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FARM NOTES.

The Fall Work.

Surely the present season is almost unprecedented in peculiar conditions; a comparatively early, and in many sections of the state, a wet spring, followed by an unusually long and severe summer drouth, which has again been succeeded by a period of unusually heavy rains, accompanied by warm growing weather. At this writing, October 20, there has not been sufficient frost to do any great damage to vegetation, and many plants, both wild and cultivated, are still to be found in bloom. This late fall will undoubtedly prove beneficial to the old meadows and pastures when considered in relation to next year's production, as well as to the late pasture this fall. The lateness of the fall will also give opportunity for the harvesting of the crops which was delayed by the rainy weather, while the ground will be in excellent condition for fall plowing should the weather remain open correspondingly late. Compensation is indeed one of the great laws of nature, and the fine weather which has prevailed during the past week should prove a lesson for the pessimists who have loudly complained regarding the unfavorable weather conditions which preceded it.

Curing the Seed Corn.

The accompanying cuts will illustrate the method of curing seed corn on one of Michigan's seed farms. The method of storage is so well illustrated as to need little explanation. The two strings of wire fence are placed on posts about 20 inches apart and a board bottom is placed at a suitable distance above the ground. The corn is shovelled in at the top and the temporary bin is roofed over to protect it from moisture. Undoubtedly this arrangement will cure the corn out much more quickly and satisfactorily than the ordinary corncrib. However, the corn that is carefully selected on the farm and thoroughly fire dried, or even air dried in corn racks, will be likely to retain its vitality and germinating power much better than where cured as herein described on a commercial scale. This, however, may prove a profitable suggestion for farmers who have a quantity of well matured corn that will be husked in the field and which can be sorted with a view of properly curing same for the seed market next spring, as there is always quite a proportion of farmers who do not take the necessary precautions in selecting and saving their seed to insure a home supply of seed corn of dependable quality.

Enough has been said and written on this subject, in recent years, since the important of corn improvement to the agriculture of our country has been fully appreciated and emphasized so that it would seem that every farmer would be sure of his seed supply for next year during the corn harvesting season. However, plans, even though made with ordinary care will often go wrong, and some farmers will never learn to plan on the future as carefully as they should, for which reason there

will probably always be a good demand for first-class seed corn, from which those who are in a position to furnish it may reap a good profit.

Other Seeds for Next Season's Planting.

In this connection a word with regard to other seeds for next season's planting will not be amiss. Many of us are not satisfied with the varieties we are using; we want improved seed oats; we want seed beans that are free from anthracnose; we want clean clover seed for the

spring seeding. All of these can be better secured at this season of the year than at any other and now they may be purchased direct from some farmer whose crops have produced well this year, and can be secured at a lower cost than will be the case if we wait until spring to purchase them. It would be the part of wisdom for every farmer who contemplates a change of seed for next year to secure the needed supply this fall and store it under favorable conditions so

that its germinating power will not be impaired. This will not only insure a more satisfactory supply of seed next year at a lower cost but will effect a saving in the time spent in an anxious search at the time when the seed is needed for immediate use.

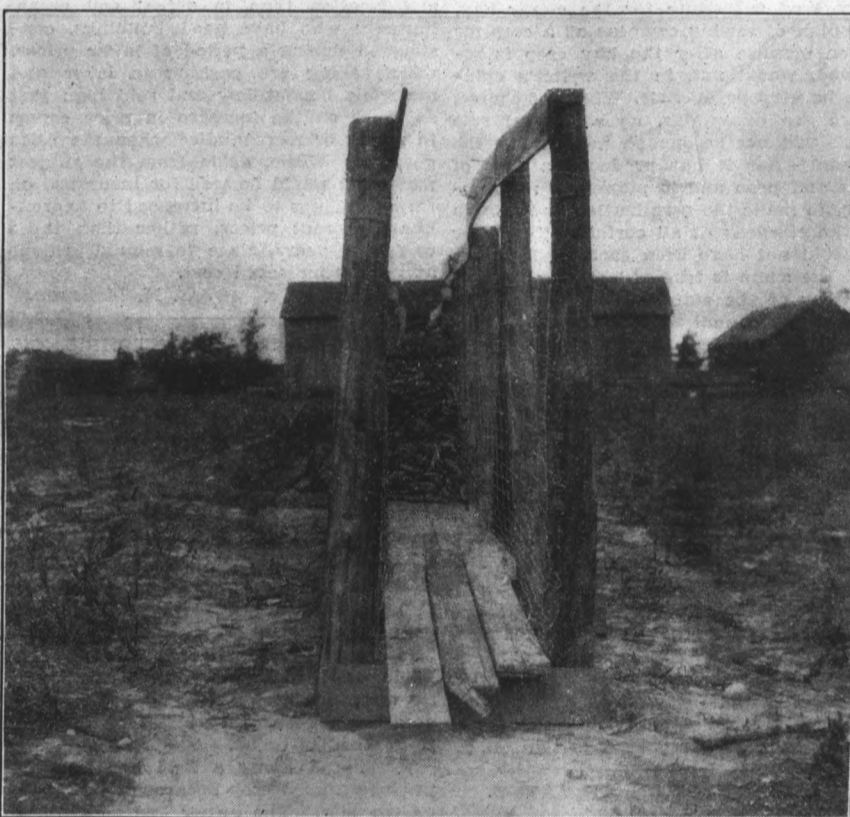
Preparing for Winter.

During the wet weather of the past few weeks which interfered with the work of harvesting the season's crops to some extent, opportunity was afforded for the doing of many odd jobs of repairing which should be attended to before winter. On the writer's farm this time was employed in replacing some yard fences which had become insecure after some years of service. There is perhaps no kind of preparation for the winter season which is more important than getting the fences about barn and yards in shape to hold the live stock securely during the season when they are confined therein. Good hog yards, good cattle yards, and good sheep are very essential and it should be made an item of fall work to replace any poor fences or repair any fences or gates that may need attention, before the season comes to confine the live stock in the yards and stables.

