is quickened and the pressure under which the bile is secreted is also raised by the sipping of the fluid.

Tea and coffee should be used sparingly and in their place water should be taken in liberal quantities. About three pints a day is said to be desirable to thoroughly wash out the system. Hard water should be avoided and in general mineral waters also. The difficulty of hard water can be largely obviated by boiling and then cooling the water. Where a tendency to rheumatic troubles exist, a pint of hot water should be sipped very slowly every morning before eating. This will overcome constipation also.

When one has a cold coming on, the drinking of cold water is one of the very best remedies because it tends to keep the pores open for the escape of the poisons of the body. Living on fruit and milk for two or three days and drinking hot or cold water freely, if taken in time will often break up an ordinary cold. A cold is a fever, and one suffering from it should avoid meat and other heating foods, for these only add fuel to the flames.

For a sore throat one of the very best remedies is a cloth wet in cold water and laid on the affected part. This can be used also with a cold on the lungs, though the rest of the body should be protected from chill. It is said that a cold bath over the chest every morning, will greatly reduce the tendency to catch cold.

Cold water is excellent also in reducing a regular fever. A cloth wrung out of cold water and laid on the head, will relieve a severe headache by lowering the temperature. The same holds with regard to a mere fever. In fact, a sponge bath all over the body will relieve a general fever.

Thus water is one of the simplest, best remedies, undervalued because it lies at hand and is free for everybody's use.

SICK ROOM VISITORS.

BY HILDA RICHMOND.

People who are ill usually have a harder time getting well in winter than in summer, and friends and relatives usually give as the reason for this that the weather is "against sick folks." Physicians tell a different story, however, and often attribute the delay in getting well to excessive visiting in the sick room. One doctor with an extensive country practice says he despises Mondays in winter for they are sure to bring him calls from morning till night from patients who are only suffering from the effects of too much Sunday company.

In summer guests drop in for a few minutes, and if the patient is too weak to see them long they are easily coaxed out to see the flowers or the garden or the chickens, but in winter there is nothing to do but keep them in the house. It isn't possible to suggest a short stay, and often the invalid is located quite close to the living room, so that a lengthy visit means misery to patient and friends. Talking, opening and shutting doors, rattling the furniture about and other distractions annoy sick people greatly, yet they can not be avoided with visitors in the house. Often people with the best intentions in the world go to visit the sick and take lively children with them. The children may be well behaved and as quiet as children can be, but everything counts against the patient if quiet is essential.

A great many ladies have not the courage to deny admittance to the sick room to guests, and this also brings on troubles of various kinds. People who have had little dealing with sickness think nothing of entering the bed room with damp clothing, kissing the patient, stroking the hair with cold hands and otherwise bringing positive danger to the invalid. It is only thoughtlessness that causes the trouble, for the guests may be

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the dearest friends the patient has and may sincerely desire a speedy recovery, but they should be gently told when to leave if they overstay the time. The patient must have the first consideration. Often a "sick spell" will teach women more than any amount of telling, for they suddenly see how annoying even their best friends may be when they stay too long in the sick room.

So make your visits brief when your friends are ill and do not feel offended if you are not allowed to see them. Take a flower or a bit of something good to eat and go with a cheery word and a determination not to mention depressing things. If you have any troubles ignore them and encourage the invalid without being gushing and untruthful. Talk in an ordinary tone, not a whisper that cuts the air and excites the curiosity of the patient, and do not prolong the leave taking. By so doing you will be an ideal guest in the sick room and your example will have a good effect on others.

DO WE ENJOY THEM ENOUGH?

BY M. F. N.

The other day I visited my three little girls in school and experienced such a feeling of homesickness—or something so much like it that I do not know what else to call it—that a question has kept rather prominently in my mind ever since.

Twelve years ago I was a teacher myself, and had been for five years. I had a real liking for the work and enjoyed those years from the double viewpoint of instruction of, and companionship with, children; yet, as I looked at the young faces that day and seemed to see in the teacher, myself a few years ago, I wondered if she were getting all the pleasure and profit possible from the days that were slipping through her fingers, wondering if I had done so in the past.

It seemed to me, just then, that I could ask nothing pleasanter than to be the teacher of that roomful, but at the same time realized that I should not want even that if it were to take from me the dozen years of home life and the little girls who were a part of the roomful, so it was but a step to the question: "Am I enjoying my children and my home as much as possible, or is there a time coming when I shall look back on these years with regret, from seeing some mother and her little folks, and wonder if I got out of life all the sweetness and helpful lessons that were there for me?"

It seemed as though a rough hand gripped my heart for a moment and I think the days since then have meant a little more to me than did some of those that came before.

We are called good mothers. We love the children dearly and let them know it; they love us and tell us so by words and acts; we want to help them in the best way possible and try to make them feel that this is so; they are helpful to us in a multitude of ways, but there is a rush and flurry about this electrical twentieth century that tends to impatience and frowns and the haste that leave too little time for calm enjoyment and a full appreciation of what our lives together as mothers and children should mean, may mean, to us all.

Vain regrets are worse than useless; I mean to give them as small a chance as possible to trouble me 30 or 40 years from now.

A LOOK INTO FOOD VALUES.

No. 1.

"Instead of studying Italian art, I think it would be a fine thing if our women's clubs devoted the year to studying food values," remarked the mother of three. "I've graduated from a couple of private schools and houses kept for eight years, but I'll be perfectly frank with you and say I don't know a thing about food composition. I don't know a proteid from a Greek root, and when I serve my meals I haven't the ghost of a notion whether or not it is a properly balanced ration I am giving my family. I worked six weeks last winter preparing a paper on Titian. This winter I shall spend my time preparing menus that are really suited to my family's needs."

No more fascinating study than food values exists for the woman who realizes that health building is the really one very simple, if we only rid our minds of the idea that the subject is one that requires a college course to understand, and then resolve the subject into its primary principles.

To begin with, we all know that we must eat to live and eat to work, one-

third of the food being given to creating energy, or the ability to work, and the other two-thirds to repairing the body and keeping us alive. We know, too, because we were taught it in physiology, that the body performs its work, much as a steam engine does its work, the food is burned in the body as coal is burned in the furnaces, and the heat liberated to produce the energy which keeps the human machine, the body, in motion.

If food is burned in the body, then we see that it must be composed of somewhat the same elements as fuel, and so it is composed of carbon and hydrogen, oxygen and nitrogen. And it is burned in the same way as fuel burns, by uniting with oxygen. This process takes place after the food has been digested and carried by the blood to the lungs. Without this burning, or liberating of the carbon, heat and energy, or the power to work, would not be produced and life would cease. Hence the necessity for breathing large quantities of pure air as well as eating plenty of nourishing food.

It is this idea that food is composed of the elements, carbon, hydrogen, oxygen and nitrogen, which is so puzzling to the beginner in the study of food values. We have got used to the notion that oxygen in the air is necessary for life, but we can not accustom ourselves to the idea that the food we eat is also composed of gases. Somehow we don't at first grasp the thought, so we will have to simply take it on trust as we did our first lessons in childhood. The food is solid when we eat it, it is meat or cereal or fat or water. We can't see how it can be made up of gases. But the chemical laboratory of nature, our body, converts it into simple elements during the process of assimilation as surely as the chemist will convert for you water into two gases, oxygen and hydrogen.

Having this first lesson firmly fixed in our minds, that the body requires carbon, hydrogen, oxygen and nitrogen, to keep it alive and able to work, we can next take up the classifications of foods, and see just what office each class performs in the body.

CEMENTING LINOLEUM.

Editor of Household Department:—I would like to ask through the columns of your paper, directions for cementing together strips of linoleum so that the joining will be waterproof.—Mrs. A. C., Fairgrove, Mich.

I do not believe the edges of linoleum can be cemented so as to make it waterproof. Experts advise simply tacking it to a board floor and only cementing to concrete or tiled floor. If you wish to cement it, however, first lay it in place and tack lightly to the floor. Leave it this way until it shapes to the room. Then remove the tacks, carefully press out all wrinkles and trim off the edges. Turn up the strips and brush for two inches back from each edge with fish glue or a prepared linoleum cement. Lay again and press in position until the cement adheres.

NOVEL TABLE "LINEN."

A woman who likes dainty things for her table and who hasn't the money for expensive linen, evolved a very pretty luncheon set from ten-cent pink and white checked gingham. She chose gingham with the checks about a half-inch square. From this she made four "runners," long enough to cross the table from the center of each side and end, and diagonally from corner to corner and hemstitched these. Tumbler and plate doilies were fringed, and there were oval doilies fringed for the hot dishes. The napkins were also of the gingham, made about 15 inches square and hemstitched like the "runners." This was used in a dining-room where all the other tones were brown and brightened it up wonderfully. A yellow and white set would tone a red dining-room.

SHORT CUTS TO HOUSEKEEPING.

When bread is cooled after taking from the oven, if each loaf is wrapped in paper before placing in the bread jar it will keep moist longer and will not mould so quickly.—L. T. F.

For those who persist in using kerosene to light the fire, it is much safer to use a piece of paper which has been set on fire than a match.—V. T.

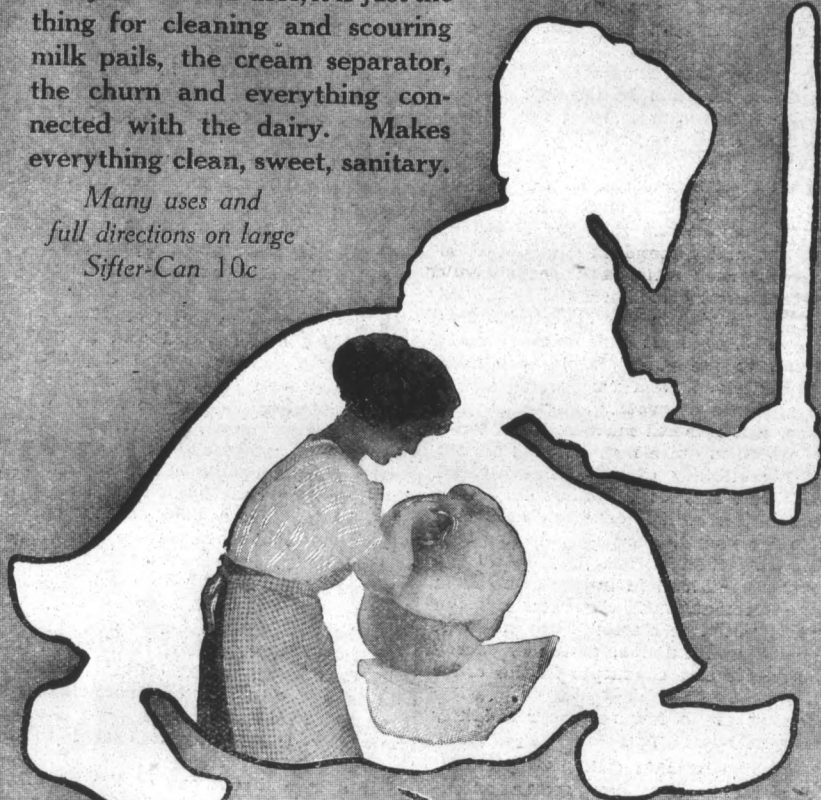
Just try greasing the bread pan after mixing the bread into a hard loaf and see how much easier it will turn out on the board when you are ready to put it into small loaves.—Mrs. A. V.

On the Farm

Old Dutch Cleanser

is of greatest value. Besides its many household uses, it is just the thing for cleaning and scouring milk pails, the cream separator, the churn and everything connected with the dairy. Makes everything clean, sweet, sanitary.

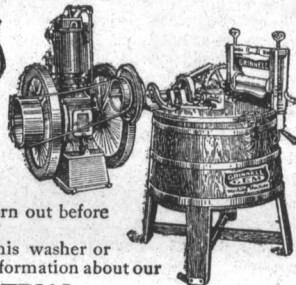
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You Rest while the Gas Engine works the washer

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hitched to a common gasoline engine at idle times would do both washing and wringing perfectly—and without a bit of work from you. Don't grow old and worn out before your time, slaving with old fashioned methods.

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First prize for largest number of subscriptions	\$50.00
2nd prize for next largest number of subscriptions	35.00
3rd prize for next largest number of subscriptions	25.00
4th prize for next largest number of subscriptions	20.00
5th prize for next largest number of subscriptions	15.00
6th prize for next largest number of subscriptions	10.00
7th prize for next largest number of subscriptions	5.00
8th to 11th prize for next largest number of subscriptions, each.....	3.00
12th to 17th prize for next largest number of subscriptions, each.....	2.00
18th to 27th prize for next largest number of subscriptions, each.....	1.00

Write at once for full particulars as this is the best time to work.

Address, Agent's Division,

THE MICHIGAN FARMER, Detroit, Michigan.

CROP AND MARKET NOTES.

(Continued from page 60).

below zero and the snow blowing every day for a week. The fields are covered with about four inches of snow on the level but not any in the highway. The principal talk of the day is the railroad from Detroit to Bad Axe, a great thing for the western part of Sanilac county. Auction sales are not very well patronized. Farmers' institutes are being held. Markets are as follows: Wheat, \$86@88c; oats, 46c; beans, \$2.10 per bu; hay, timothy, No. 1, \$17 per ton; fat hogs, \$5.25; lambs, \$5 per cwt; butter, creamery, 34c; eggs, 26c.

Livingston Co., Jan. 15.—The weather this month has been the most severe in years. Cellars that the frost had never entered before were not proof against such weather as has prevailed the past two weeks. Stock is being marketed freely on account of the scarcity of feed. Feed of all kinds is scarce and hay and other coarse feeds are selling at almost prohibitive prices. Hay selling for \$20 per ton, loose. There is probably not more than half as many lambs on feed this winter as usual and feeders must necessarily receive a good price for stock in order to realize a profit on account of the high price of feeds.

Ogemaw Co., Jan. 15.—This county is now in the grip of one of the hardest and most protracted "cold spells" known here for 18 years. The mercury has been down as low as 28 below zero and is today 10 below at 9 o'clock a. m. More or less suffering among stock is the result as many farmers have sold themselves short on hay, owing to the exceptional prices this year, and are now feeding largely on straw. There has been thousands of tons of hay shipped from the county, the price being now from \$17@18. Cream brings around 34c; butter at the stores, 26c; fresh eggs 28@30c. Not enough corn was raised last year to supply the home demand and much is being shipped in. Pork and beef show quite an advance over last month. Any farmer who owns a timber lot can dispose of a load of stove wood quickly. Wheat is quite well covered with snow and is generally reported in good shape.

Newaygo Co., Jan. 2.—Good winter weather and some snow, with not much doing on the farm. Fall sowed grain is looking good. All kinds of feed scarce and high and not any to sell among the farmers. Farmers making contracts for next season's pickle crop at the salting station and some signing contracts for growing truck for the canning factory. There will be a small acreage of peas grown for the local cannery on account of the scarcity of seed. Potatoes, 60c; wheat, 82@84c; oats, 45c; corn, 65@70c; rye, 80c; eggs, 25c; butter, 28c; butterfat, 35c; spring chickens, 8c.

Northern Isabella and Southern Clare Co.'s.—After three weeks of good winter weather it warmed up in December enough to let the farmers gather the beets and chicory that was frozen in. Farmers begin to get their returns for sugar beets and realize only about \$5 per ton, net. The farmers are easy marks, take their best land and raise beets and sell them to the beet companies for one-half the price they could afford to pay for them, and I am one of them, just because we do not organize and stand together. Hay buyers plentiful.