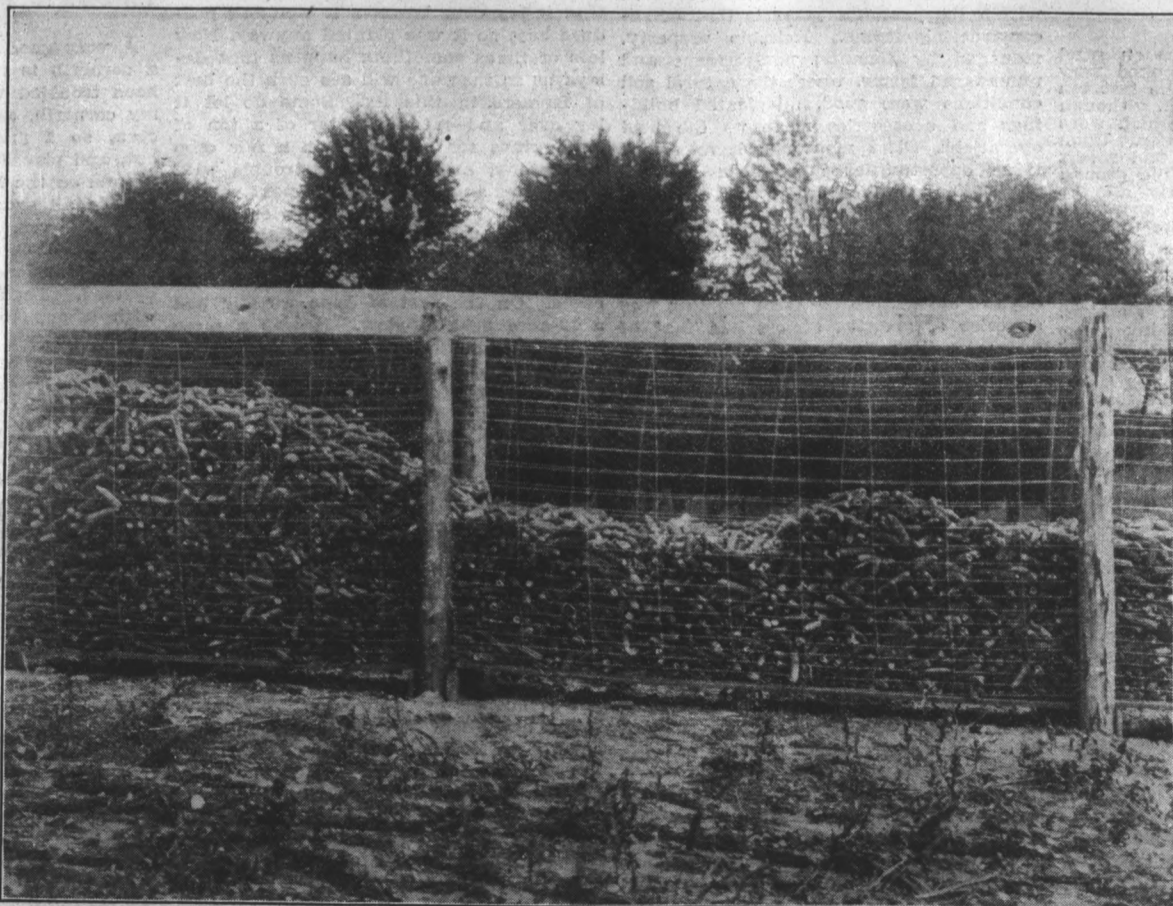
Another item which should receive frequent attention as a preparation for winter is the grading up and filling of low spots in the yards, so that there may be as little mud as possible for the live stock or their caretakers to wade through before freezing weather comes. It does not take much time with a good scraper, or even with a wagon, to move sufficient dirt to grade up about the buildings and yards, provided it is done each year as it may be needed. It is also a saving in ultimate repair bills to see that the walls about the buildings are well pointed up at least once a year and this is a good season to give that work attention, as generally more time can be found for it in the fall than in the spring season.

There are numerous changes to be made in the stables each year and minor repairs to be made to the stalls or stable equipment which should not be delayed until after the live stock is placed in winter quarters, and the stormy weather in the fall season when one cannot work in the fields is a good time to give this work attention. As a matter of fact, where these little odd jobs are given attention as their need becomes apparent, there will be little preparation for winter required upon the average farm, but if they are allowed to accumulate from one season to another it will be found difficult to place everything in satisfactory condition for the winter season without considerable work.

While the fences are being repaired about the barn and stables, it is good economy to give some attention to the field fences as well, notwithstanding the fact that the fields are not used during the winter. If there are some broken or decayed posts in the fences the winds and storms of the late fall and winter will often cause other weak posts to be broken and the work of repairing will be greater if delayed until



End View of a Seed Corncrib Used by a Commercial Grower.



Side View of Seed Corncrib Used on a Michigan Farm where Seed Corn is Made a Specialty.

spring. These may seem like unimportant details with which one should not bother until the crops are all secured, yet the farmer who pays close attention to the little details will generally be found to be one who is well up with his work at all seasons of the year, and these little things are as much an indication of the ability of the farmer as are the character of the crops which he grows.

Fertilizer for Beans.

I have 10 acres of stubble that was in spring rye last year that made about 15 bushels per acre. The clover didn't come good enough to leave. I have just rented this farm for five years, and I am under the impression the land is pretty badly run. Now I want to put this 10 acres to beans. Will it be a good plan to drill fertilizer in the bean rows? If so, how much and what kind? Or would it pay to sow early to oats, plow the oats under at bean planting time, or say about two weeks before? The soil is a sandy loam.

H. W. V.

Many bean growers find it profitable to use fertilizer on the bean crop. However, care must be used in applying it as a considerable quantity of the fertilizer distributed in the rows with the beans is likely to injure the germinating power of the seed. Some growers follow the practice of distributing the fertilizer in the bean row and through one drill feed on each side of the row, using about 200 pounds per acre of 2:8:2 fertilizer. As the bean is a leguminous plant nitrogen is not required on a fertile soil where one is certain that the bacteria peculiar to the bean plant is present. However, on a run down soil, a little nitrogen will aid in giving the bean plant a good start. Results with fertilizer on this and other crops are more satisfactory where the land is in a good mechanical condition than where its humus content has been depleted as is quite likely to be the case on this soil.

It would not, in the writer's opinion, pay to sow oats in the spring to be plowed down for the bean crop for two reasons. First, they would not get a large enough growth to add much vegetable matter to the soil; and second, if dry weather prevailed the late plowing would be a handicap to success with the crop, which would hardly be balanced by the benefit derived from plowing down the oats. Rye sown in the fall would be a better means of adding humus to the soil where a bean crop is to follow.

Buckwheat as a Cover Crop.

Can you give me any information as to the time of the year to sow buckwheat in order to plow under for corn? Is there any danger of souring the land, which is a gravelly loam?

A. F.

Where buckwheat is sown as a crop to plow down the following year, it should be sown reasonably early, say not later than the middle of August. There would be no danger of producing an acid condition of the soil, since the best method is to leave the cover crop on the ground until spring before plowing it down. It is now too late to sow such a crop this season, and there are better crops to grow for this purpose, except where one desires a catch crop under conditions where there is but a brief season for growth.

Potato Blight.

I have six acres of potatoes on sand and gravel soil which have looked very nice all summer, but within the last ten days they have nearly all died, although there were a few little spots which were evidently killed by weevil earlier. Upon examining the potato stalks I find a soft place about two inches from the ground and the stalk is hollow nearly all the way to the top, but cannot find any trace of weevil in them. I would like to know if you think this is blight. A neighbor told me that blight caused the stalks to be hollow always. Another field of potatoes within 20 rods which were planted a little earlier, are as green as ever. Please advise whether you think there would be any more danger in keeping the potatoes over winter than as though they had ripened naturally. I might add that the vines smell almost as strong as when they are frozen.

C. E. W.

From the description given the rapid progress of this disease and the very noticeable odor from the decaying vines, it appears that the trouble was the late blight or rot of the potato. This is a fungous disease which grows through the entire plant, both leaves and stalks, and might cause the peculiarity in the stalk which is mentioned in this inquiry, although this is not one of the effects by which its presence is recognized.

The late blight, however, kills a field of potatoes quickly when it once gets a foothold. A potato crop which has been killed by the blight is not as desirable for winter storage as one which has ripened naturally. The best authorities recommend not digging the potatoes for about ten days after the vines are dead where they have been attacked by blight, and then digging and removing from the

field to a cellar, never covering pits with the dead vines if they are to be pitted in the field. By allowing them to remain in the ground a short time after the vines are killed, the tubers which are seriously affected will develop symptoms of rot so that they can be distinguished when the potatoes are picked up. Early planting is a preventive of late blight and probably is the reason for the other field mentioned not being affected, although they may be of a different variety, there being a great difference in the susceptibility of varieties to the attacks of late blight.

Substitutes for Clover in Crop Rotation.

Owing to the dry season, most of our clover seeding is lost, and I write for your opinion of a plan I have in mind. Our land is quite sandy, and I plan to sow the ground that missed seeding, to peas and oats next spring. This will replace the hay crop and I want to sow the ground to cowpeas after the peas and oats are cut, to plow under the next season for corn, the same as the clover sod would have been turned under if the clover had not missed. The plan I have outlined would carry on the rotation the same as clover and I would like to know what varieties of cowpeas are best to sow, as they could not be sown much before July 5, and I want to leave them on the ground over winter, and plow the dead vines under the next spring. Would I be getting as much nitrogen and humus into the land, from an ordinary cowpea crop, as I would from a fair clover sod? My idea carried out would be to put the corn ground to wheat, top-dress and seed to clover, making a three-year rotation.

Jackson Co.

F. D.

While the oats and peas will make a very good substitute for the clover hay, the plan of sowing cowpeas as a crop for green manure after the hay crop is removed, would not, in the writer's opinion, be very practicable. While, of course, there are exceptions, as a general rule there will not be enough moisture in the ground after it has produced a crop of oats and peas and is plowed in midsummer, to make the germination and growth of the cowpeas at all certain. This year it could not have been successfully done, and the same is true of last year in most sections of the state. Then the cowpeas should have about all of the growing season from the first of June to make a maximum growth.

It would probably be a better plan and accomplished with less labor to disk the ground after the oats and peas are cut and sow to rye and vetch, if a leguminous crop is desired, or to rye and rape if the soil is not in need of additional nitrogen, as this will supply a good deal of vegetable matter to plow down the following spring and can be utilized as late pasture for sheep and hogs.

In case either vetch or cowpeas are sown as a cover crop for green manure, it would be a wise precaution to inoculate the soil or seed with the bacteria peculiar to these plants, as only a comparatively small growth will be made if the bacteria is not present in the soil.

RECONSTRUCTION OF FARMS.

Not entirely a new line of business, yet one that conditions have favored within the past few years is that of reconstructing farms. Heirship property, managed by tenants; non-resident and unmanaged farms, where the natural soil conditions were good, dilapidated buildings and accessories made up the field operations. The men who have seized these opportunities have been farmers who had capital or credit and a genius for building.

In almost every normal person there is a desire to build and stamp individuality on construction work. In the earlier days of agriculture the farm building was a series of growths almost like that of a tree, a little each year, and additions rather than a comprehensive whole. Too often the near completion marked the death or the weakness of age of the farmer, who, when just ready to enjoy life, was unable to do so. There were, indeed, the tragedies of life, as compared to the conditions under which the reconstructor works. One large old house received the attention of carpenters and concrete men, and in 60 days it was a modern residence completed, while the original had been nearly as long in building as was the temple of Jerusalem. The old siding was removed and concrete put on expanded metal lath, the interior modernized, concrete porches, walks, etc., added to the appearance of the residence. The barn was placed on a concrete wall, windows made numerous, concrete floors, tank for water and all modernized as far as possible to utilize existing structures, and at the minimum of cost. This place, which before had been of ill repute as a farm, had the finishing work of tiling and fencing, and for every dollar spent in

reconstruction two dollars were received when the place was sold.

The reconstructor of farms enjoys not only the work, but secures the profit. He is selling the results of his skill and mechanical ability, and at the same time carries on farm work. The professional contractor cannot compete with him, for he has teams, tools, wagons and labor, and utilizes these at unseasonable periods of farming. The art and skill is in adaptation of existing buildings to modern conditions, and these conditions are so varying that it finally resolves itself into the personal equation.

The buyer of these reconstructed farms finds a place which suits his ideas. The permanence of the work makes him feel that the repair bills will be of little consequence for many years and that he is justified in paying the price. The ability to operate a farm with modern equipment makes farming a "going business," rather than a struggle under conditions less favorable. The work of the farm reconstructor corresponds in a measure with the systematizer in manufacturing business, or rather, added to this, the application of correct mechanical ideas to permit a modern system of farming.

The work of the reconstructor is an object lesson in the community in building and planning farm working conditions. The advance in farm prices in the final analysis is in most cases more of an advance in the improvements on the farm in buildings, fencing and drainage, roads and location than in actual soil areas. Farmers who have good buildings, constructed during a period of lower prices, when selling are cashing in labor and materials bought low and sold high just as much as the increase in price comes to stocks or merchandise when the price goes up. While, aside from the subject matter, it would be well for insurance on farm buildings to be increased to approximate present prices, rather than those of former years, since to rebuild is done at greatly increased cost.

Shiawassee Co. JAS. N. McBRIDE.

SOME LESSONS FROM EXPERIENCE.

I have noticed that in two articles, one written a year ago and another this year, by S. B. Hartman, he states that in corn badly blown down a corn binder would not work satisfactorily. Now, I think there must be a difference in binders in this respect. Our binder will pick up corn that is flat on the ground, unless it lays perfectly flat lengthwise of the row, and in drilled corn this would be impossible. It knocks off a few more ears on down corn than it does on good standing corn. The main benefit we get from a corn binder is its ability to pick up down corn, as we are still husking by hand and it cuts down corn just as fast as it would if it stood up good.

Every fall many a field has failed to produce a good crop because it was plowed too late. The owner had so much to do that he just couldn't get that last field in on time, and there was no use of letting it lay over because it wouldn't produce hay, so it was planted anyway. Now lots of times something happens that delays us so that one will see even the best of farmers in this fix. Some do let it lay over and cut a quarter of a ton of June grass for hay, or even a fair crop of timothy, and then have trouble with wireworms and cutworms the next year.