Emmet Co., Dec. 26.—Fields have been bare for the last half of the month, with moderate temperature. Just what the damage to winter grains and seeding will be no one can tell. Wheeling has been good and one sees loads of potatoes occasionally going to market. Lumbering operations are not being pushed. Hay firm at \$18 and many holding for \$20. Pork lower than for some years back, selling around \$7; eggs, 30c at stores; butter, 30c; business generally quiet.

Indiana.

Laporte Co., Jan. 8.—Sixteen degrees below zero yesterday morning. Mercury ranged the lowest of any week in ten years and below zero the last three days. A fine blizzard of snow filled the air, driven by a strong wind. Ice men could not put up ice on account of fierce cold wind. But little snow.

Ohio.

Lucas Co., Jan. 8.—We had a very bad fall to secure the corn crop and much is spoiling either in the crib or in the mow. The roads that are not stoned have been impassable. Just as soon as it would freeze enough to bear up a team it would rain again. It is now colder and farmers hope it will stay cold. Poultry is plentiful and cheap; chickens, 9@10c; ducks, 14c; geese, 12@14c; turkeys, 16@18c, alive; hogs, 6c; hay is bringing \$25 on the Toledo market; bright oat straw is \$8; potatoes are scarce at \$1; apples, \$1. The country grocers are paying 36c for fresh eggs. Butter is 30c and scarce. Nearly all of the farmers ship their milk to Toledo. The farmer who has a silo seems to be in the best shape to handle the feed question this fall, as the corn in the shock is spoiling. Ear corn is selling for 75c per 100 lbs. Good cured ear corn is selling at 90c per 100 lbs.

Carroll Co., Jan. 8.—It is very cold here with a good deal of wind but not much snow. There is still some corn out in the field, but the weather is too bad to husk. Corn, 70c; oats, 60c; rye, 95c; wheat, \$1 per bu; eggs, 30c per doz; butter 32c per lb.

Hardin Co., Jan. 8.—The wet weather through our section has come to a close and the thermometer is registering around the zero mark. Very hard on the live stock. Some snow falling today. Most farmers are through husking corn; some fodder out yet. Wheat looking very well, considering the weather conditions. Fat cattle bring good money and good hogs bring 6c; wheat, 93c; oats, 48c; hay, baled, \$18.50; eggs, 25c.

Get at it



with the Scales!

Don't guess at your crops. Get at them with the scales as this man did, and see how our fertilizers pay you good dividends.

"I will write you my experience with A. A. C. Co. Fertilizer on Oats. The yield was 70 bushels per acre of oats that weigh 40 pounds to the bushel, struck measure, on land I call very much run down.

There were 12 acres in the field. It was in beans last year and the ground was fall-plowed late for oats, and was well fitted in the spring with a spring tooth harrow and the oats drilled in at 2½ bushels to the acre.

I commenced on one side of the field by drilling 100 pounds of Fertilizer to the acre. I increased the Fertilizer at intervals at the rate of 50 pounds each time until I got up to 400 pounds per acre leaving a drill row at each increase unfertilized. The parts that were fertilized with 100 pounds and 150 pounds each per acre were not as good as that which was fertilized with 200 pounds and over. The unfertilized strips were sorrowful looking oats by the side of the rest and attracted a great deal of attention. These strips were examined by good judges who laid their yield at from 30 to 40 bushels per acre—the yield of the whole field had no Fertilizer been used. That being the case, from 30 to 35 bushels per acre were added by using the Fertilizer.

We pulled up equal distances of rows that grew only seven inches apart, side by side, and took the dirt from the roots and weighed them and found that the fertilized row weighed over two and a half times as much as the unfertilized row. The fertilized oats stood a foot higher than the others and were much stiffer and larger, with over three times as much root as the other.

It pays well to use Fertilizer. It will add 20 to 40 bushels per acre, besides giving you double the straw and ripening your crops from a week to ten days earlier." (Name given on application.)

Our soils in the Middle States will produce good crops if the farmer goes at it in the right way.

There is no chance to make any money at all out of a poor crop.

Some Fertilizers are better than others. That is a well known fact. There are farmers who are satisfied with ordinary crops grown with inferior Fertilizers, because they have never used the best. While the farmer is obliged to take some chances on things beyond his control, he should not take any chances as to the Fertilizer he applies, for that is something he can control.

A A C CO. FERTILIZERS

are made not only to contain the full percentage of plant food according to guaranteed analysis, but—we go further than that. The agricultural value of our Fertilizers is given first consideration, because we look to the future. We want every farmer who uses our Fertilizer to get good results and increase his orders each season. That is why we are doing a tremendous business. Our factories never shut down.

Write for further information and agency proposition.

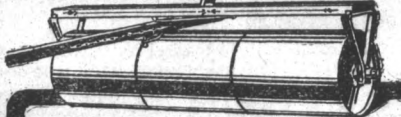
Every farmer should read an article by John A. Widtsoe, Ph. D., printed in our pamphlet—How to fight drought with fertility and why the richness of soil makes up for lack of moisture.

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Dunham Pulverizers, Packers and Rollers are made suitable to every soil formation. Single and double gang pulverizers. Flexible and jointed-frame pulverizers. Combination surface and sub-surface packers. All steel land rollers. Pipe and T Bar Rollers. An average increase of 5½ bushels per acre by using the Dunham. On sale near you. Write us.

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MAKE A SULKY PLOW OF YOUR WALKING PLOW

Attach a Western plow sulky to your regular walking plow and ride. Fits right or left wood or steel beam plow. Levers give perfect control in any soil. 10 days free trial, fully guaranteed, sensational price. Write today for particulars. Western Implement Co., 820 Park St., Ft. Washington, Wis.

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"Took just 3 minutes to put a very dull axe in perfect order," writes J. A. Sudan, Newark, Del. Sharpens

plows, sickles, and all tools amazingly quick. 25 times faster than grindstone. Will not draw temper. The Luther Farm Tool Grinder has shaft drive, enclosed bearings. Low price, 5 yrs. guarantee. 30 attachments to select from. 30 Days Free Trial One Year Approval. You may use it 30 days free. No money needed. Write for 40-page free book and special offer. Luther Grinder Mfg. Co. 21040 Stroh Bldg., Milwaukee, Wis.



PRACTICAL SCIENCE.

HOW PLANTS FEED.

BY FLOYD W. ROBISON.

General Composition.

Moisture.—If we should take a plant fresh from the soil and place it in a warm dry place, in the course of a few hours it would become dry and brittle. The cause of this condition is, of course, the evaporation of the water from the tissues of the plant. In green plants the content of water is from 75 to 90 per cent of the total weight. When grass is cut, the curing process is principally a drying process by which the greatest bulk of the water is driven off. The dried plant still contains considerable water, however, which it will not give up until it is finely pulverized and subjected to prolonged drying at the temperature of boiling water.

Seeds and the grains contain considerable water even when thoroughly ripe and matured. Roots in their natural condition contain much water. The potato contains at least 75 per cent water and the sugar beet frequently 80 to 85 per cent. The dried or cured hays and grains contain from 10 to 15 per cent water.

Dry Matter.—After the removal of the water or moisture, the residue is called dry matter, and is very complex in its makeup. It is composed of various organic constituents and some inorganic or mineral constituents as well.

Ash.—If the dry matter be burned, the organic constituents escape and only the mineral matter remains. This mineral residue is called ash. Everyone is familiar in a general way with the approximate comparative amounts of matter burned away, or the organic, and the ash, or the inorganic which is left behind when wood is burned. This same general relationship exists in other vegetable matter between the organic matter and the ash although it is by no means a constant factor.

The following table shows the percentage of water, dry matter and ash in a few plants:

	Water. per ct.	Dry Mat'r. per ct.	Ash. per ct.
Wheat (seed)	14.0	86.0	9.00
Beans (seed)	14.8	85.2	5.40
Potatoes	75.5	24.5	0.95
Clover	80.0	20.0	1.25
Beet leaves	90.0	10.0	2.00

Relative Importance of Dry Matter and Ash.

It is evident from the relative amounts of dry matter and ash in plants that nature places much greater stress on the dry matter than on the ash. Of course, strictly speaking, the fact that the ash is present as a minor constituent does not argue against its importance. It is a fact, however, that the demand of living matter is much greater for organic or vegetable structure than for the ash or the inorganic part of plants.

Generally speaking, we are not concerned with the ash part of vegetable matter although it exercises an important function. Later on in our studies in animal nutrition we shall see that in the human diet enough attention has not been given to securing a satisfactory supply of the ash constituents, but for the present we are not particularly concerned therewith.

Composition of Dry Matter.

From the preceding table we have seen that the dry matter, aside from the water, occupies the major part of plants. This dry matter is of an exceedingly varying composition and because of this, we are able to exercise greater control over the life habits of the domestic animals than would otherwise be possible. Dry matter is composed of two general classes of products: First, the nitrogenous substances, and second, the non-nitrogenous substances.

The Nitrogenous Substances.

By the nitrogenous substances we mean the products containing nitrogen. The nitrogenous substances contain also carbon, hydrogen, oxygen and sometimes sulphur, phosphorous and iron, or lime in small quantities.

The principal nitrogenous products with which we shall be concerned are the proteins, or as they are sometimes called, the albuminoids. At this point it will be sufficient to bear in mind that this class of products are the products containing nitrogen, and that the proteins are fundamentally concerned with plant and animal life. Why they are so important we shall discuss later on in our studies in nutrition. It is to build up the proteins that

has furnished such a stimulus to the use of artificial manures. Otherwise the practice of intensive agriculture may quite properly be laid to the door of the nitrogenous constituents of dry matter.

The Non-Nitrogenous Substances.

The non-nitrogenous substances are the constituents of the dry matter that contain no nitrogen. They consist of carbon, hydrogen, and oxygen in a great variety of combinations. The non-nitrogenous matter is further divided into two principal divisions, viz.:

A—The carbohydrates.

B—The fats.

A—The carbohydrates, are typified by such common products as sugar, starch and cellulose or woody fiber.

B—The fats, are commonly understood to be the vegetable and animal oils, such as cottonseed oil, linseed oil, lard, butter, etc.

Some very complex combinations of these three simple elements, carbon, hydrogen and oxygen, occur in the carbohydrates and the fats. It seems almost incredible to believe that so many combinations can exist and be simply the various arrangements of these three simple elements. When we realize, however, that granulated sugar, butter-fat, starch-tallow, etc., are nothing more nor less than different arrangements of carbon, hydrogen and oxygen, we are then prepared to believe other still more wonderful processes of nature.

We shall discuss them again and more fully in our discourse on animal nutrition a little further on.

LOW GRADE VS. HIGH GRADE FERTILIZERS.

The demand for a cheap fertilizer is not universal by any means, but it is quite general. It is apparent that many farmers still pay greater attention to the cost of a fertilizer than to its intrinsic value.

The manufacturer of fertilizers should not be blamed for the sale of cheap fertilizers. He has simply been supplying a demand. Many tons of fertilizers are sold annually because they pass muster under the name fertilizer, rather than because of any specific merit which they possess.

The farmer evidently fixes in his mind the amount of money he feels he can afford to expend per acre on fertilizers and then proceeds to purchase that particular brand which will give him the greatest quantity at the lowest price. It is this demand which has been responsible for the putting upon the market of the low grade fertilizers.

Low grade fertilizers are quite generally very expensive ones. In fact the term "low grade" very aptly expresses their true relationship. Assuming that the low grade fertilizer contains no filler at all, which may, of course, be the case, then, as a rule, we may safely say that the fertilizing elements are not only present in small amounts, but as well in the most undesirable forms. By purchasing such a fertilizer the farmer gets more tonnage for his money but much less real value in fertilizing ingredients.

Assuming that high grade fertilizing ingredients are used, the only other explanation for the low cost is the presence of a considerable amount of filler. Now it must be evident that the manufacturer cannot mix inert filler with his high grade ingredients and still sell the product at the price he could before mixing. Not only has he added the expense of mixing, but he has greater bulk, thereby increasing the expense of sacking, the expense of cartage of the filler before mixing and likewise the increased freight and cartage expense of the mixed fertilizer.

For all of this the farmer must pay, of course, and usually a good margin of profit besides. Some of the best sellers retail at about \$20 per ton, and if made from high grade ingredients may perhaps have a value, say, of \$12 per ton.

The Missouri station (Bulletin No. 91), illustrates a case as follows, which nicely confirms the above statements:

"In order to furnish a mixed fertilizer containing nitrogen, 0.82 per cent, available phosphoric acid, 7.00 per cent, potash 1.00 per cent; or one containing nitrogen 1.65 per cent, available phosphoric acid 8.00 per cent, potash 2.00 per cent; or a steamed bone containing, nitrogen 1.65 per cent, total phosphoric acid 20.00 per cent, or an acid phosphate containing

Get a roof that water won't soak through—won't blow off—sparks and embers won't burn—and at a less cost.

Put up in rolls and shingles

Why waste your money on wood shingles, tin, slate or tile—when you can get just as artistic effects and a much more durable roofing at a lower cost.

Don't buy the same style of roofing your grandfather bought—you can't get the same quality today. Here is something newer, better, more durable.

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Quality Certified and Durability Guaranteed for 15 Years, furnished in shingles and in rolls. No need to worry about the quality—all you have to do is to look for this Certificate—its for your protection—it guarantees both quality and price. Back of this Certificate is the General's enormous mill facilities and volume—enabling your local dealer to undersell Mail Order Houses and sell you this high grade Rubber Roofing at such a low price you simply can't afford to use any other roofing material.

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Try **Certain-teed Roofing** when you are building or rebuilding—see how much you will save. At least get our book—it's free for the asking. Write today. —Address Dept. N5

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You're Robbing the Soil

of part of its most valuable and fertile products—ammonia, potash and phosphorous—every time you grow a corn crop.

These must be replaced regularly or in a few years all the fertility of the soil will be exhausted.

Jarecki Brand Fertilizers

contains all the foods necessary to the perfect development and maturity of corn.

Drill Jarecki Fertilizer, 200 to 400 lbs. to the acre, and you will get 80 to 100 bushels of better, more fully developed corn per acre.

Write for free memorandum book. Contains the A, B, C, of fertilization. Free to all growers.

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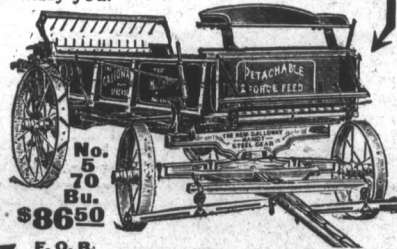
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FIRST TEN MEN OR MORE In Every Township—Answer!

I want to place 10 Manure Spreaders or more in every township in the country in the next few months. And that means that I have to cut my prices to the bone to do it! So the first ten men or more who answer this from each township will receive a startling offer on the best Spreader in the world—Galloway's New No. 5, with Mandt's New Gear. A gift of as good as \$50 to these men—be one of them! Why hand over \$50 extra to a dealer or agent when you can buy direct from Galloway? Keep the money in your pocket and get a better machine. My 45-55 bushel Spreader, \$39.50—complete with trucks, \$64.75—sent on 30 to 60 days' free trial—money back if it doesn't satisfy you.

Don't Wait! Get quick action on this wonderful offer. Be one of the first from your township. I have the world beaten on Manure Spreaders—Mandt's famous new gear and eleven special patented features that cost you not one penny extra. My prices to you are less than your dealer can buy Spreaders for spot cash in car load lots! Send your name and address on postal today, and my big offer will go to you at once.

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William Galloway Company, 649AB Galloway Station,
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No. 5
70 Bu.
\$86.50

F. O. B. Waterloo With Mandt's New Gear

10 per cent available phosphoric acid, it is necessary to use low grade material or to add ground cinders, molder's sand or some other inert substance as filler. The addition of this filler makes an increased cost to the manufacturer which the consumer must pay. The price which the farmer pays for the fertilizer is based on the delivery at his railroad station. The manufacturer must, therefore, add the extra cost of freight on this filler which in no way increases the value of the plant food but must necessarily increase its cost. In addition to this, the farmer must haul the added filler from the station to his farm when he could just as well have taken so much dirt from the roadside to apply on his land. For illustration, take the low grade mixed fertilizer mentioned above. This is reported by many dealers as being their best seller at from \$19 to \$21 per ton. At the values used, this fertilizer is worth as follows:

0.82 per cent nitrogen at \$4.00 per unit	3.28
7.00 per cent available phosphoric acid at \$1.20 per unit	8.40
1.00 per cent potash at \$1.20 per unit	1.20

Total value of this fertilizer.....\$12.88

The amount of plant food in the above fertilizer can easily be obtained from good high grade material as follows: Nitrogen (0.82 per cent) 16.4 pounds per ton, can be obtained from 125 pounds of dried blood, 110 pounds of sodium nitrate, or 200 pounds of tankage. Seven per cent available phosphoric acid, 140 pounds per ton, can be obtained from 1,000 pounds of 14 per cent acid phosphate or from 875 pounds of 16 per cent acid phosphate. One per cent potash, 20 pounds per ton, can be obtained from 40 pounds of good commercial sulphate of potash. This makes a total of from 1,025 pounds to 1,240 pounds of good fertilizer material. The balance of the ton, 975 to 760 pounds, is useless filler upon which the farmer pays freight because he demands a cheap fertilizer.

High grade fertilizers, as a rule, are therefore much cheaper in the end because they furnish the fertilizing ingredients at a much less cost per pound and much more closely approach the cost of the raw materials used.

LABORATORY REPORT.

Dairy Feeding Questions.

We were taught that a cow must have a certain amount of protein to make milk of. Does she make the butter-fat from the protein of the food or from the fat and carbohydrates of the food? Should a Jersey cow giving six per cent butter-fat be fed the same ration as the Holstein cow that gives three per cent butter-fat? Why?

The object of supplying protein in the feed is to furnish to the body repair material to take the place of the tissue used up in the bodily mechanism of the cow. This tissue destroyed is of a nitrogenous character and being nitrogenous must be formed from some food constituent which contains nitrogen (to wit, protein).

In the elaboration of milk one of the important constituents of the milk is protein, and consequently the amount of protein consumed by the cow must be sufficient not only to take the place of the nitrogenous tissue used up by the body in the various bodily functions performed, but as well to supply the amount of protein removed in the milk.

The butter-fat is produced in part from the protein but also from the carbohydrates and fats. It is not economy to feed protein for the purpose of butter-fat production because the carbohydrates and fats are cheaper.

Unquestionably a cow giving a six per cent butter-fat should be fed a greater grain ration per pound of milk than a cow giving three per cent butter-fat.

I think the best way of arriving at the proper grain ration to be fed should depend upon the pounds of milk solids. In this way allowance will be made for not only the difference in quantity of milk yield between the Jersey and the Holstein, but also for the difference in composition. Milk containing three per cent butter-fat will contain 11.5 per cent solids, whereas milk containing six per cent butter-fat will contain 15.0 per cent solids.

We may quite safely figure that one pound of grain ration should be given for each one-half pound of milk solids. If a Holstein cow gives 30 pounds of three per cent milk she will give $30 \times 11.5\% = 3.45$ pounds milk solids per day, which should call for 6.90 pounds of grain per day. The Jersey may give but 15 pounds of six per cent milk, thereby elaborating $15 \times 15\% = 2.25$ pounds milk solids per day. This

it should call for $2 \times 2.25 = 4.50$ pounds of grain ration per day.

Assuming that the roughage ration takes care of the maintenance requirements of the two cows, the Holstein should be given on the above basis, 6.90 pounds of grain per day and the Jersey 4.50 pounds per day.

Deterioration of Rubber.

Do rubber goods, such as boots and shoes, deteriorate with age? If so, why, and how prevent it?

It is generally conceded that such rubber goods as boots and shoes deteriorate very materially with age. Just why this is so is not apparent but it is probably due to an atmospheric condition involving an oxidation. It seems to be true that rubber goods deteriorate more rapidly when not in use than when in actual use, that is, referring, of course, to the condition of the rubber and not to the question of the wearing out, as would, of course, be more rapid when the goods were in use than not in use. Probably the most available preventative measure is to keep the rubber stock in tight compartment which is as dark as possible. The oxidation, or wearing out of the rubber, will not be as rapid in the dark as in the light.

WHOLE VS. GROUND CORN FOR HOGS.

The question of the most economical method of feeding corn to hogs has been very carefully studied by the Iowa Experiment Station. The fastest and most profitable gains were secured by feeding dry-ear corn until the hogs were close to 200 pounds in weight. Then, if the hogs were to be fed longer, and the weather permitted, the most profitable gains were secured by changing them to soaked shelled corn. Fall pigs and the spring pigs carried over to be fattened the following spring were handled most profitably by feeding dry-ear corn until the weather became mild enough for soaking corn in the following spring, and then feeding soaked shelled corn until the finish. It should be borne in mind that corn soaked 12 hours gave better results than that soaked 24 hours. It proved useless to grind corn for hogs of any age when the weather was warm enough to permit soaking. In every case, where grinding has shown a saving of corn, simple soaking 12 hours in water has shown a still greater saving.

CATALOG NOTICES.

"The Southern Homeseeker's and Investor's Guide" is the title of a 40-page pamphlet, published by the Norfolk & Western Railroad of Roanoke, Va. This pamphlet is issued quarterly and contains many fine illustrations as well as descriptive matter concerning the agricultural industries of the section traversed by this line.

The Brown Fence and Wire Co., of Cleveland, O., will send to interested readers of the Michigan Farmer their annual catalog of wire fencing, ornamental fencing, gates, etc. This company is in its thirty-second year of success in the fence business and this 64-page illustrated catalog tells all about the goods they make.

The Kitzelman Fence, manufactured by Kitzelman Bros., of Muncie, Ind., is fully described and illustrated in their 40-page catalog, No. 31. This firm was established in 1883 and manufactures a number of styles of farm and ornamental fences, gates, etc., as well as machines for making one type of fence on the ground.

Allen's Catalog for 1912 is a handsomely illustrated, 50-page book, illustrating and describing a choice variety of strawberry plants and small fruits offered by this grower. Address W. F. Allen, Salisbury, Md., for a catalog, mentioning the Michigan Farmer.

"Reo Echo" is the title of a booklet published by R. M. Owen & Co., 1759 Broadway, N. Y., describing and illustrating the various styles of Reo automobiles in action, and containing much matter of interest to motorists.

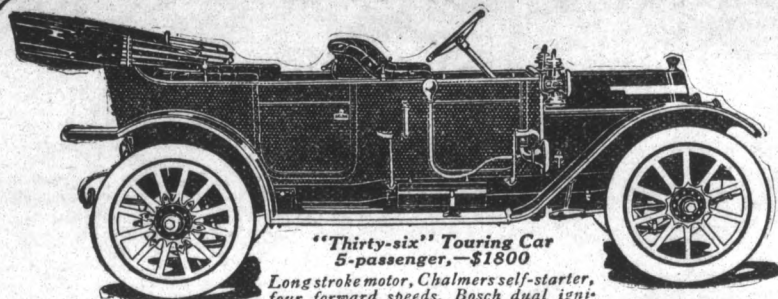
W. N. Scarff's Fruit and Farm Seeds for 1912 are illustrated and described in a 40-page catalog, sent by W. N. Scarff, New Carlisle, Ohio. It lists a full line of small and tree fruits, ornamental plants and farm seeds.

"The Golden Opportunity Place" is the title of a finely illustrated 50-page pamphlet, published by Barney & Hines, Inc., Central Bank Bldg., Memphis, Tenn. This booklet describes the golden opportunities awaiting settlers in the Mississippi River Delta country and illustrates the agriculture of that country most admirably.

Book Notices.

Second Year Latin for Sight Reading By Arthur L. Janes, Boys' High School, Brooklyn. This book is intended to follow the intensive reading of Books I and II of Caesar's Gallic War. Cloth, 12mo, 238 pages. Price, 40c. American Book Company, Chicago.

Second Course in Algebra. By Joseph V. Collins, Professor of Mathematics, State Normal School, Stevens Point, Wis. This book meets the needs of high school classes devoting a second year to the study of algebra. Cloth, 12mo, 313 pages, with cuts and diagrams. Price, 85c. American Book Company, Chicago.



"Thirty-six" Touring Car
5-passenger, \$1800
Long stroke motor, Chalmers self-starter,
four forward speeds, Bosch dual ignition,
Solar gas lamps and Prest-O-Lite tank,
ventilated fore-doors, 36x4-inch tires,
Continental demountable rims.

"Leans Right Up In the Collar and Pulls"

THIS expression describes very well the mule-like pulling qualities and the bull-dog endurance of the Chalmers "Thirty-six" motor.

Chalmers cars are built for durability; for day-in-and-day-out service; they have a reputation which has made them standard.

The new Chalmers "Thirty-six," the leader of the 1912 line, gives to the farmer, at \$1800, a car which he can compare favorably with the high priced cars. When the "36" was planned we instructed our engineers to build a four-cylinder, five-passenger car that would leave absolutely nothing to be desired. We said we would fix the price when the car was ready.

We think in the Chalmers "36" we are offering a car that actually does leave nothing to be desired. The "36" has a splendid motor, with large cylinders, long stroke (4 1/4" x 5 1/4"). This motor is a great puller on high speed; a wonderful hill-climber, and will give you all the speed you want. Although rated at 36 h. p., it will actually

develop 40 h. p. It is a motor that will "lean right into the collar and pull."

The Chalmers Company was the first to offer a real automobile at a low price. We believe that the "36" is the first medium priced car which will compare with any five-passenger motor car, no matter how costly. It is a car, so reliable, so sturdy, so durable, so good looking, that it will appeal to the farmer as no car heretofore offered can.

The well-tried Chalmers "30," the car that won the last year's Glidden Tour, the car which last year, fully equipped, sold for \$1750—now, through improved methods of manufacture—is this year offered to you at \$1500.

We invite you to inspect Chalmers cars. Comparison has sold more cars for us than all our advertising. Your local dealer will be pleased to give you a demonstration of Chalmers cars. A postal card will bring you our latest catalog and an introduction to your nearest dealer. Let us get acquainted. Let us hear from you today.



This monogram on the radiator stands for all you can ask in a motor car

Chalmers Motor Company, Detroit, Mich.

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Postal Savings Bank Deposits

That is the only class of bonds we offer you.
But—instead of the 2 percent the Postal Banks
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We have a complete list of these high-grade Bonds. Ask for it—It's FREE.

New First Nat'l Bank Dept. Z-2 Columbus, O.

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Edwards Roofing
Because They Like Yours!**

This is our special Agent's Proposition in a nutshell. It is open right now to one man in each community. If you are the man, write us at once! Get the whole proposition. You place yourself under no obligation. You can have an everlasting roof of Edwards Interlocking "Reo" Steel Shingles on your house, barn or other farm buildings and let it make money for you.

Edwards "REO" Steel Shingles

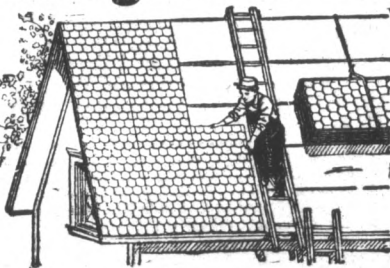
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Each and every one of the high-grade Bessemer Steel Shingles is dipped singly into molten zinc. This gives heavy, uniform coating and covers all edges. No raw edges exposed to the weather. Edwards interlocking feature makes solidest roof. Lasts a lifetime. Comes in sheets 5 to 12 feet long, 24 inches wide. Galvanized or painted, all ready to put on. Hammer and nails all that is required. Anyone can do it. Can be applied over wood shingles or sheathing 12 inches apart.

\$10,000 Ironclad Bond Lightning Insurance

We agree to refund the amount paid in every case where a roof covered with Edwards Interlocking "Reo" Steel Shingles is destroyed by lightning. This guaranty is backed by our \$10,000 Ironclad Bond and stands forever. Ask for Big Free Roofing Catalog No. 167, with special low prices. Freight prepaid. Send dimensions of your buildings and we will quote you cost. Write today.

THE EDWARDS MFG. CO., 117-167 Lock Street, Cincinnati, Ohio



MARKETS

DETROIT WHOLESALE MARKETS.

January 17, 1912.

Grains and Seeds.

Wheat.—Wheat prices ruled steady at the closing figures of a week ago, the only interruption being a decline of a half cent on Monday, which was regained the following day. The chief interest centers in conditions in South America and the activity at primary elevators in Canada. Reports of damage keep coming in from Argentine and also news that transportation is still interrupted by railroad strikes, so that little grain is arriving at the coast for shipment to foreign countries. The crop in that country, while larger than usual will grade much below normal because of the excessive wet weather. This is true also of the Canadian wheat, the offerings show the effects of moisture, the grain being mouldy and musty in many instances. This makes dealers anxious to secure dry grain and is likely to develop a wider margin between the high and low grades. The American visible supply decreased, while the Canadian supply increased over 4,000,000 bushels during the week. One year ago the price for No. 2 red wheat was 98½¢ per bu. Quotations are as follows:

	No. 2 Red.	No. 1 White.	May.	July.
Thursday .....	.97	.95	1.01½	.95½
Friday .....	.97	.95	1.01½	.95½
Saturday .....	.97	.95	1.01½	.95½
Monday .....	.96½	.94½	1.00½	.95½
Tuesday .....	.97	.95	1.01	.95½
Wednesday .....	.97½	.95½	1.01½	.96

Corn.—The cold weather has favored a stronger corn market. There appears to be a good foreign demand for this grain. Offerings at country elevators have not been sufficient to hold prices steady and the cold wave augmented the influence. Many sections of the country that usually grow sufficient of this cereal to carry on their feeding operations are importing corn this winter. This gives a substantial support to the deal. The price for No. 3 corn a year ago was 47½¢ per bushel. Quotations are as follows:

	No. 3 Corn.	No. 3 Yellow.
Thursday .....	.63	.64
Friday .....	.63	.64
Monday .....	.63½	.64½
Saturday .....	.63½	.64½
Tuesday .....	.64	.65
Wednesday .....	.64½	.65½

Oats.—There is a very active demand for oats on the local market and the supply is scarce. Prices are advanced over the high figures of last week. In the Chicago market holders are not in a mood to sell and appear ready to accept more of this grain, which gives to the trade there a bullish tone. One year ago the price for standard oats was 36¢ per bu. Quotations are as follows:

	Standard.	No. 3 White.
Thursday .....	.51½	.51
Friday .....	.51½	.51
Saturday .....	.51½	.51½
Monday .....	.51½	.51½
Tuesday .....	.52	.51½
Wednesday .....	.52½	.51½

Beans.—The cold weather has improved the bean deal, viewed from the seller's standpoint. Both cash and futures are higher. The trade is becoming anxious for the supplies farmers have in their possession. There is also an improvement in the condition of the legumes. Quotations are as follows:

	Cash.	Feb.
Thursday	\$2.33	\$2.35
Friday	2.33	2.35
Saturday	2.35	2.37
Monday	2.35	2.37
Tuesday	2.35	2.37
Wednesday	2.38	2.40

Clover Seed.—Prices have advanced since a week ago. While the volume of sales is small a firm tone features the trade. Quotations are as follows:

	Prime Spot.	March.	Alsike.
Thursday	\$12.65	\$12.65	\$10.75
Friday	12.75	12.75	10.85
Saturday	12.75	12.75	11.00
Monday	12.75	12.75	11.00
Tuesday	12.75	12.75	11.00
Wednesday	13.25	13.25	11.25

Rye.—This grain held at the advanced price of a week ago. Offerings are small and the trade quiet. No. 2 rye is quoted at 97¢ per bushel.