But we had a little experience two years ago that makes me think that in such cases the old-fashioned summer fallow is the line of work to follow in such cases. On the first of June we still had a 12-acre field to plow. It was a piece badly infested with ragweed, Canada thistles, and other weeds and wouldn't even make pasture, so we started to plow it. After getting five acres plowed we were delayed unavoidably for a few days, so we decided to fit this piece and put it into beans and let the remaining seven acres lay idle. About the first of July we plowed the rest of the field and rolled and dragged it at odd spells during the remainder of the summer. On September 1 we drilled it to wheat. We harvested seven bushels of beans per acre from the remaining five acres and by the time we got this piece ready for wheat it was October 1. The following year we got 30 bushels per acre from the summer fallow and about 10 bushels from the late sown bean ground wheat, and this year the clover still showed big on the summer fallow as compared to the bean ground. We hear the summer fallow spoken of as being obsolete, but it pays, in my estimation, when you can't get a crop in on time.

We had a peculiar experience with

beets this year. We have a nine-acre field with a six-inch tile running through the middle of it, that always carries a running stream of water. This field was used in a rotation of potatoes, corn, and this year beets. Never before have crops planted over this tile in any way molested the tile, but this year those beets plugged that tile from one end to the other with fine roots, just like an elder bush will. We have had beets over tile before without any damage being done, but those tile were dry during the dry part of the summer while this tile carried water all the time, which probably accounts for it. I think this is the last year we will put beets over tile carrying spring water.

Montcalm Co.

R. R.

LOCUST A PROFITABLE TIMBER.

When my father bought our present home 32 years ago there was one small locust tree growing on the farm. The land where it grew is high and sandy and not very rich. That one tree has spread until we have a good-sized grove of handsome trees. They have all come from suckers; though they seed abundantly, they have not spread from seed. They have proved such a blessing we do not grumble much at having to cut them when they spread where we do not want them.

To anyone not acquainted with their habits, their quick growth is marvelous. The tallest shoots started this spring are eight feet high. We have used timber from this grove for years to repair barb wire fences where the original cedar posts have decayed, and last year made 80 rods of new fence, most of the posts being locust.

There are about 50 good-sized trees left and many small ones. We always peel the posts, thinking it pays in the end. When the sap starts in April they peel very easily. The posts check the first year and many of the staples have to be replaced. The timber is very hard and, after it is seasoned, it is difficult to drive staples in it.

Where the trees grow very close together we fancy the borers do not work as badly, though we have had few killed.

The largest tree we cut last year was 20 inches at the stump. It branched eight feet from the ground. The butt made six large posts, and the branches were large enough to split. That one tree made 33 posts and 27 stakes large enough for repair work. The trees grow tall, as tall as white or black oak growing near them. They are taller than any I have ever seen elsewhere. Perhaps the chickens using the grove for shade has made the difference. The stump of the original tree is three feet, it divided near the butt and grew in three parts. Where they grow close together they make straight, handsome trees, are self-trimmers and the fuel is excellent.

Tuscola Co.

G. A. JOHNSON.

CONCRETE FLOOR FOR CORNCRIB.

A very good foundation and floor for a corncrib is made of concrete. I have been troubled with rats working under my corncrib, and destroying considerable corn, so I finally took the board floor out, and placed cobble stones all over the ground on the inside and about six inches outside all around. Then I sifted gravel over the stones and swept it into the crevices, then covered this with about one to four concrete, until the stones were covered. Then I plastered this all over with a one to three mixture. I think when this gets dry and I fill the corncrib with corn, the rats will not pull it down under the crib, through the floor.

Shiawassee Co.

B. S. FOSKET.

CATALOG NOTICES.

Hamilton's Red Book on Orchard Heating, published by the Hamilton Orchard Heating Co., of Grand Junction, Col., is a 40-page illustrated booklet which discusses every phase of orchard heating and illustrates the economy of giving this subject merited attention.

A Quarter-Centennial Souvenir, published by Clay, Robinson & Co., Union Stock Yards, Chicago, Ill., is being distributed to the patrons of this firm and other interested people. It contains the history of this firm's progress during 25 years until it reached an aggregate of \$105,000,000 of business in 1910. In addition it contains much valuable and interesting information for live stock men with regard to the personnel of this progressive firm.

The Nelson Tank Heater, manufactured by the Nelson Manufacturing Co., Deerfield, Wis., is fully described in an illustrated folder which will be sent by the above firm on application. It shows the two styles of the Nelson Tank Heater adapted to different types of water tanks.

HOW MUCH WORK SHOULD A MAN ACCOMPLISH?

Please let me say a few words in your journal. I read with much interest the questions asked by T. E. M. in The Farmer of October 14, and also the answers given by Colon C. Lillie, and would like to add some comments to Mr. Lillie's answers. Undoubtedly, Mr. Lillie is a farmer with much experience, but I think he follows the old way of farming and uses the old day's tools more than the practical farmer ought to do. Now, in farming, as well as in anything else, we ought to try to get as much profit and as much work out of our hired help as we possibly can, without hurting them or the teams they use. This being granted, the question might properly arise, how can we do this?

Touching the answer Mr. Lillie made to T. E. M., I will first say that in regard to plowing, the 12-inch bottom plow and the horses hitched to it are both old-fashioned and hard work on both a heavy team and on the best hired man that can be found. Now a better way is to buy a good riding plow, get a good one of the best make that money can buy, and get a 16-inch bottom, hitch three good horses to it, have your field laid out as long as 80 to 160 rods, and a boy 16 years old can, with ease, almost every day of the year, that the ground is fit to plow, turn over three acres a day. If a man wants to do more get a plow with a seat on and two 14-inch bottoms, hitch four good horses to it, and the same boy can turn over five acres a day, and both plows will do good work if the man uses the levers on the plow whenever it becomes necessary.

And now, with regard to the cultivating, I have not much to say, only that seven acres a day is too much for a single-row cultivator in the small fields we have here in Michigan, but it can be done easily with the fields mentioned above, and even more. In regard to planting the corn with a two-row, check-row planter, a man can plant 15 to 20 acres a day as easily in the long field as 10 acres in our small fields.

Now, Mr. Lillie, and perhaps some other readers of The Farmer, will say the writer of this is doing more work on paper than can be done in the field. Yes, dear reader, I am aware that it will look that way to some of you, but I have done it, both as a hired man and as my own boss, and I have taken newcomers right from the old country and trained them to do the very same thing. I have also mowed down many a 20-acre field of hay in a day, with a five-foot mower and cut down many 20-acre fields of grain with four horses and a seven-foot binder which, as I said before, was in long fields. Now, why can't the most of us do the same thing right here in Michigan and save both our horses and our hired men, ourselves and our pocketbooks?

Allegan Co. S. B. V.

BETTER BUSINESS METHODS.

The American farmer can not be successful in this hustling, bustling age unless he conducts his farm along business lines. The tiller of the soil who is not up-to-date in his business methods will be left far behind in life's race for a little more than his and his family's daily bread by his more business-like and painstaking brother. Then it follows, as night follows day, that any plan or method that will increase the business effectiveness of a farmer should be seized with eagerness. The business methods of successful, up-to-date, progressive farmers and business men should be studied carefully and followed when it is possible and where they are practicable.