Timothy Seed.—This market is dead. The nominal quotation is \$7.20 per bu.

Flour, Feed, Potatoes, Etc.

Flour.—Prices are unchanged. Market steady.

Straight	\$4.25
Patent Michigan	4.85
Ordinary Patent	4.60
Rye	5.20

Feed.—All grades are unchanged and steady. Carlot prices on track are: Bran, \$28 per ton; coarse middlings, \$28; fine middlings, \$32; cracked corn, \$30; coarse corn meal, \$30; corn and oat chop, \$27 per ton.

Hay and Straw.—With the exception of rye straw all grades of hay and straw are higher. Market firm. Quotations are: No. 1 timothy, \$21.50@22; No. 2 timothy, \$20@20.50; clover, mixed, \$19.50@21; rye straw, \$10.50@11; wheat and oat straw, \$10@10.50 per ton.

Potatoes.—Because farmers will not chance shipping their potatoes for fear of freezing, the supply is running low and prices are going up. Car lots on track are quoted at 95¢@1 per bushel.

Provisions.—Family pork, \$17.50@20; mess pork, \$16.50; medium clear, \$16.50@18; picnic hams, 9½¢; bacon, 12@14¢; pure lard in tierces, 10¢; kettle rendered lard, 11¢ per lb.

Dairy and Poultry Products.

Butter.—On Monday the produce market became a matter of public comment because of the unusual advance of 4¢ per lb. for creamery butter. The Elgin board of trade led off in the change for higher values and other markets quickly followed. There is a scarcity of supplies and the cold weather is reducing the current output. The high figure, however, is checking the movement of butter and making it difficult for dealers to dispose of their holdings and it is also encouraging the use of substitutes. Dairy butter advanced two cents. Quotations are: Extra creamery, 40¢; first creamery, 36¢; dairy, 23¢; packing stock, 22¢.

Eggs.—There are few offerings of eggs which gives a firm tone to the market. The price remains at last week's figure, current receipts, cases included, being quoted at 30¢ per dozen.

Poultry.—This department continues as a week ago, prices being unchanged and trade steady. Quotations are: Live Turkeys, 16@17¢; geese, 11@12¢; ducks, 14¢; young ducks, 15¢; spring chickens, 12@13¢; No. 2 chickens, 10¢ per lb; hens, 10@11¢. Dressed—Chickens, 12½@13¢; hens, 11@12¢; ducks, 17@18¢; geese, 14@15¢; turkeys, 18@19¢.

Veal.—Market rules steady. Fancy, 11@12¢; choice, 9@10¢ per lb.

Dressed Hogs.—Light, \$7; medium, \$6.75; heavy, \$6.50 per cwt.

Fruits and Vegetables.

Cabbage.—Now selling at 2¼@2½¢ per pound.

Onions.—Steady at \$1.25@1.35 per bu.

Apples.—Baldwins and Greenings, \$2.50@3; Spy, \$3@3.50; Ben Davis, \$2@2.50; Snows, \$3.50@4 per bbl.

OTHER MARKETS.

Grand Rapids.

Fresh eggs have advanced to 32¢. Dairy butter is steady at 28¢. Hay is in good demand and is bringing \$18@20 per ton. Potatoes are not moving, but the Grand Rapids local market is higher, tubers retailing at 35¢ per peck. Live chickens and fowls are worth 11@11½¢; geese, 10¢; ducks, 13¢ and turkeys 17¢. Wheat is bringing 92¢; oats, 51¢; corn, 63¢; rye, 88¢ and buckwheat 75¢.

Chicago.

Wheat.—No. 2 red, 95@97¢; May, 99½¢; July, 94½¢.

Corn.—No. 3, 61@61½¢ May, 65½¢; July 65½¢ per bu.

Oats.—No. 2 white, 50@50½¢; May, 49½¢; July, 45½¢ per bu.

Barley.—Malting grades, \$1.10@1.35 per bu; feeding, 80@90¢.

Butter.—Eastern markets are taking a large part of the high grade butter, and this, aided by the extreme cold, brought a 2¢ advance in this market on Monday. The sensational jump at Elgin caused a further advance on Tuesday and placed prices on the highest level known in some years. Quotations: Creameries, 30@40¢; dairies, 26@34¢.

Eggs.—Despite cold weather and consequent light receipts, this market is quiet and decidedly easier, prices showing a decline of 1½¢ since last week. Quotations are: Firsts, grading 45 per cent fresh, 31½¢; ordinary firsts, 26½@28½¢; at mark, cases included, 18@27½¢ per doz.

Potatoes.—Unusually light receipts and reports of damage by freezing from many sections have sent prices up about 15¢ in the last ten days. Market firm. Michigan stock is now quoted at \$1.08@1.10 per bu. Wisconsin, \$1.05@1.10; Minnesota, \$1.08@1.10.

Beans.—This market has an easy undertone. Current quotations are: Pea beans—Choice hand-picked, \$2.53@2.55 per bu; prime, \$2.35. Red Kidneys—Fancy, \$3.15; average, \$3.

Hay and Straw.—All grades steady to firm. Quotations: Timothy, choice, \$23.50@24.50; No. 1, \$22@23; No. 2 and No. 1 mixed, \$20.50@21; No. 3 and No. 2 mixed, \$16@19.50; clover, \$15.50@17.50; No. 2 clover and no grade, \$7.50@13.50; alfalfa, choice, \$19.50@20; No. 1, \$18@19; No. 2, \$16@17; straw, oat, \$9@10; straw, wheat, \$7.50@8.50.

New York.

Butter.—Cold weather and lighter shipments have advanced all grades. Market firm. Creamery specials are quoted at 42¢ per lb; extras, 40½@41¢; firsts, 36@38½¢; seconds, 31@34¢.

Eggs.—Market irregular; prices average lower. Fresh gathered extras, 35@36¢; extra firsts, 33½@34¢; seconds, 32@33¢; western gathered whites, 35@38¢ per doz.

Poultry.—Live—Firm. Western chickens, 13½@14½¢; fowls, 16@17¢; turkeys, 14@16¢. Dressed—Dull. Western chickens, 13½@19¢; fowls, 14½@17½¢; turkeys, 12@21½¢.

Boston.

Wool.—There was a general understanding among manufacturers that, from a demand and supply viewpoint, wool must advance and upon that knowledge many large firms bought heavily of wool during the month of December, with the result that the market held firm and prices advanced slowly. They having supplied their wants there has been diminished calls for wool during January and consequently less trading is being carried on. Many lines, however, are low and the whole supply shows a shortage as compared with a year ago. A large number of Americans are attending the London sales, showing the anxiety on this side to secure foreign wools to supply our deficit. The activity extends to nearly all grades, quarter-bloods, however, being in greatest demand among the grades of fleeces. Following are the leading domestic quotations for fleeces: Ohio and Pennsylvania fleeces—Delaine washed, 32¢; XX, 28@29¢; fine unmerchantable, 23¢; ½-blood combing, 27@27½¢; ¾-blood combing, 26½@27¢; ¼-blood combing, 26¢ delaine unwashed, 25¢; fine unwashed, 21¢. Michigan, Wis-

consin and New York fleeces—Fine unwashed, 20¢; delaine unwashed, 23¢; ½-blood unwashed, 25½@26¢. Kentucky, Indiana and Missouri—¾-blood, 24¢; ¼-blood, 25¢.

Elgin.

Butter.—Market firm at 40¢, which is an advance of 4¢ since a week ago. This is the highest price level reached in this market since 1888. Output for the past week amounted to 615,000 pounds, as compared with 618,000 pounds for the previous week.

THE LIVE STOCK MARKETS.

Buffalo.

January 15, 1912.
(Special Report of Dunning & Stevens, New York Central Stock Yards, East Buffalo, N. Y.)

Receipts of stock here today as follows: Cattle, 160 cars; hogs, 155 double decks; sheep and lambs, 130 double decks; calves 900 head.

With 160 cars of cattle on our market here today, and 17,000 reported in Chicago, everything showing fat and quality sold at last week's prices. In fact, the better grades of heavy cattle that were on sale today were very similar in quality to the top grades last week. The lower grades of cattle sold slow and barely steady, and in some instances a shade lower than last week.

We quote: Best 1,400 to 1,600-lb. steers \$7.85@8.25; good prime 1,300 to 1,400-lb. steers, \$7.50@7.75; do. 1,200 to 1,300-lb. do., \$7@7.50; best 1,100 to 1,200-lb. shipping steers, \$6.75@7.25; medium butcher steers, 1,000 to 1,100, \$5.75@6.50; light do., \$4.25@5.25; best fat cows, \$4.85@5.40; fair to good do., \$4.25@4.75; common to medium do., \$3.60@4.25; trimmers, \$2.50@3; best fat heifers, \$5.75@6.50; good do. \$5.25@5.60; fair to good do., \$4.50@5; stock heifers, \$3.25@3.50; best feeding steers, dehorned, \$5@5.25; common do., \$4@4.25; stockers, all grades, \$3.50@4; prime export bulls, \$5.25@5.75; best butcher bulls, \$4.75@5.25; bologna bulls, \$4@4.50; stock bulls, \$3.25@4; best milkers and springers, \$4.50@5.50; common to good do., \$2.50@3.

With a very heavy run of hogs on hand this morning, it was impossible to get any advance over the close of last week; practically all of the choice quality strong weight yorkers, mixed and medium weights selling at \$6.40. Pigs and lighter weights sold around \$6.15@6.25, according to weight and quality. The bulk of the rough sows sold at \$5.70, with some of the selected bunches at \$5.75. There are a good many hogs going over unsold that were yarded late. Do not look for much change in prices until the supply is cleaned up and out of the way.

The lamb market was active today; most of the choice lambs selling for \$7.25; few at \$7.30. Look for little higher prices the last of the week. The sheep market was firm today; prospects about steady on sheep.

We quote: Best lambs, \$7@7.30; cull to common do., \$5.50@6; wethers, \$4.50@5; bucks, \$2.25@3.50; yearlings, \$5@6; handy ewes, \$4.25@4.50; heavy ewes, \$4@4.25; cull sheep, \$2@3.25; veals, choice to extra, \$10.50@10.75; fair to good do., \$8@10.

Chicago.

January 15, 1912.
Cattle. Hogs. Sheep.
Received today 17,000 25,000 23,000
Same day last year..... 39,567 35,289 30,761
Received last week..... 62,069 211,945 142,818
Same week last year..... 59,770 157,406 100,470

This protracted severely cold weather, while it has some brief let-ups, stays with us for almost an unprecedentedly long time, and the receipts of all kinds of live stock today are very small for a Monday, due in part to the disposition of many stockmen to wait for a rise in the temperature, but more to the continued refusal of the railroads last Saturday and Sunday to accept consignments of stock.

Many droves of hogs are reported held back at country shipping stations, and stock trains are delayed hours behind time today. Cattle, after advancing 10@15¢ for most kinds last week, show the same advance today, with one sale at \$8.60. Hogs are up a dime, despite slowness upon the part of local packers in taking hold, with shipments of hogs and other live stock to eastern points hindered by lack of cars. Hogs are going at \$5.95@6.50, with the best light hogs at \$6.37½, while pigs are selling at \$4@5.75, buyers using their efforts to depress pig prices, partly, it is said, to discourage owners from marketing them. Hogs received last week averaged 211 lbs., compared with 223 lbs. a year ago and 208 lbs. two years ago. Sheep and lambs lost late last week much of their big booms in prices and are steady at these reductions today.

With the best lambs going at \$7.15, while a few cars of feeder lambs averaging around 62 lbs. were sold to Michigan buyers at \$5.35@5.40. Top yearlings are salable now at \$6, best wethers at \$5.65 and best ewes at \$4.50.

Cattle prices moved back and forth last week because of the irregular supplies, with an exceptionally meager run Monday on account of the unusually severe winter weather. Many consignments of cattle intended for the Monday market were refused by the railroad officials, who foresaw that prompt deliveries could not be promised, and hence there were a good many delayed supplies later in the week. Monday's prices were anywhere from 10@25¢ higher, there being nowhere near enough cattle to go around, as less than 16,000 head arrived. Later in the week there were declines in values, with recoveries, and on the whole owners of desirable lots had little cause for complaint. The greater part of the week's sales of steers took place at a range of \$5.75@8, with the cheaper class of light-weight, short-fed steers going at \$4.90@5.75, these being cattle that should have

been fed considerably longer. The same may be said of many of the medium grade cattle, these selling at \$6@6.90, while good steers went at \$7@7.70 and choice to fancy lots at \$7.75@8.50. Desirable yearling steers were sold on a basis of \$6.75@8.40, but at no time was there much trading in cattle above \$8. The better class of cattle sold \$1@1.50 per 100 lbs. higher than a year ago, but there was no great difference in the poorer lots. Butcher stock went off extremely well on the whole, being higher, with cows and heifers taken at \$3.60@7, while cutters sold at \$2.85@3.55, canners at \$2@2.80 and bulls at \$3.35@6.10. Moderate animation characterized the stocker and feeder trade, stockers finding buyers at \$3.40@5.25, and feeders at \$4.75@6.10. These cattle were in only moderate supply, and choice lots were particularly scarce, with packers outbidding country buyers for choice heavy feeders. Calves sold at \$3.50@6 for the commoner lots and at \$8@9.50 for the better class of light vealers, the more attractive lots being scarce and in strong demand at further liberal advances in prices. Milk-cows and springers were active and higher at \$30@75 each.

Hogs were marketed last week in greatly increased volume, with 53,439 head showing up Wednesday, the big runs bringing about some sharp breaks in prices, following an upturn of 10@20¢ Monday, when the offerings were especially light because of the cold snap. The hogs were all wanted, however, with especially vigorous buying on the weak spots, and on Wednesday 10,853 hogs were taken out of here by eastern shippers. The local packers lost no opportunity to depress prices, and the big ones brought in fair numbers from other markets. Rallies in prices took place after the mid-week big break in quotations, with choice shipping hogs of good weights taking the lead, as usual. The receipts continued to run chiefly to light-weight swine, these being marketed very extensively by their owners in order to avoid longer feeding of high-priced corn, although the best authorities are agreed that, even at the ruling advanced values of various feeds, it will pay stock feeders to hold their hogs to full maturity. Light hogs are selling still at a marked discount, and so are pigs, but the receipts of extremely light pigs are nowhere near so large as several weeks ago. While cattle averaged 10@15¢ lower at the close of the week than a week earlier, hogs closed only about a dime lower, sales ranging at \$5.85@6.40.