Authorities claim that 95 per cent of the country's business is done by credit papers instead of currency. How many farmers are there, influential, wide-awake leaders of their calling, who do 95 per cent of their business by means of checks, drafts and notes? It is a safe wager to say that there are many farmers who do less than 5 per cent of their business with commercial papers, and 95 per cent of the 5 per cent are the checks received from the live stock and produce buyers and their own notes issued to settle some bill long past due. And yet the entire country is dependent upon the farmer. It is the farmer who grows the bread stuff and furnishes much of the raw material for the large manufacturing enterprises, and should he not be near the front ranks in business methods, too, instead of straggling along in the rear ranks.

The live stock buyers and produce dealers pay for their purchases in many

instances by checks. Business men are fast adopting the method of paying all bills without the use of currency. Manufacturers often pay their long pay roll by checks and corporations use the check method almost exclusively. Why should not the farmer adopt a similar successful method? There are few points why the payment of all bills with checks would not prove practical to the farmer and many reasons why he would be benefited from its use.

Where the farmer deposits his money in the bank subject to checks it is safe and secure from fire and robbers. As indorsed checks are the best receipts obtainable the liability of paying old accounts is reduced to a minimum. The check decreases the chances of errors and does away with the making of change, a source of frequent annoyance and inconvenience. This is especially true when paying off hired help.

The farmer's credit is measured to a large extent by his bank balance. The man with the largest balance frequently has the largest financial influence in the community. To increase the bank balance a tendency to economize is fostered and less money is spent foolishly upon luxuries, but is invested upon improvements and labor saving tools. When in need of additional funds, the good depositors are given the preference by the bank.

The use of checks increases the amount of money in circulation—a very needful thing in the time of a financial crisis. The farmer's surplus or reserved funds for a rainy day are in the bank instead of hoarded in old stocking toes, iron kettles well covered with mother earth, or other secret places where they do no one any good are a source of anxiety to the owners, sometimes of danger.

A good substantial bank improves the business condition of the community, and it should receive the support of the rural population. It is no more than fair that the farmer should patronize his best financial friend and counsellor. The bank is a trusted business counsellor to whom the farmer can go and find that the bank's officials stand ready and willing to nip in the bud a "gold brick" purchase, or put the farmer wise to a "get rich quick" swindle.

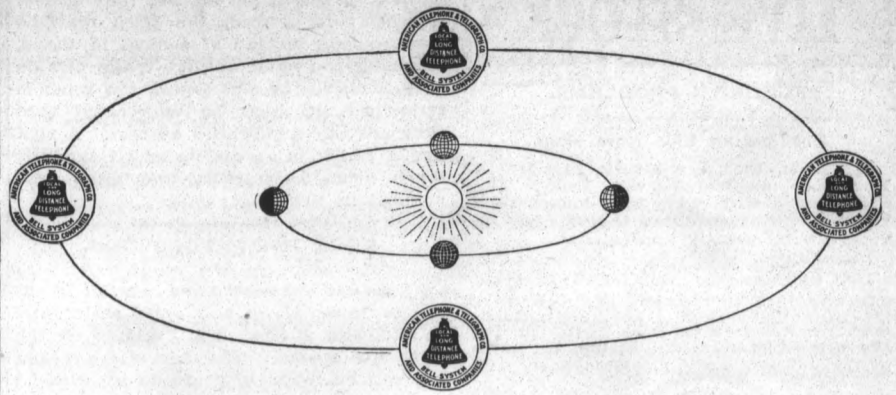
With the constant use of checks the exact business method of the banker will be acquired by the farmer, and as he goes on in his daily rounds he becomes more exact and business-like in his methods of business. Thus, the farmer becomes up-to-date by contact with business men and business methods. His farm will be run along business lines and his prosperity increased, his happiness enlarged, and the country enriched by another successful business farmer, who is not contented to bring up the rear guard but is out with the scouts, and ever on the lookout for the good of mankind.

Oakland Co. E. S. C.

AN OFTEN NEGLECTED FACTOR IN BUILDING.

It is very common to see the shingles blowing off from a recently constructed building because of the rusting and rotting of the wire nails that were used in laying them. In like manner wherever the boards are removed from old fences or the siding from a building, it will be noticed where common wire nails have been used in the construction work that they have nearly or quite rusted in two. No construction work can outlast in good repair the nails which hold it together, hence, it is poor policy to buy nails which are sure to prove the weak link in the chain of construction where a permanent job is desired. Just why the common steel wire nails are so inferior in this respect is not easily explained, but is a very thoroughly demonstrated fact. To overcome this difficulty various preparations have been used for coating wire nails so as to render them impervious to the action of moisture. Various degrees of success have been obtained in this connection and the wise builder uses only coated nails. These may be galvanized, or better yet, covered with a zinc coating which is impervious to even the salt laden air of the sea coast. Special brands of these nails are now on the market and are available at a slightly increased cost above the common kind. But in view of the fact that they insure the life of all exposed woodwork, economy can only be secured by their use in such connection. Buy the best brands of such nails available, some of which are now well advertised, and secure greater economy in your building operations.

Oakland Co. A. R. F.



Comparison of the Distance Traveled by Earth and Bell Telephone Messages

The Orbit of Universal Service

In one year the earth on its orbit around the sun travels 584,000,000 miles; in the same time telephone messages travel 23,600,000,000 miles over the pathways provided by the Bell system. That means that the 7,175,000,000 Bell conversations cover a distance forty times that traveled by the earth.

When it is considered that each telephone connection includes replies as well as messages, the mileage of talk becomes even greater.

These aggregate distances, which exceed in their total the limits of the Solar system, are actually confined within the boundaries of the United States. They show the progress that has been made towards universal service and the intensive intercommunication between 90,000,000 people.

No such mileage of talk could be possible in such a limited area were it not that each telephone is the center of one universal system.

AMERICAN TELEPHONE AND TELEGRAPH COMPANY AND ASSOCIATED COMPANIES

One Policy One System Universal Service

Big Stumps Pulled Quick and Easy *No Stump can Resist the Hercules* **All Steel Triple Power**

Pulls an acre a day. It doubles land values. Enables you to grow crops instead of paying taxes on land that yields nothing.

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LIVE STOCK

FEEDERS' PROBLEMS.

Eradicating Lice from Hogs.

My hogs, that I am fattening for the November market, are very lousy. They are infested with a big gray louse. What can I do to exterminate them? Any advice will be greatly appreciated.

Ingham Co. O. J. H.

Use the standard coal tar disinfectants advertised in this paper, one part to 20 parts of water and apply daily until the lice are exterminated. It will be necessary to continue the applications until the nits have all hatched out in order that the eradication may be complete.

Storing and Feeding Beets.

I would like to know through the columns of your paper how is the best way to store for winter use, mangel wurtzel beets. When is the best time to feed, mid-winter or early spring, when feeding to breeding ewes? Is there any way to save beet tops for feed, or should they be fed as soon as gathered? Would they be good for milch cows?