Sheep and lambs sold wonderfully well last week, with smaller receipts and a big general demand, shippers doing their share of the buying. The lively upward movement in prices that was so widely predicted several weeks ago, when the market was glutted and extremely low in prices, has been carried out fully, and the rise so far has even exceeded most expectations. Lambs, always the most active, have led off in the advances, the offerings of the choicer lots being much too small to go around, but yearlings, wethers and ewes have all had large advances. Eastern markets have been bare of live muttons much of the time lately, and this has made a large eastern demand in this market, forcing local packers and butchers to face genuine competition. When the startling fact is recalled that at the low level of about six weeks ago, it took prime lambs to fetch \$5.50, sheepmen who have been hesitating whether to finish off their holdings in first-class condition, should hesitate no longer. Lambs sold up to \$7.40, the poorest going at \$4.50, while yearlings sold at \$5@6.25; wethers at \$4@5.05; ewes at \$2.50@4.75 and bucks at \$2.50@3.50. During the previous week the best lambs brought \$6.85.

MICHIGAN FARMERS' INSTITUTES.

County Institutes.—Midland Co., Coleman, Jan. 22-23; Bay Co., Auburn, Jan. 23-24; Gratiot Co., St. Louis, Jan. 24-25; Saginaw Co., Saginaw, Jan. 24-25; Genesee Co., Flint, Jan. 25-26; Clinton Co., Ovid, Jan. 26-27; Tuscola Co., Caro, Jan. 26-27; Huron Co., Bad Axe, Jan. 29-30; Sanilac Co., Melvin, Jan. 30-31; Lapeer Co., Almont, Jan. 31-Feb. 1; St. Clair Co., Marine City, Feb. 1-2; Macomb Co., Armada, Feb. 1-2; Mason Co., Ludington, Jan. 24-25; Manistee Co., Bear Lake, Jan. 25-26; Benzie Co., Bendon, Jan. 26-27; Leelanau Co., Sutton's Bay, Jan. 29-30; Grand Traverse Co., Traverse City, Jan. 30-31; Antrim Co., Elk Rapids, Jan. 31-Feb. 1; Charlevoix Co., East Jordan, Feb. 1-2; Kalkaska Co., Kalkaska, Feb. 2-3; Lake Co., Luther, Feb. 5-6; Mecosta Co., Big Rapids, Jan. 29-30; Newaygo Co., Fremont, Jan. 30-31; Oceana Co., Hart, Jan. 31-Feb. 1.

One-day Institutes.

Charlevoix Co., Norwood, Jan. 22; Marion Center, Jan. 23; Ironton, Jan. 24; Kalamazoo Co., Alamo, Jan. 20; Cooper, Jan. 22; Comstock, Jan. 23; Augusta, Jan. 24; Ingham Co., Holt, Jan. 22; Allegan Co., Burnips Corners, Jan. 22; Hamilton, Jan. 23; Monterey, Jan. 24; Chichora, Jan. 25; Hopkins, Jan. 26; Wayland, Jan. 27; St. Clair Co., Smith's Creek, Jan. 23; Goodells, Jan. 24; Capac, Jan. 25; Emmett, Jan. 26; China Township, Jan. 27; Avoca, Jan. 29; Yale, Jan. 30; Blaine, Jan. 31; Genesee Co., Montrose, Jan. 22-23; Hillsdale Co., Somerset, Jan. 29; Moscow, Jan. 30; North Adams, Jan. 31; Jefferson, Feb. 1; Litchfield, Feb. 2; Reading, Feb. 3; Frontier, Feb. 5; Allen, Feb. 6; Berrien Co., Benton Center, Jan. 22; Sodus, Jan. 23; Pipestone, Jan. 24; Berrien Center, Jan. 25; Soudale, Jan. 26; Glendora, Jan. 27.

Farmers' Institutes Saginaw.
A neat six-page folder has been issued by the local institute authorities of Saginaw county for the sessions to be held Jan. 24-25 at the Auditorium in Saginaw. The folder gives a list of the officers and speakers, a detailed program of the several sessions and local information of interest to institute members and friends.

THIS IS THE LAST EDITION.

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

DETROIT LIVE STOCK MARKETS.

Thursday's Market.

January 18, 1912.

Cattle. Market steady at last week's prices on all grades. Receipts, 726. Best steers and heifers, \$6 @6.50; steers and heifers, 1,000 to 1,200, \$5.50@6; do., 800 to 1,000, \$4.75@5.50; do. that are fat, 600 to 700, \$4@4.50; choice fat cows, \$4.50@4.75; good fat cows, \$3.50 @4; common cows, \$3@3.25; canners, \$2 @3; choice heavy bulls, \$4.50@5; fair to good bolognas, bulls, \$3.50@4; stock bulls, \$3@3.50; milkers, large, young, medium age, \$4@5; common milkers, \$2.50@3.50.

Bishop, B. & H. sold Nagle P. Co. 6 cows av 1,021 at \$4.25, 1 bull weighing 910 at \$4.25; to Kamman 13 butchers av 856 at \$5.35, 1 steer weighing 840 at \$4.50; to Hammond, S. & Co. 1 canner weighing 770 at \$2.75, 5 steer av 1,008 at \$5.65, 2 butchers av 975 at \$4.50, 1 cow weighing 910 at \$3.50, 3 heifers av 583 at \$4, 1 steer weighing 900 at \$5.25, 3 cows av 973 at \$3.25, 6 canners av 825 at \$2.85, 2 do av 975 at \$3, 7 do av 917 at \$2.85; to Parker, W. & Co. 21 butchers av 783 at \$5.15, 5 do av 934 at \$4, 1 steer weighing 904 at \$5, 2 do av 670 at \$4.50; to Newton B. Co. 5 cows av 1,104 at \$4.50, 2 do av 1,175 at \$3, 10 steers av 863 at \$5.75, 3 butchers av 800 at \$4.50, 10 do av 895 at \$5.10, 7 do av 820 at \$4.50; to Schilscher 3 steers av 826 at \$5.75, 2 do av 650 at \$4.25; to Goode 4 cows av 960 at \$3.60, 4 heifers av 400 at \$4, 5 cows av 962 at \$4.50, 1 do weighing 960 at \$3.50; to Bresnahan 7 stockers av 601 at \$4; to Kamman B. Co. 4 cows av 770 at \$3.50; to Regan 2 heifers av 565 at \$4.50; to Newton B. Co. 22 steers av 993 at \$6; to Mich. B. Co. 22 do av 992 at \$5.90, 18 do av 836 at \$5.50, 5 butchers av 890 at \$4, 3 canners av 783 at \$3; to Newton B. Co. 4 steers av 650 at \$4.25, 1 do weighing 1,080 at \$6, 1 do weighing 1,240 at \$6.25.

Roe Com. Co. sold Kamman B. Co. 29 butchers av 846 at \$5.35, 12 do av 866 at \$5; to Regan 10 do av 570 at \$3.90.

Spicer & R. sold Hammond, S. & Co. 5 butchers av 920 at \$4, 1 cow weighing 840 at \$3.25, 2 do av 840 at \$3.25, 2 do av 950 at \$3.25, 3 steers av 747 at \$4.75, 8 cows av 906 at \$4.10, 30 butchers av 936 at \$5.10, 3 bulls av 1,003 at \$4.50; to Kamman B. Co. 8 butchers av 746 at \$4.50; to Sullivan P. Co. 2 steers av 850 at \$5.75, 2 cows av 1,175 at \$5, 1 do weighing 1,170 at \$3.25; to Thompson Bros. 2 do av 820 at \$4; to Kamman 2 do av 780 at \$3.25, 5 do av 808 at \$3.50, 14 butchers av 648 at \$4.75.

Haley & M. sold Sullivan P. Co. 7 cows av 1,211 at \$4.65; to Rattkowsky 1 bull weighing 1,430 at \$4.60, 2 cows av 1,150 at \$4, 1 do weighing 1,140 at \$3.25; to Hammond, S. & Co. 5 do av 964 at \$3.20, 2 canners av 830 at \$2.60.

Taggart sold Hammond, S. & Co. 6 steers av 970 at \$6.20.

Veal Calves.

Receipts, 392. Market steady at last week's prices. Best, \$9@10; others, \$4@8.75; milch cows and springers steady.

Bishop, B. & H. sold Parker, W. & Co. 14 av 150 at \$9.25, 8 av 125 at \$9, 7 av 130 at \$9.50, 2 av 140 at \$9, 2 av 115 at \$9.50, 1 weighing 150 at \$9, 2 av 115 at \$8; to Nagle P. Co. 2 av 110 at \$9.50, 6 av 160 at \$9.50, 7 av 135 at \$9.50, 2 av 160 at \$7.50, 3 av 165 at \$9; to Sullivan P. Co. 3 av 160 at \$9.50; to Parker, W. & Co. 19 av 150 at \$9.50, 35 av 140 at \$9, 12 av 150 at \$9.75; to Burnstine 13 av 145 at \$9.25, 10 av 133 at \$9.

Spicer & R. sold Thompson Bros. 1 weighing 160 at \$8; to Hammond, S. & Co. 6 av 150 at \$9.50, 2 av 160 at \$10; to Sullivan P. Co. 2 av 250 at \$6, 7 av 145 at \$9.50; to Rattkowsky 1 weighing 250 at \$6, 3 av 155 at \$9, 2 av 250 at \$6, 7 av 145 at \$9.50.

Sheep and Lambs.

Receipts, 4,868. Market steady at Wednesday's prices; 15@25c lower than last week's opening. Best lambs, \$6.75; fair lambs, \$6@6.50; light to common lambs, \$4@5.25; fair to good sheep, \$3@4; culls and common, \$2@2.75.

Bishop, B. & H. sold Swift & Co. 39 sheep av 85 at \$4, 17 do av 125 at \$3.75, 36 do av 125 at \$3.50, 22 do av 110 at \$3, 25 do av 110 at \$2.50, 111 lambs av 83 at \$6.75, 142 do av 82 at \$6.60, 131 do av 85 at \$6.50, 76 do av 75 at \$6.40; to Sullivan P. Co. 50 do av 73 at \$6.25, 48 do av 60 at \$5, 50 do av 57 at \$5, 14 do av 65 at \$5.25, 46 do av 55 at \$4.50, 36 do av 60 at \$4.25, 29 do av 70 at \$6.50, 26 do av 50 at \$4.50, 40 do av 55 at \$5, 37 do av 55 at \$4.50; to Nagle P. Co. 28 sheep av 90 at \$2.25, 129 do av 115 at \$3.75, 235 lambs av 73 at \$6.70, 173 do av 80 at \$6.75, 211 do av 80 at \$6.80, 60 do av 75 at \$6.75; to Thompson Bros. 17 sheep av 78 at \$2.50, 22 lambs av 50 at \$4.50, 14 do av 65 at \$6; to Hayes 11 do av 65 at \$5.50, 9 do av 60 at \$5.50; to Pierson 44 do av 73 at \$6.60; to Young 39 do av 70 at \$6.50; to Hammond, S. & Co. 14 do av 80 at \$6.75, 27 do av 75 at \$6.25, 19 do av 55 at \$5; to Fitzpatrick Bros. 122 do av 85 at \$6.75, 24 sheep av 90 at \$3.50, 12 do av 78 at \$4, 26 do av 90 at \$4; to Parker, W. & Co. 133 lambs av 80 at \$6.75.

Spicer & R. sold Nagle P. Co. 3 sheep av 155 at \$3.25, 23 lambs av 90 at \$6.80, 19 do av 185 at \$6.80, 124 do av 84 at \$6.75; to Rattkowsky 10 sheep av 110 at \$3.50, 1 buck weighing 160 at \$3.25; to Breitenbeck 43 lambs av 50 at \$5.75; to Parker, W. & Co. 67 do av 57 at \$5.50; to

Thompson Bros. 26 sheep av 95 at \$3.75; to Hayes, 22 lambs av 60 at \$3.50, 29 do av 50 at \$4; to Hammond, S. & Co. 35 do av 75 at \$6.75, 26 do av 70 at \$6.50, 22 sheep av 90 at \$3.50, 6 lambs av 45 at \$5; to Thompson Bros. 14 sheep av 90 at \$2.50.

Hogs.

Receipts, 2,941. None sold up to noon. Bidding about steady with Wednesday of last week.

Range of prices: Light to good butchers, \$6.10@6.25; pigs, \$5.90@5.95; light yorkers, \$6@6.10; stage one-third off.

Haley & M. sold Parker, W. & Co. 280 av 215 at \$6.25, 225 av 180 at \$6.20, 135 av 150 at \$6.15.

Spicer & R. sold same 370 av 210 at \$6.25, 315 av 180 at \$6.20, 150 av 145 at \$6.10.

Bishop, B. & H. sold Hammond, S. & Co. 510 av 210 at \$6.25, 1,680 av 180 at \$6.20, 541 av 150 at \$6.10, 315 av 160 at \$6.15, 337 av 140 at \$6.

Roe Com. Co. sold Sullivan P. Co. 135 av 210 at \$6.25, 240 av 180 at \$6.15, 24 av 200 at \$6.20, 42 av 170 at \$6.

Thursday's Market.

January 12, 1912.

Cattle.

Receipts, 415. Market steady at Thursday's prices.

We quote: Extra dry-fed steers and heifers, \$6.50@6.75; steers and heifers, 1,000 to 1,200, \$5.50@6; do. 800 to 1,000, \$4.75@5.50; grass steers and heifers that are fat, 500 to 700, \$4.25@4.50; good fat cows, \$3.75@4; common do., \$3@3.50; canners, \$2@2.75; choice heavy bulls, \$4.75@5; fair to good bolognas, bulls, \$4.25@4.50; milkers, large, young, medium age, \$4@5; common milkers, \$2@3.

Veal Calves.

Receipts, 112. Market steady at Thursday's prices. Best, \$9@10; others, \$5@8.50; milch cows and springers dull.

Sheep and Lambs.

Receipts, 2,710. Good grades steady; common and culls 25@35c lower. Best lambs, \$6.75@7; fair lambs, \$5.75@6.50; fair to good sheep, \$3@4; culls and common, \$2@3.

Hogs.

Receipts, 1,740. Market steady at Thursday's prices.

Range of prices: Light to good butchers, \$6.20@6.25; pigs, \$5.90@6; light yorkers, \$6.10@6.15; stage one-third off.

LIVE STOCK NOTES.

A few farmers have been buying well-bred little heifers in the Chicago market for fattening, and it seems strange that more stock feeders do not follow this course, since prime heifers are usually extremely good sellers, even at times when the steer market is in bad shape. In recent weeks there have been limited sales of strictly prime heifers at the Chicago stock yards at \$6@7 per cwt., not many of this class being shipped in, and a short time ago a sale was made of two head of fancy yearling heifers for the Christmas holiday market at \$8, which is the highest price of the year. Heifer sales above \$6 are rare, recent sales of corn-fed heifers having been largely at \$5@5.75 for a choice class of corn-feds, while a pretty good killing kind off corn sold around \$4.50@4.85. Sales have been made of ordinary to middling stalk-fed cows at \$3.15@3.85.

For the past six months one of our two-year-old colts has had a nasty discharge from nose; this colt is stocking in all four legs and under belly. His appetite is none too good, but his bowels and kidneys act all right. Our local Vet. has treated him for some time without doing him much good. T. R. Van Wert, O.—Groom him well twice a day, keep him in a clean, well ventilated barn that is warm; feed him plenty of oats, mixed hay and roots. Give him 2 drs. powdered sulphate of iron, ½ oz. ground gentian, 1 dr. ground nuxvomica and 2 drs. powdered buchu at a dose in feed three times daily.

The recent report made by the tariff board states that practically all of the corn land in the state of Illinois is sufficiently well drained to maintain flocks of sheep, but the land is so valuable for grain growing that farmers are placing most of it under cultivation. This results in a shortage of summer feed. One farmer owning 860 acres of such lands was asked whether the maintenance of farm flocks as a regular feature of agricultural operations is on the increase in his community, and he replied: "It is on the decrease because of the great profits of grain farming. I got over \$50 an acre for a field of corn last year." This farmer was formerly known as a large holder of sheep, but now he owns only a small number. Like practically all the states of the middle west, dogs make sheep raising rather precarious, while the stomach worm has done serious injury in many places. Many former sheepmen have abandoned the industry because of the ravages of this little pest, but others have found the much more rugged range sheep valuable substitutes for the more delicate natives. The tariff board report contains the following paragraph: "Nowhere in the state is the production of wool the primary object, but it is regarded as a necessary consideration with lamb growers to make sheep pay. Shropshire and other down blood prevails in most of the flocks. Illinois, like her sister states, Iowa, Missouri and Indiana, has a large percentage of flocks badly mixed in breeding. Like these states, too, she has dropped Merino for the British mutton breeds, and for the same reasons—namely, that the decline in price of wool and the rise in the price of land made the production of wool no longer profitable."

Western packers have slaughtered from the first of last November to latest advices 6,010,000 hogs, a gain of 1,515,000 hogs over the same time a year ago.

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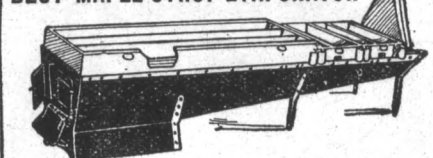
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H. F. SMITH, Traffic Mgr., Dept. P, Nashville, Tenn.

POULTRY AND BEES

MATING THE BREEDING STOCK.

During this month the poultryman must begin actual preparations for the selection of his breeding stock. No more serious problem confronts the breeder or the farmer than that of proper mating, for his success in securing the best of young stock will depend upon how he selected and mated his fowls. It becomes a question of studying the fowls intended for breeders, determining the good and bad points in each, and then mating them in such manner as to overcome the faults and perpetuate the desirable qualities so far as possible.

The selection of the breeders should commence a month or six weeks before hatching eggs are desired. This will allow ample time in which to study the breeders from time to time, noting how the male behaves toward his mates, whether too many or too few females are being mated to him, and to make better selections should other members of the flock develop desirable qualities.

Points to Consider in Choosing Males.

The male is considered half the breeding pen and is the sire of each chick. His good and poor qualities are likely to appear in every chick hatched. Therefore, in order to obtain best results he must be first considered. He must be fully matured and up to standard weight. It is advisable, whenever possible, to use males not less than a year old. Weak, runty stock can often be traced directly to the use of immature cockerels. Select a male that is healthy, vigorous, active, that spoils for a fight and is a good crower, not one that will cower and run as soon as another male approaches. He should stand well on his feet. Do not use one with legs so close together that they almost touch.

The shape of the head should also be taken into consideration. A short, broad skull is desired. Avoid the one that possesses a long and narrow head which, in my opinion, denotes lack of masculine power. The eyes should be large and bright, the comb and wattles blood red.

Some cockerels often develop into what are known as "effeminate males." That is, they resemble a hen in some respects

the hens about in the breeding pens. I often find that some male will refuse to mate with certain hens. When such is the case, remove those hens and put them in another pen. Keep changing them about in this way until you are sure that all hens are receiving proper attention. I also find that some males will pick on certain hens, driving them about the pen and depriving them of their proper share of feed. I remove all such hens from the pen and have others take their place. However, if the male is naturally vicious he should be discarded.

Selecting the hens according to their laying qualities is to some poultrymen a hard proposition. If everyone had the time and inclination to install and operate trap-nests the matter would be simplified. But we find that a majority of poultry raisers, especially farmers, do not have the time to devote to trap-nesting which that system requires. Therefore, in picking out their best layers they must resort to other means. The type of hen is considered by some to be an index to laying quality, but we cannot depend upon type alone. We can, however, be reasonably safe in picking out the most industrious hens. Slow, inactive hens are apt to be poor layers. Select those that are always busy; that are first to leave the roost in the morning and last to go back in the evening; those that work for the last grain of corn, and that possess large, bright eyes and red combs. Such specimens possess health and vitality and can usually be relied upon to fill the egg basket.

Indiana.

O. E. HACHMAN.

AVOIDING MISTAKES IN TURKEY RAISING.

Probably more people fail miserably and entirely at turkey raising than in any other branch of poultry keeping, and there are a few specific reasons for this. There are a few "don'ts" about turkey raising which, unheeded, are fatal, although the same heedlessness with regard to other fowls means poorer results usually.

The first and most important mistake is the keeping over of late, undeveloped or otherwise inferior stock, and breeding from the same. For instance, with live turkeys bringing from 14 to 20 cents per pound, there is a strong temptation to sell all of those fine, big gobblers, and likewise the largest hens. Three dollars

liveliest and largest stock, both hens and gobblers, and get rid of the rest for what they will bring; the result should be a much smaller proportion of inferior turkeys next season. For farm breeding and general utility purposes I would never recommend even once inbreeding. It may have its merits, but they are more than counterbalanced by the danger of it, and it is a mighty safe rule to keep clear of it entirely.

Don't try to keep too many hens—I mean chickens—if you intend to grow many turkeys, and this especially where your range is not a large one. Unless turkeys have pretty free range they do not do well. Don't insist on your turkeys lodging in the usually overcrowded hen-house. Their usual distaste for this is caused by their instinctive knowledge that it is suicidal. It is better by far to let them roost on top of the house than inside of it.

Now is the time to begin the coming season's campaign. Pick out your best stock. Lacking the right kind of breeders yourself, go and find them. The cost may be high but in the end it will pay. There was never a time when turkey raising paid as well as in the last five years and, like all things that present more than ordinary difficulties, the business will never be overdone. So surely as the holidays roll around, so surely will come the ever-increasing demand for the festive turkey.

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WM. J. COOPER.

TESTING INFERTILE EGGS.

When advertising eggs for hatching purposes live poultrymen generally state that infertiles will be replaced. Now, it often happens that the novice cannot tell a clear egg from one in which the germ has developed a little and then died back, and frequently such eggs are returned to the breeder as being clear ones, with the result that a lively correspondence is carried on, to the discomfort of both parties concerned. Before returning eggs as being clear, the buyer should fully understand how to test an egg during the process of incubation.

An infertile egg is quite clear when held before a strong light, even after 10 days or more of incubation, while a germ that has died during incubation will show itself, more or less distinctly, according to its development, in the form of a dark patch adhering to the lining membranes



Thrifty Flock of White Holland Turkeys and their Owner, Mrs. Mae Whitbeck, of Muskegon County.

and do not pay extra attention to the females. Such are, of course, not fit for breeding purposes and should be culled out.

It is the opinion of some poultrymen that the female influences the size, and the male bird the shape, color and head points. While this is, perhaps, true, I wouldn't under any condition, use a male that is undersized. I would prefer to have both males and females of the proper size, and could then expect the progeny to develop into full-sized specimens. Some use extra large hens, mating them with the expectation that the size of the female will overcome the lack of size in the male. This is an unwise practice. It often happens that the pullets derived from such matings will equal the hen in size and the cockerels will be undersized, the same as their sire. Therefore, in order to secure best results have large and fully matured fowls on both sides.

Selecting and Handling the Hens.

It is sometimes necessary to change

each counts up much better than \$1.50 to \$2.00 each. In such cases the process of reasoning is that the smaller ones will get larger by spring, and will do just as well to breed from and this is the most fatal error in turkey raising.

These inferior fowls never "make good" in development or breeding qualities. Their eggs bring poor hatches to begin with, averaging low in fertility and strength of germ, and such hatches are but the beginning of a long line of troubles which follow swiftly but surely. The pullets "droop," and lice are blamed. Sometimes this is the trouble, but with the right amount of vitality they would in most cases withstand the pests' attacks instead of dying miserably. Even after having arrived at full, or nearly full, growth they are often attacked by that infallible sign of lacking vitality, the "swelled head," usually fatal.

I cannot too strongly emphasize the necessity of breeding from stock of the highest vitality. Choose your earliest,

of the shell, in a cloudy and floating mass of substance, or in a blood-red streak running across the inner side of the shell membrane. Eggs should be tested on the seventh day, when any clear ones can be easily detected and returned to the seller, to be replaced according to agreement.

Canada.

W. R. GILBERT.

THE FUTURE OF POULTRY.

Everywhere chances for gaining an independent livelihood can be found. It is mostly a question of whether people in poor circumstances will take advantage of their opportunities. To my mind, one of the greatest opportunities open at the present time lies in the direction of poultry raising. There are many farms for sale just now; one can find them advertised in any daily or weekly paper, and some of these can be bought at very reasonable figures and on favorable terms. In my opinion, land in this country will never be cheaper. Indeed, the

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prospects are that as population increases farm values will rise in proportion to the increase.

Many of the farms now upon the market are well adapted to poultry raising even though located at some distance from villages or car lines. The farther from market the more cheaply land can be secured, and in many sections of this state improved highways are a matter of the near future. Surely there is a chance for people of limited means to engage in poultry raising, and the poultry industry is a profit-paying one when carried on intelligently. This industry has grown until today it has become the second largest in America, and yet the demand for poultry products exceeds the supply. Eggs have been made a substitute for meat because of the high cost of the latter, and in consequence are at present commanding better prices than ever before.

It would seem, therefore, that there has never been a more promising time for entering the business of growing poultry. It holds out the prospect of a constant demand which, in late years, has been ever in advance of the supply, and offers the advantages of living near to nature, of enjoying outdoor life and the chance of building up and owning an independent and profitable business.

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THE HABITS AND USEFULNESS OF THE HONEY BEE.

The life of a honey bee is a very short one, and a very busy one, too. Very few of them live to exceed the age of 45 days, except during their time of hibernation in winter; yet, in this short period, much is accomplished.

The first two weeks of a bee's life is spent almost entirely inside of the hive, nursing larvae, building comb and doing housework in general, taking only a short flight on sunny afternoons to strengthen its wings and mark the location of its home. The next three or four weeks are spent in roaming the fields in quest of honey, pollen and propolis and carrying them to the hive. They are busy incessantly, and soon wear themselves out by constant work. By excessive flying their wings become shredded and they drop to the ground while journeying to and from the fields, where they crawl about and perish; comparatively few bees die inside the hive.

The honey bee has numerous habits, some of which are good and others not quite so good. Still, I for one am glad that every female bee is equipped with a good sharp sting. If it were not so how could such small, helpless creatures protect themselves and their homes from man and beast? The race would soon become extinct, for the honey bee has many enemies. It would also be necessary for the apiarist to keep a constant watch on his hives to prevent them from being looted. As it is, the bees themselves do their own sentinel duty, and no one has yet come around and found them all asleep. After a hard day of toil the bee-keeper can lie down to rest and feel quite confident that the bees will hold the fort until morning.

Bees gather three products: Honey, pollen and propolis. Honey is their staff of life. It is estimated that a colony of bees require about 75 lbs. of honey for food in a year. They are capable of gathering twice this amount and more. Therefore, all the honey the bees store above what they are able to consume is useless to them, and is the bee-keeper's share of the spoils. I have taken as much as 109 lbs. from one hive in a single season. Pollen is the farina, which is commonly called bee bread. It is mixed with honey and fed to the larvae or immature bees. Propolis is a resinous substance which is gathered from trees or shrubs and is used in gluing tightly all cracks and crevices in the hives. Bees also carry considerable water to their hives during the breeding season.

The bee as a pollinizer of blossoms is one of the greatest of our natural benefactors. The nectar hidden in the well of the flower is but the bait that lures the bee unwittingly to perform a vastly more important function than gathering and storing honey for either itself or man. The amount of nectar in each blossom is so small that the bee is obliged to visit blossom after blossom in order to secure its load. In this way the pollen is carried from blossom to blossom, from tree to tree, and from one variety to another. Many men have an aversion for bees, but the fruit grower should not, for to him bees are of great assistance.

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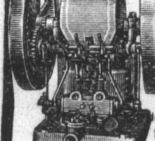
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HORTICULTURE

INTERESTING GRAFTS AND HOW TO MAKE THEM.

The grafting of plants is generally an easy matter providing the botanical relation between the plants grafted is sufficiently close for one plant to "take" to the other. The Spy or Red Canada is easily top-worked upon the Ben Davis and is a good use that can be made of Ben Davis trees, they being very strong growers. It is rather difficult to realize that all the common tree fruits, with but very few exceptions, are grafted so that the root is not of the same variety, or plant, as the top. Such, however, is the case and in some instances the root is entirely different from the top. The pear as a dwarf has a quince root. The apple, also, may be grafted upon a quince root but in this case a very long cion is used and when planted in the nursery row



Potato-Tomato Plant, Grafted at Point Indicated by Arrow.

only two or three buds are above ground which allows roots to be given off from the cion beneath the ground, the small quince root simply nourishing the cion until the cion gets roots of its own and in time it will become an own-rooted tree. This is used in cold climates to make sure that the tree will withstand severe freezing for the root, coming as it does in ordinary grafting from a seed, is not sure of being hardy to severe cold, but varieties which have been proven cold resistant may thus be grafted so that the roots are known to be hardy as well.

The pear may be grafted upon the apple and bear fruit of much larger size, but the graft seldom lives but a few years.

Grafting is not of recent origin but has been known at least 2,000 years, although for many centuries it was kept as a trade secret, only a limited number being able to do it, the rest thinking it to be a magic art.

At present, however, nearly everyone knows the fundamental principles of grafting, that is, that it is necessary to have the growing portion of stock and cion, which is called the cambium layer situated just beneath the bark, in contact in order to continue the growth of the cion. There are exceptions, however, to this universal understanding of the fundamental principles of this work, as shown by some grafting of apples that was performed for a lady last year. A man calling himself a professional grafter (and it turned out that he was), did the grafting but none of the grafts grew and upon inquiring she discovered that it was not properly done as he had bored a small hole in the very center of the stub, stuck in a cion and covered it with wax, instead of splitting the stub and placing a cion at each extreme of the split stub.

As commonly used, but very few different kinds of grafts are necessary, the whip or tongue for root grafts, budding for small trees in nursery and the cleft graft for top grafting old trees being those used in a commercial way. However, Baltet, a Frenchman, whose book upon grafting is still authority, describes over 100 differently named grafts.

There are a few grafts that are sometimes used that are interesting, though not of great importance, among them being inarching or approach grafting. This

is not used in the nursery to any extent, but may be used upon hard wooded plants, but more often upon soft-wooded plants, such as geranium, coleus and other house plants, and very interesting as well as novel results can be obtained by its use. It is found quite often as a natural graft in woods and unpruned trees where two limbs growing close to each other have rubbed together until the cambium layers have become exposed and then finally grow together.

This approach graft has been used to make novel gateways and anyone can perform the operation. If two or four trees of the same kind as elms or maples are set out at the intersection of two walks and brought together after they have grown to a height of ten or twelve feet, they may be easily grafted by the approach graft. The method is as follows: Cut through the bark for six inches on each trunk in such a way as to have the cambium layer on each fit the cambium of one or more of the others, the whole being bound with bandages and held firmly in place and covered with grafting wax. Then gradually cut away the tops of all but the best one so that in a few weeks after the graft has firmly united one top will receive the nourishment from the two or four roots. If the wounds in removing the tops are made smooth and close to the graft they will heal over in a few years.