Hillsdale Co. C. H. B.

The best method of storing roots for winter use is in a cellar to which daily access may be had. A barn cellar is, of course, more convenient, and in its absence a house cellar may be utilized, but it is not desirable, however, and a cheap outdoor cellar can be constructed for temporary use very easily on well-drained soil. Experiments made at various stations with regard to the economy of feeding beets to sheep indicate that a small ration of these roots, not exceeding four pounds per head per day, gives most economic results. When fed in such quantities they provide a desirable degree of succulency in the ration, and enable the animal to get a much larger food value from the other feeds used in the ration. When fed in quantities above this amount, much less profitable results are secured.

Care should be taken in feeding beets to so store them as to prevent freezing since there is a considerable danger in the feeding of beets that have been frozen, especially where fed in liberal quantities. Preferably, they should be fed in small quantities throughout the period of winter feeding rather than at any particular season during the stable feeding period.

The beet tops can be utilized by piling them in small heaps in the field and drawing them directly to the barn for feed. They are best fed in small quantities once each day to dairy cattle, as deleterious results sometimes follow their use for sheep, especially where care in feeding is not exercised.

The Department of Agriculture has devoted some attention to this problem and our Washington correspondent advises us that the Department is about to issue Farmers' Bulletin 465 on Experiment Station Work, containing an item on the Storage of Root Crops. The best place to store roots, says the article, is in a root cellar near where they are to be fed. Such a cellar may be a part of a barn, basement, or it may be built conveniently near to the stock barn. In most places the root house can be built most economically of concrete. Ordinarily cement is the only material that has to be purchased. The gravel and sand are usually available at no great distance on most farms. While the temperature in a root house should never fall to the freezing point, it should be at a low point for best results in keeping roots.

With no cellar available, roots may be stored in pits. For fall and early winter feeding they need not be covered to any great depth. The roots are put in a conical pile about four feet in diameter on a bed of clean straw, then covered with a layer of two inches of long straw. Clean rye straw is preferred for this purpose. The straw at the apex of the pile is made to form a chimney five or six inches. The roots are piled as high as is thrown on the pile to a depth of six inches. The roots are piled as ... as possible so as to shed water. When wanted for feeding the whole pit is taken into the barn at once. For early winter feeding the layer of dirt should be thicker, and in addition a covering of straw or horse manure should be placed over the whole pile.

A description is given of a pit intended to remain over winter, recommended by E. J. Delwiche, of the Wisconsin station. This pit provides for two layers of straw and two of earth. A ventilator made of four-inch boards is placed at the apex. When severe freezing weather sets in, the ventilator is stuffed tightly with

fine hay. In such a pit roots will keep without freezing even in the coldest weather. If desired, the piles may be made oblong instead of conical in shape, retaining the gable form. While pits do very well, so far as keeping the roots is concerned, it must be understood that they are but makeshifts at best. A root house which is accessible at all times is much more satisfactory and more economical in the long run.

KEEP THE PIG GROWING.

These are the days when the fall litters are to be cared for and given their start in life, and a good deal depends on the first few weeks. The faster the young pig can be made to grow, in a healthy and normal fashion, the more profit will be given to the owner. The mother should be encouraged to furnish as much food as possible, by judicious feeding, but it is important that the young pig be taught at the earliest possible date to supplement the mother's rations with something more substantial than milk, and the sooner the pig can be taught to eat, the better will be its chances of thriving when it is taken from the mother. A little slatted pen where the older hogs cannot get, and where even the hens, if they have the run of the farm, are barred, can be supplied to the pig when it is a week old, and corn which has been soaked to soften it, can be put in shallow troughs, and a bit of sweet milk added, just enough to give the pig a taste, and make it eager for more, then, when it has learned to lick the trough for the milk, a thin slop, made of middlings and sweet milk, can be given not much at first, for it should all be eaten up clean before it has a chance to sour. The amount can be increased each day, as the pig learns to eat, and its stomach enlarges, with this kind of treatment the pig will be ready to wean at six weeks of age, and will scarcely miss the supplies withdrawn by the removal of the mother, and will continue to grow rapidly, if its bodily comfort is looked after. There are apt to be chilly nights at this season, and a warm sleeping place should be provided, and above all else it should be dry. Ten or a dozen well-fed pigs have a good deal of heat stored up in their system, and when crowded together they will not suffer from ordinary cold, if there is no draft, and if the nest is dry, but it is asking too much of a pig, big or little, to thrive when it has to sleep in a damp and foul nest. Straw is cheap, and the bedding should be changed before there is a suspicion of dampness.

It is surprising how fast a pig can be made to grow when it is properly fed and cared for. Several years ago we purchased a pig for breeding purposes, a full blooded O. I. C., it was born May 21, and ran with the mother until July 5, when we got it. At that time the pig weighed just thirty pounds, and she kept growing, notwithstanding her removal from the mother. On August 4 she was weighed again, and tipped the scales at 64 pounds, which we thought was doing pretty well, but she kept growing, and when September 3 arrived she was again picked up, though she made an armful. The scale said she weighed 107 pounds, and she was certainly a nice pig, not too fat, but in fine growing condition. I regret that we had no conveniences to keep track of her weight after that, she was too heavy a month later to pick up easily, hence I am unable to state how many pounds she did gain, but the record shows what good feeding and good care will do during the first three months of the pig's life, and on the average, that is nearly one-half of the porker's existence, and the most important half too, for the pig that is given a good start in life is apt to keep growing unless conditions are exceedingly unfavorable. Of course, the fall pig will need more care but if he is kept comfortable, and well fed he will repay with good interest, the time and expense devoted to him.

Eaton Co. APOLLOS LONG.

For several weeks past farm pastured cattle have been shipped to market freely from such states as Ohio, Kentucky and the two Virginias, and these shipments have been large enough to make a good supply of cheap and medium-priced beef in the eastern markets. This has made a smaller eastern shipping demand at Chicago for low-priced beef cattle. A writer for a live stock journal says: "The old days of enormous winter marketing and packing during cold months at extremely low prices are past. The hog business is not so much a seasonal affair as it used to be. Two crops of pigs are raised in many places and there is no reason why there should not in future be a more even distribution of supply and demand and prices. Grass, alfalfa and silage are coming more and more to be big factors in pork marketing."



Keep Hogs Healthy

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UTILIZATION OF FEED BY CATTLE.

It is a fact of common knowledge that marked differences exist between individual animals as regards the returns which they yield for the feed consumed. A current statement is that a good feeder has a greater digestive power than a poor one, or that the power of assimilation of the one animal is superior to that of the other, and it has been assumed that the advantage of the better type of animal lay in its ability to produce more flesh or fat from a unit of feed than could the poorer one. It has also been commonly taught, and seems to be generally accepted by animal husbandmen as an established fact, that young growing animals not only make actually larger gains than more mature ones, but likewise more economical gains.