This grafting by approach is used sometimes to form an especially large apple upon a fruit spur by grafting early in the season a vigorous water sprout to the spur, thus causing an excessive amount of food to enter the spur for the development of but one fruit. A natural brace can be formed between two limbs on a tree that might split down under a heavy load by twisting and tying two water sprouts together, one from each limb. In a short time these will grow together and form a perfect brace. The advantages of this graft over others are: It can be performed during the growing season and is more apt to succeed as the cion is nourished by its own roots until the union is thoroughly united.

With house plants, such as geraniums, two or more different kinds can be made to grow upon one root.

A very interesting form of this graft is to graft the tomato upon a potato. This can be done by starting a potato in a pot and allow but one or two stems to develop and at the same time, or previous to this, start a tomato from seed in another pot so that by the time the potato is six or eight inches high the tomato would be nearly the same. Then place the pots together and at the same



Stem of Plant at Grafted Point Showing How Union is Formed.

height cut a portion from the stem of each at least two inches long and one-quarter way through the stem so that the cut surface on the tomato will fit the cut surface on the potato, tying them firmly together with raffia or cloth bandage, and at the same time pruning away at least one-third from the top of the potato. After about ten days cut away the roots of the tomato a little at a time and in a similar way decrease the leaf surface of the potato until at the end of four weeks the tomato can be entirely cut away below the graft and the potato above. This potato-tomato plant can be transplanted to the garden and tomatoes raised on the stem and potatoes on the roots, as shown by the photograph. Of course, the crop of each is diminished but the result is interesting as well as partially practical.

The saddle graft may also be used with herbaceous plants such as geraniums, coleus, salvia and the like to grow more than one variety upon a single root. In this method of grafting a stem of the

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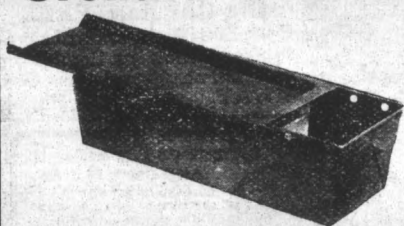
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stock is cut wedge-shaped for an inch or more and the portion used as a cion cut to a saddle, taking out a portion similar to the wedge upon the stock. The leaves from the cion should be nearly all pruned away and the saddle inserted upon the wedge and kept in place with a bandage. It should then be shaded and covered, if possible, with a glass can or bell-jar, to make a humid atmosphere about the plant. After two or three weeks the graft ought to be united. The bandage can then be removed.

Soft-wooded plants are unlike hard-wooded plants in their structure, as they unite throughout their cut surfaces so that a union is not as difficult as with hard-wooded plants.

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SOME EXPERIENCES IN FORCING VEGETABLE PLANTS.

Where one desires to obtain early vegetables it becomes necessary to start the plants several weeks prior to the time when soils warm up in the open. On a small scale, vegetable seeds may be started in small boxes or flats, placed under the kitchen stove. The seeds will germinate readily. When this has taken place the plants should occupy a sunny window during the daytime. A fair growth of plants may be secured in this manner, if the plants are handled properly. Much better results are to be had, however, where some bottom heat is supplied and a more even and higher degree of temperature is maintained than is possible where grown in boxes placed in windows of dwelling houses.

One method of securing this heat is by the old-time forcing pit. It will hardly be necessary to enter into details as to the construction of these heating pits. All large seed catalogs contain a description of their construction and operation. Horse manure containing the right proportion of straw or other bedding materials is the material most often used as the source of heat. The most successful bed of this style in the writer's experience was the first one he constructed. The heating material was taken directly from the manure heap as thrown from the stable. The manure was steaming in good style at the time. The pit was located on the south side of a poultry building and built entirely above the surface. If I remember correctly, the heating material used was about 18 inches in depth. I used a watering pot to dampen the material and was very careful to get an even division of the mixture, tamping it down well with the back of the stable fork as placed. The features of this, our first attempt in hot-bed construction that remain most vividly impressed on the memory, however, is the wonderful results in plant growth secured. Tomatoes, lettuce, cabbage and radish; the way those plants did grow in that bed was a source of joy and satisfaction to the then youthful operator. Of the many heating beds of like construction built by the writer since that time, none have given such perfect results as that first attempt.

A wood or coal fire furnishes a more reliable source of heat, and if properly handled is found to provide heat as uniform as that secured from heating pits. Aside from the regulation greenhouse, the cost of construction of which places them beyond the reach of the average farmer, there are ways in which wood fire heat may be utilized in the growing of plants, and the expense of their construction is moderate. The greatest outlay in cash is for the glass. But even these are not absolutely necessary where operations are to begin late in the season. Cloth covered frames may be substituted for the glass with fairly good results.

The heat may be generated in a pit and conducted through flues located underneath the bed. Having some discarded

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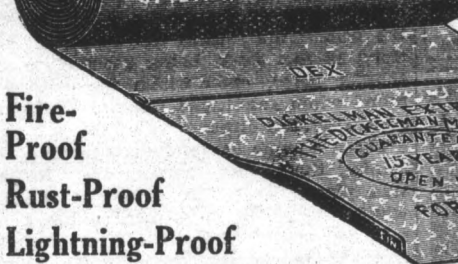
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tin roofing, the writer constructed and used a forcing house built in this manner. A pit was dug, and covered with a section of this roofing. A smaller section was joined to this, answering as a door to the fire pit. Leading from this pit, at an incline sufficient to produce a good draught, we dug two trenches, covering these with strips of the roofing. The trenches at the pit were about 16 inches under the surface of the bed; at the upper end about six inches. Six-inch boards were used for the sides of the frame which was eight or nine feet wide, and small poles from the nearby woods were used as supports for the muslin which covered the bed. This muslin was sewed in sections 12 feet long, being secured to two smaller poles, upon which the cloth was rolled when conditions were favorable for admitting the direct rays of the sun.

There was no trouble whatever in maintaining the proper temperature. No dirt was placed over the center of the pit, which was about three feet, square hence a large amount of warm air was supplied from the surface of the pit. The plants thrived well, too. On frosty mornings the leaves would be dripping with congealed moisture, but no injury to plants was done, even when the plants crowded against the cloth covering. A large amount of moisture was continually passing off through the flues which made it necessary to apply water to the surface of the bed in liberal quantities. The results we were working for, however, were in evidence in the fine growth of the plants.

In constructing a forcing house of this kind, it is necessary that there be sufficient drainage to insure against flooding the pit, and that the incline of the flues be sufficient to give a good draught. In the one constructed by us the incline was about one inch to the foot. Perhaps less would answer the purpose. Two or three lengths of discarded stove pipe at the upper end will help in the matter of draught. Six-inch drain tile may be used for the flues and an old sheet iron stove, as a cover for the fire pit.

Emmett Co. M. N. EDGERTON.

POSSIBILITIES OF APPLES IN HILLSDALE COUNTY AND MICHIGAN.

One of our correspondents in a recent interview with Guy B. Stone, a farmer and fruit grower of Hillsdale county, Mich., has given us the following as Mr. Stone's opinion of apple and fruit growing in his county and Michigan:

I have every confidence in Hillsdale county, in southern Michigan, and in other parts of the state being equal to and much better than the fruit growing sections in other states. The only cause in the falling off of the apple crop in Hillsdale and a few surrounding counties in the last score of years is the lack of attention to fruit, and interest being turned to other lines of agriculture. As a result orchards did not pay and were turned into pasture, cut down, neglected or otherwise made unprofitable.

I have traveled through the state considerably, and I find that every cared-for orchard is paying its owners from \$50 to \$200 an acre. I have reference to the orchards that have been sprayed. This year has been characterized by poor markets, and the farmer who neglected spraying and trimming realized comparatively nothing. The orchards that are thoroughly attended to are profit producers, this or any other year. Most of us have been holding our apples in storage this year, and in giving figures I speak of a year ago. I recall one orchard of 50 trees which with only a little careful attention produced 300 barrels of apples and the fruit brought \$1,000. This is just the beginning of what this small orchard will do.

Do not destroy your orchards. The trees may be a little disfigured, they may be surrounded by suckers. There are great possibilities in these old trees if they are given the proper kind of tree surgery. Many people believe a sucker is useless, and will not bear fruit, but the fact is they can be made the best part of the tree. Pick out a large healthy one, and if a large limb has been removed from the tree, train one of the suckers to grow in such direction as to fill the gap. This can be done in a single season by using a string and weight. Use a soft string or wrap the twig where the string is attached.

Deformed trees in the process of rejuvenation are by no means incapacitated. If properly cared for during the process they will yield good results, even large profits. I tried it out in our orchard last year, and in other orchards this year. I recall a tree of yellow harvest apples, it

had not produced a perfect apple in years, but after trimming and spraying, as fine apples as were produced were grown on this tree.

My choice of an apple to eat from the hand, is a Canada Red, but the facts are that any apples that can be grown in Michigan, can be produced with profit. A farmer near Reading is making a fine success with Willow Twigs. There are great possibilities in these and other standard varieties; the Ben Davis, although we do not like it so well in Michigan, is a fair apple with good sale.

I am confident that nothing can be raised in Hillsdale and other counties that will bring as liberal returns to the farmer as the production of good fruit, fruit that will stand the test in the markets of the world. I know this is possible in Michigan. In flavor, quality and the purposes for which apples are used for food, apples from the Wolverine state are in the lead in quality over those produced in any other part of the world. We may have to take our hats off to some parts of the west in the matter of delicate coloring, but we have the goods.

I am enthusiastic over the apple outlook in Michigan. When a farmer can go into his orchard in the fall after he cuts his corn, and can pick from \$1,000 to several thousand dollars' worth of fruit, from a few acres, it appears that farming is worth while, and that apple culture is one of the most profitable lines of farming.

In Hillsdale county, nine out of every ten families do not have the apples they would consume. It would be the greatest benefit to this county if every orchard was bearing to its fullest capacity. Take it year after year, the market would not be overstocked. Of course, the local market could not be relied on in such event, but buyers from a distance would be attracted. These buyers do not care to figure on one or a dozen car loads, but if we could put up to them that we were producing from 500 to 1,000 car loads, that would make it an object for them to inspect the field and quote us better prices. There would be competition among buyers and the figure our product would command would be in excess of the figure in case only an occasional buyer came to the field to pick up a few straggling car loads of fruit.

Generally the soil is good in this and other counties for apples. Of course, judgment must be exercised in the selection of a location for the orchard. To my notion a heavy soil, comparatively high and dry is ideal for apples, but on gravelly ground they yield well. Of course, one would not expect to set out an orchard on low wet ground.

The matter of spraying and pruning is important and vital in connection with the apple growing industry. The reason why farmers are not shipping car loads of apples from the county now as they did a score of years ago is that methods of combating the ever increasing pests have not been adopted in Hillsdale county as rapidly as the enemies have developed.

During the past year I have used the lime-sulphur solution, and have found it adequate to my needs as spray. A great deal of painstaking effort has to be taken in the use of the Bordeaux mixture, and the quality and appearance of the fruit is in several ways inferior to that which has been sprayed with lime-sulphur.

Sprayed apples will bring a better price than those that are neglected. This is evident even to the unsophisticated. Farmers who do not make a practice of pomology, have established a standard of number one apple which is found to fall considerably short of the very ordinary apple raised by the orchardist who sprays and trims. If in no other way than from the improved appearance of the fruit, spraying will pay the farmer handsomely.

I say every farmer should be enthusiastic over the apple outlook, not only in Hillsdale county, but in the state. If a man cannot have a large orchard, he should have a few trees at least, and then should attend to them. Careful spraying and pruning each year will enable a few trees to produce fruit for the home and some for the market.

The apple is a healthy, wholesome fruit and its uses as food are unlimited. Start an orchard now. If the apple crop is to be your money crop, throw your whole soul into it. Learn to love the work. Michigan at one time lead the world in apple production and by taking the interest that the success of the fruit deserves, the quality and quantity of our fruit will easily place the state again at the head of the list. There is no reason why Michigan and Hillsdale county apples should not command the highest prices in the world's markets.

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We paid \$350.00 for the 10 ears winning the Grand Champion Sweepstakes prize at the National Corn Show. This is a record-breaking price. We planted every kernel of these 10 ears on our own farm. Every corn grower will want to know the result, so we have a booklet, nicely illustrated with actual photographs of our growing corn fields, seed barns, residence, pile of ear corn harvested from 10 seed ears, etc. As long as they last you may have one without cost if you are an actual corn grower or directly interested in corn crops. If you would like some of the seed grown from these 10 ears, we will tell you how to get it without cost. Seed and Fruit Catalog Free.

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

Associational Motto.—

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

Associational Sentiment.—

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

WHAT THE LOCAL CLUBS ARE DOING.

As Reported by Delegates at the Associational Meeting.

Spring Arbor Club, of Jackson County.—This Club sends different delegates each year to the State Association, as far as practicable. The Club has been in existence for 19 years. The delegate at this year's associational meeting was a charter member. The Club holds no meeting in July, but has an annual picnic in August. A Club fair is held in October. This special feature of Club work has been very successful. The proceeds are devoted to charity this year, having been contributed to the Old Ladies' Home at Jackson. Kindergarten work has also been aided in the same manner. A temperance meeting is held annually in March. The Club has been a great success and, while some of the Clubs in the surrounding territory have gone down, this one is still flourishing.

The Troy Club, of Oakland County, holds twelve meetings during the year with an annual picnic in July. The Club has 50 members, but an average attendance of from 60 to 70 persons. Refreshments are served at every meeting. A pleasant diversion in the program is the varied manner in which members respond to roll call. The question box is one of the best features of the meeting. This Club has an advertising feature of some value to members, the president giving the members a chance at the close of the meeting to tell what they have to sell or desire to buy. A viewing committee of four is appointed for each meeting. Printed programs are used.

CLUB DISCUSSIONS.

Will Have Printed Programs.—The Summer and Seville Farmers' Club met in January at the home of Mrs. R. A. Gee, at "Pioneer Farm." After dinner the meeting was called to order by President James Gargett. Song by the Club and invocation. Reading of minutes of last meeting, followed by roll call, responded to by quotations. As a number who were on the program were not present, G. M. Wilson entertained those present by several very pleasing selections. The Club gave him a vote of thanks for the same. The idea of a yearly program was discussed and accepted, they are in booklet form. An interesting subject will be discussed at every meeting.

Higher Prices for Beets.—The subjects, "Higher prices for beets," and "what could one afford to pay a hired man the coming season," were warmly discussed. A very pleasant time was enjoyed by all, with only one sad feature. Mrs. Gee has sold her farm and will move to Ithaca in the spring. All were sad to think that they were enjoying their last meeting at Pioneer Farm, with Mrs. Gee as hostess.

An Institute Meeting.—The December meeting of the Wise Farmers' Club was held at the home of Milo Lamphre, and in connection with the farmers' institute. Mr. Potts, the conductor of the institute, spoke on building up and maintaining the fertility of the soil. The ladies' topic, "Woman Suffrage," was opened by a reading by Mrs. J. H. Lansing, entitled, "Why I want the ballot," and a poem entitled, "The mother of the man." Many others spoke on the subject, followed by a select reading by Mrs. Chas. Church, entitled, "The great day Matilda voted." The Club then listened to a song by Mr. and Mrs. Arthur Badgley, "Down by the Old Mill Stream," and an address by Hon. Dennis Alward, on "The reason why men and women should think." The Club history was given by one of the Club's ex-presidents. The Club then adjourned after giving Mr. and Mrs. Lamphre a vote of thanks. Next meeting will be held at the home of Mr. and Mrs. J. H. Martin, of Clare.—A. J. Seeley, Sec.

Fruit Culture Discussed.—Nearly 100 persons braved a severe January storm to attend the meeting of the Thornapple Farmers' Club at the home of Mr. and Mrs. W. R. Harper. The meeting was

called to order at 11 o'clock a. m. After the usual routine of business, the delegates to the state convention of Farmers' Clubs, held at Lansing, Dec. 5-6, gave a very complete and interesting report, following this came dinner. At 1:30 p. m. the Club was again called to order and several members gave short talks on their experience in raising fruit. President Russell then introduced George E. Rowe, of Grand Rapids, who spoke at some length on the possibilities in fruit raising, the care of orchards, the need of understanding the requirements of different soils and the food necessary for the successful growing of an orchard. A short literary program and a song concluded the day's exercises. The February meeting will be held at the home of Iva Adams of northwest Thornapple.

The Health of the Family.—The December meeting of the North Owosso Farmers' Club was held December 30, at Way-Side, the pleasant farm home of Mr. and Mrs. F. W. Stiles. After the serving of a bountiful dinner the delegates to the state association gave a good report of that meeting and a good literary and musical program was rendered. W. S. Carson responded to the question, "What contributes most to the health of the family," by saying that good healthy heritage was of great importance. The laws of hygiene should be respected, and sanitation enforced. The location of the home was another important factor, whether on low, damp ground or on a high, dry location. The construction of houses was another item, and that all floors of the same story should be on the same level to prevent the necessity of stepping up or down in going from one room to another. The selection of good, wholesome food and have it properly cooked, also the water supply was of great importance. But he thought that cheerfulness contributed most to the welfare of the family and gave a prescription as follows: Equal parts of cheerfulness, kind words and good deeds; when shaken together add a good portion of kindness, hearty smiles, and an occasional good, hearty laugh; to be taken at frequent intervals, and in sufficient doses to keep one sweet. In preparing this magical alchemy do not forget to laugh and to smile for, it is said, "Laugh and the world laughs with you." The next meeting will be held at the home of Mr. and Mrs. Z. D. Hurrell on Friday, Jan. 26.—Reporter.

Discuss Consumer's Dollar.—The Howell Farmers' Club met in January at the beautiful home of Mr. and Mrs. Britten Gilkes and was called to order by President Munsell, the members all joining in singing America. Mrs. R. R. Smith, delegate to the state association then gave a very able report of the meetings of the association. R. R. Smith gave some time to the discussion of "What is the matter with our present school system?" and had only praise for the system. Would not discard it although there are defects. S. M. Yerkes thought even a smattering of Latin and Greek worth having. "Is the farmer getting his share of the Consumer's dollar?" Mr. Wells opened the discussion on this topic and thought that the farmer should get more than he does if the consumer pays what he does. S. M. Yerkes thought the farmers should organize to get better prices. The Club adjourned to meet the first Thursday in February with Mr. and Mrs. Frank Crandall.

GRANGE

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

THE JANUARY PROGRAMS.

Suggestions for Second Meeting.

Song.—"Relation of Middlemen to our prosperity," led by a man and woman.
"A Message to Garcia," declamation.
"Telling Stories to Children," by a mother or teacher.
Solo.
"How can we hasten a general parcels post law?"
Surprise feature.—"Yankee Doodle Housewives."
Good ginger bread, recipes given by five women, who serve samples of the same.

A TIMELY BLOW FOR PARCELS POST.

Does the Grange really want a law enacted providing for a general parcels post? It has gone on record repeatedly as desiring such a law. Has it not "resolved" and "resolved" to that effect for the past decade? Were it not in so just and grave a cause, its parrot-like reiteration of "we demand a parcels post" would be monotonous and tedious.

The time for more energetic action than simply creating sentiment in public meetings is here. This is a vital matter just now. It is a good subject to put upon Grange programs now, but something more than discussing must be done. The Grange and all other forces and individuals desiring parcels post must get into action now! The old saying that "actions speak louder than words" was never truer than regarding this issue.

The most effective blow for parcels post is a letter to your representative at Washington. It need not be a hard thing to get one from almost every member.

However briefly or crudely the message is worded, if its meaning is unmistakable, it will do its work.

A "postage stamp campaign" needs enthusiasm to fire it. A plan to send your congressman a post-card shower should be no more difficult to manage than a post-card shower for a personal friend. Do it at one meeting and have the messages read for roll call. One Grange in the state gave its general deputy a post-card shower which he declares to be "the best Christmas present he ever had." What we need just now is that every Michigan senator and congressman be made to feel that he, too, has had a postal shower which he cannot forget—nor evade!

JENNIE BUELL.

AMONG THE LIVE GRANGES.

Rose City's New Officers.—Rose City Grange, of Ogemaw county, has installed the following officers: Master, Silas Snook; overseer, Chas. Antill; lecturer, Eugene Parker; steward, Howard Thompson; assistant steward, Herman Baller; chaplain, Mrs. Anna Benjamin; treasurer, L. F. Smith; secretary, D. L. Hoyt; gate keeper, Chas. Bartels; Ceres, Josie Blair; Pomona, Bella Bierce; Flora, Mrs. Myron Rex; lady assistant steward, Addie Blair.

Dewitt Grange, of Clinton Co., elected the following officers at its last regular meeting in December: Master, Will Ellwanger; overseer, Will Seeger; lecturer, Mrs. C. L. Pearce; steward, Daniel Ellwanger; assistant steward, Arthur Dagget; chaplain, Mrs. Gertrude Pearce; treasurer, O. B. Dills; gate keeper, Paul Cuolahan; Ceres, Hazel Farrier; Pomona, Ethel Scott; Flora, Ruth Gilbert; lady assistant steward, Dorris Stamilly; installing officer, Mrs. Estella Dills.

Debate Arouses Interest.—In an exciting debate, covering two meetings, Crystal Valley Grange, of Montcalm county, has recently been discussing whether tobacco or liquor has caused the more evil in the past 25 years. Both sides collected facts and statistics and presented them. Judges Van Buren, McConkey and Linter decided that the liquor arguments were the stronger by several points.

Otsego Grange, of Allegan county, held a short business meeting Jan. 10, followed by an oyster supper and a fine social time. About 40 members present. New officers were installed as follows: Master, F. Webster; overseer, F. Palmer; lecturer, May Webster; steward, J. W. Winters; assistant steward, Elmer Hare; chaplain, Mrs. Finger; treasurer, Lee Smith; secretary, Mae Carroll; gate keeper, W. Staley; ladies in court, Velma Wyatt, Fay Cherrington and Leeta Williams; lady assistant, Mrs. Ida Hare.

A New One for Shiawassee.—A new subordinate, to be known as Venice Grange, was recently organized by County Deputy Stone. The following officers have been chosen: Master, Fred Miller; overseer, C. A. Owen; lecturer, Ambert Weller; steward, Lucian Hart; assistant steward, Wm. Hudson; chaplain, Annie Stewart; treasurer, Ray Ellis; secretary, Edna Hudson; gate keeper, Jerry Craig; Ceres, Edna Saxton; Pomona, Millie Craig; Flora, Cora Reed; lady assistant steward, Flora Hudson; chairman of finance committee, Finley Reed.

Richland Grange, of Kalamazoo county, held its first meeting of the new year on January 3. It proved a well attended and profitable meeting. New officers for the ensuing year were installed as follows: Master, C. E. Jones; lecturer, Mrs. Fannie Jackson; steward, D. C. Jewett; assistant steward, Chas. Dooley; chaplain, Mrs. M. E. Jewett; secretary, W. C. Whitney; gate-keeper, C. F. Bissell; lady assistant steward, Mrs. C. E. Jones.

Installation of Officers by Galesburg Grange, of Kalamazoo county, was followed by an oyster supper, the meeting proving a most enjoyable one. The officers of this Grange for the coming year are: Master, J. J. Campbell; overseer, J. W. Vosburg; lecturer, Mrs. C. DeLong; steward, William Cook; assistant steward, Dor Backus; chaplain, Mrs. George Burroughs; secretary, George Telfer; treasurer, Seymour Olin; gate keeper, William Joy; Ceres, Miss Bernice Telfer; Pomona, Mrs. J. W. Vosburg; Flora, Mrs. William Cook; lady assistant steward, Mrs. Dor Backus.

Clinton Pomona Officers.—The last Pomona meeting of the old year was held with Olive Grange early in December. The election of officers marked the retirement of Mrs. Abbie E. Dills who has served the Pomona as secretary for 11 successive years, and Mrs. C. L. Pearce, who has filled the office of Pomona lecturer in an able manner for 17 years. The new officers are: Master, L. N. Carpenter, of Olive Grange; overseer, W. F. Plowman, of Bingham Grange; lecturer, Mrs. Allie Veeney, of Bingham Grange; steward, Byron Sowle, of Essex Grange; assistant stewards, Mr. and Mrs. Roy Smith, of Olive Grange; chaplain, Mrs. C. L. Perce, of Dewitt Grange; treasurer, C. Jones, of Bingham Grange; secretary, Mrs. Cora Sowle, of Essex Grange; gate keeper, Ross Brooks, of Bingham Grange; Ceres, Mrs. Daisy Ottmar, of South Riley Grange; Pomona, Chille Carpenter, of Olive Grange; Flora, Mrs. Viola Pike, of South Riley Grange.

COMING EVENTS.

Pomona Meetings.
Ingham Co., with Stockbridge Grange, Friday, Jan. 26.
Western (Ottawa Co.) Pomona with Coopersville Grange, Friday and Saturday, Jan. 19 and 20. County corn contest in connection with this meeting.

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The Case is known far and wide as the car with the

famous engine. This engine embodies advanced ideas found in no other make—ideas that have been worked out with consummate skill and infinite care and patience.

It took eighteen years to perfect the engine that makes the Case supreme.

These eighteen years, devoted to designing, experimenting, refining, improving and perfecting this wonderful engine, have brought forth what we believe to be the masterpiece of America.

An engine so simple, compact, silent, accessible and powerful that its equal does not exist.

"The Car With the Famous Engine"

Our Mighty Engine

These statements, coming as they do from one of the most conservative manufacturers in the world, are based on the actual performance of the engine. It is due to this extreme conservatism that we rate as a 40 horsepower, an engine that shows 52 horsepower on the brake test. This is the same type of engine that carried the Case "30" to victory and fame on race tracks, durability runs and hill-climbing contests galore.

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The Greater Case is big and roomy, with a straight line body and sweeping lines that give symmetry and grace. It is richly finished and upholstered, handsomely trimmed, luxuriously appointed, and up-to-the-minute in style.

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And its perfect balance and long, strong springs, make it by far the easiest riding car.

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Back of Case Cars stands the 70-year reputation of a company whose products have always made good.

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This emblem on an automobile has the same significance as the STERLING MARK on silver. It stands for highest quality and a guarantee that protects. It places at the disposal of the owner of a Case Car our

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We have 10,000 Case Agents and 65 big Branch Houses scattered throughout the United States and Canada. All of our vast army of agents are equipped to promptly take care of Case Cars.

Wherever you carry the Case Eagle you may be assured of a welcome, hospitable treatment and fair dealing at the hands of the Case local agent. He will furnish you with information on the best roads, hotels, etc. No other automobile concern in the world can duplicate Case Service.



And for three generations that high standard of quality has steadily been maintained.

You want a car that will last—not one that will be down-and-out in a year. We are not competing with the cheap, "one-year" cars with which the market is flooded.

We are building cars for those who demand the utmost limit of durability and service and are glad to pay an honest price for full measure of honest value.

The Greater Case is a high-grade car at a medium price. Fore-door ventilation—36x4-inch tires—120-inch wheel base—three-quarter elliptic springs—11-inch clearance—4½x5¼-inch cylinders—Rayfield carburetor—dual ignition—Brown-Lipe transmission—Timken full-floating axles—cellular-type radiator—regulation trim-

mings—demountable rims—English mohair top with side curtain and dust hood.

Self-Starting Motor

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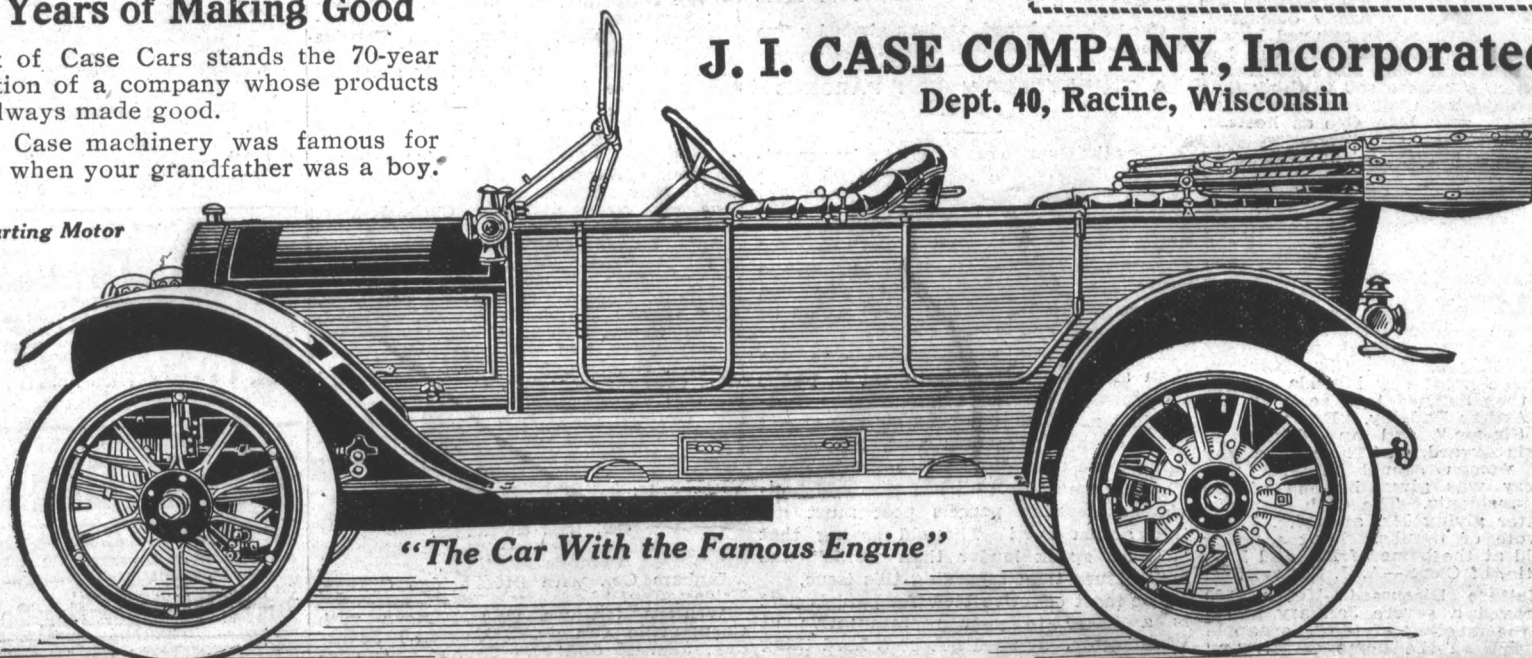
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