The influence of type and age upon the utilization of feed by cattle has, therefore, been investigated by officials of the Department of Agriculture, and the result published in Bureau of Animal Industry Bulletin No. 428.

Two steer calves were selected as the subjects of this investigation, one a pure-bred typical beef animal of one of the well-known beef breeds; the other a "scrub" of mixed breeding. Exhaustive feeding trials were carried out with these animals, including 24 experiments with the respiration calorimeter. Finally the steers were subjected to a slaughter test, whereby the quality of the meat and the relative size of the various cuts were accurately determined. The work is therefore important alike to the practical feeder and the agricultural scientist.

The feeding stuffs used were of the same kind for both animals in all the periods, and the different grains used were

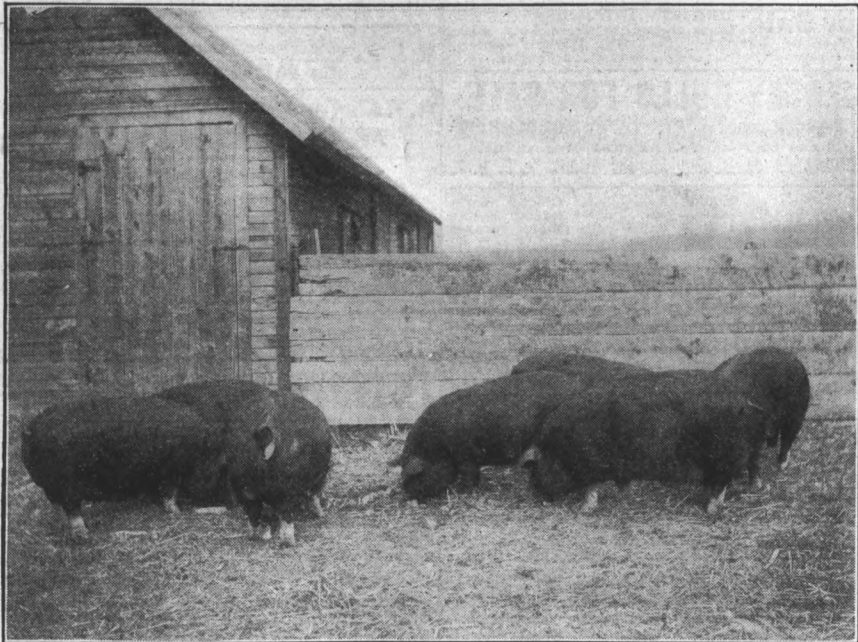
between the ages of 14 and 39 months, the requirements decreasing relatively as the animals matured. The gain in weight of the scrub as compared with that by the pure-bred steer consisted more largely of protein with its accompanying water and to a smaller extent of fat, and therefore represented a materially smaller storage of feed energy. This was also indicated by the results of the block test.

The animals were killed on January 4, 1908. The scrub was rated as "common," and the pure-bred was graded as "prime." The total dressed weight and the weights of the several wholesale cuts show the considerably higher percentage of dressed weight in the case of the pure-bred which is characteristic of the beef animal, and likewise the predominance of the loin cut over the less valuable cuts of the fore-quarter in the beef animal as compared with the scrub, and the marketable meat of the retail cuts show that the proportion of more valuable cuts was notably greater in the pure-bred.

LIVE STOCK NOTES.

This is the time of the year when the northwestern range cattlemen are forced to do some lively hustling to gather up their cattle intended for marketing, and recent receipts at western markets have undergone a large increase. Before long the big end of the supply will be in, although fair numbers are likely to be shipped into the early part of November. The appearance of large supplies of these cattle tends to hold down prices for cattle of the grassy kind, and after they are in, common and medium cattle will undoubtedly sell considerably higher.

Horse breeding clubs are to be organized in every county of Wisconsin, says Dr. A. S. Alexander, in charge of the department of horse breeding in the college of agriculture of the University of Wisconsin. The first club was formed in September at the Dane county fair at



A Bunch of Seven Poland Chinas Fed by George Sexton, of Kent County. Combined Dressed Weight at 217 Days of Age, 1,456 lbs.

mixed throughout in the same proportions for each steer. At intervals during the time the digestibility of the total ration and the nitrogen balance were determined for each animal.

During each of the three winters covered by the investigation, four experiments were made on each animal by means of the respiration calorimeter in order to determine the percentage availability of the energy of the feed consumed. During the first winter, that of 1904-05, the feeding stuffs used differed from those employed during the ordinary feeding. In the succeeding two winters the grain feeds used were the same, only the amount differing.

While the results fail to show any material difference between the physiological processes of food utilization in the two animals, they do show clearly an economic superiority of the pure-bred over the scrub steer, due, first, to his relatively smaller maintenance requirement, and, second, to his ability to consume a larger surplus of feed above the requirement. Both of the facts tend to make the actual production of human food in the form of meat and fat per unit of total feed consumed by the animal notably greater by the pure-bred animal.

In the case of the pure-bred animal especially, and to a less degree in that of the scrub, rations containing less available energy and notably less digestible protein than the amounts called for by the current feeding standards for growing cattle, produced entirely satisfactory gains in live weight.

A distinct influence of age upon the maintenance requirement was observed

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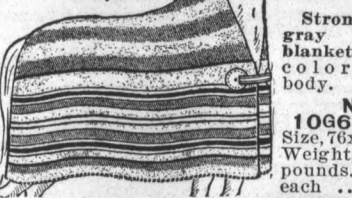
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GUARANTEED

POULTRY

THE CAYUGA OR "BIG BLACK" DUCK.

Several excellent pens of Cayuga ducks were seen at the recent Michigan state fair and the specimen shown in the accompanying illustration was taken at random from a pen exhibited by Mr. E. J. Haskins, of Hillsdale county. This breed has been called the "big black" in distinguishing it from the black East Indian, a breed which is sometimes referred to as the bantam of the duck family. The Cayuga compares favorably with the Pekin as to size, the standard weights of the two breeds being the same and averaging only about a pound below those of the Aylesbury, Rouen and Muscovy breeds.

There is some question as to how the Cayuga originated, some holding it to be merely a black sport of the Aylesbury or the Rouen; others think that the blood of the East Indian played an important part in its development, while others believe that the breed came into existence through the domestication and improvement of the wild black duck. Certain it is that when this duck first came into notice it was confined to the region about Cayuga lake, in central New York, to which fact it undoubtedly owes its name. It has been more or less generally grown for a good many years, notwithstanding the fact that the color of its plumage is against it in the eyes of many practical growers. Duck raisers, like broiler raisers, are partial to white feathers for market fowls, but those who have disregarded this point have found the Cayuga to compare favorably with any of the breeds grown for commercial purposes.

Cayugas are reputed to be well adapted to the needs of the grower who desires to grow ducks on restricted range as they breed well in confinement. They are comparatively quiet and docile, forming a strong attachment for their home and showing little inclination to stray. As table fowls for early markets this breed has been favorably compared with the Pekin, the advantage claimed for either of these breeds being rapid growth cheaply secured. The Cayugas are also reasonably good egg producers, laying from 80 to 90 in the spring and frequently laying again in the fall. The young are hardy and easily grown, while the mature fowls lay on fat rapidly under proper feeding.

The plumage is solid black with a greenish luster, the green being especially noticeable in the coverts and on the neck of the male. The requirements of the standard call for black shanks, toes and webs but dark slate color is permissible.

CROP TROUBLES IN POULTRY.

Large numbers of fowls of all ages die as a result of trouble in the crop. This is really a form of indigestion, but it arises from several different causes and in many cases is due ultimately to a disordered state of the liver. Broadly speaking, crop troubles are of two sorts: There is the mechanical form known as crop binding, in which, for some reason, there is an obstruction in the passage leading away from the crop which prevents the passing on of the food; the other form is what is known as "soft crop," which is pure and simple indigestion. I shall briefly enumerate the causes of these troubles, and the remedies for them, prefacing what I have to say with the observation that they are common to no particular season, occurring in summer and winter alike.

Treating Crop-Bound Fowls.

Almost everyone experienced with poultry has noticed that as a fowl wanders about over a farm it picks up all sorts of substances. These are mingled together in the crop—grain, grass, seeds and grit all jumbled together. From the crop they pass on to the proventricles, or stomach proper, which is not a very large organ in a fowl, as the greater proportion of the digestion work goes on in the gizzard. Now if a fowl eats a lot of grass, or swallows a number of hay

spikes, as poultry often will do, particularly in winter when cattle are being fed upon hay, or at seeding time when the spikes of grass in the fields are ready to shed their seeds, it is easy to see how the little opening in the proventricles can become blocked. Two or three spikes of hay or strings of grass stretched across the opening of the passage will effectively keep back the rest of the food, and thus the crop becomes full of food which cannot pass on. Then this food starts to ferment and very soon trouble results.

Another way in which it may be brought about is by poultry over-gorging themselves, as they will sometimes do when fed grain, particularly corn. The crop is the place in which the food taken by poultry undergoes a preliminary softening process. The juices of the crop cause the corn to swell very much. Thus if a fowl gorges itself with corn, as soon as the corn swells impaction of the crop may ensue and we say the fowl is crop bound.

The way to deal with this trouble is, first of all, to try simple methods; if these are not successful an operation will be necessary. Take the fowl in hand and pour about half a teacupful of tepid water down the throat; work the contents of the crop with the hand and see if you can induce the bird to disgorge by holding the head down. A little practice will enable the poultry keeper to do this quite successfully and, if there be no long stringy material in the crop, as a rule relief will be given. All that is then necessary is to withhold all food for a few hours so as to enable the fowl's digestion to right itself.

If, however, the crop cannot be washed out in this way it becomes necessary to



open it from the outside. This is not a serious operation if it is done carefully. It must be borne in mind that there are two skins to cut through, first the outer skin and then the wall of the crop. A small opening about an inch in length should be made with sharp scissors; then a mustard spoon can be used to extract the congested contents. This having been done, a little warm water containing a grain or two of permanganate of potash should be used to wash out the crop; then the hole must be sewn up. Use a little silk or catgut for this, great care being taken to sew up the inner skin first, and not to allow the outer skin to be sewn to the inner. This having been done devise some means of preventing the fowl from reaching the stitches, and feed it for a day or two on stiff oatmeal pellets exclusively.

"Soft Crop" or Indigestion.

This is the other form of crop trouble, and it consists in the crop being always more or less full of watery fluid, the bag of the crop hanging down and the fowl appearing unable to enjoy its food. This is indigestion pure and simple, and, as I have already said, it often arises from liver trouble. The liver, being disorganized, cannot perform the work which it is called upon to do; consequently it cannot take the food from the crop as rapidly as it ought to take it.

The best possible treatment in such cases is, first of all, to starve the fowl; that is to say, allow it very little food for a few days or until it has recovered its normal condition. This may start the cure, but further treatment will have to be pursued, and that consists in giving medicine that will tend to clear the liver.

An occasional dose of epsom salts will do as much good as anything, there being nothing better than that for clearing the liver in poultry. At the same time a little powder added to the food, or an occasional charcoal and butter pill will be very useful, as that will tend to counteract the acidity and sourness of the crop. If a fowl is persistently suffering from trouble of this kind it may be taken for granted that it is not likely to prove a profitable member of the flock and it should therefore be disposed of at the first favorable opportunity—I mean, should be fattened and killed.

Canada. W. R. GILBERT.

PREPARING FOWLS FOR SHOWS.

The winter poultry shows will soon be in full swing, and as local shows hold out opportunities to amateur breeders a few words about properly preparing and conditioning the prospective prize winners will not be out of place at this time.

The first thing to do is to pick out the most promising specimens, going over the whole flock, and place them in a separate pen. Then go over them all again and cull out those fowls that are off somewhat in color, shape, color of eyes, lobes, etc. Repeat the culling process until you get down to the number you intend to exhibit. Now place them in separate coops so they can be properly trained and conditioned. Fowls properly trained and accustomed to handling will show up to better advantage, and often will score a few points higher, than those not so prepared for showing.

Weigh the fowls to ascertain whether they are up to the weights required by the standard. If not, they must be fed in such a manner as to take on the required weight in time for the show. If only a short time remains in which to bring them up to the required weight they may be given sweetened milk to advantage. Wet mash, consisting of about two parts corn meal and one part bran and middlings, should be fed often. Feed this in a crumbly state and not as a thin slop. Animal meal or green cut bone should also be given, but in moderation. Too much will cause looseness of the bowels. Animal food will add color to the comb. Handle the fowls often—several times a day—while training them. This handling and training should be commenced a few weeks before exhibiting. Take a stick about two feet long and go over each fowl with this, making it pose so as to show its shape to best advantage.

Examine the legs carefully. If they show any tendency to roughness rub them thoroughly with vaseline. After applying this a few times the scales should become soft and loose ones can then be rubbed off. Remove all dirt from beneath scales with a toothpick.

The fowls should, if of a light-colored variety, be washed thoroughly the day before sending to the show. For this washing three tubs of water are required. The first should be comfortably warm, the second slightly cooler and the third a trifle cooler than the second. Into this third or last tub place about as much blueing as is used in an ordinary wash. Into the first tub shave a cake of pure castile soap.

Two persons are needed to do the work. Have the assistant hold the fowl on its side in the tub of warm water while you open the feathers and rub in the soap and water. Rub the lather well into the feathers and always rub the way the web of the feather runs, to prevent feathers from becoming broken. After it has been carefully washed remove fowl to the second tub and rinse thoroughly. Be sure to remove every particle of soap from the feathers; otherwise they will cling together when dry instead of fluffing out as they should. When thoroughly rinsed place the fowl in the blueing water and rinse again. Remove from tub and press all the water possible from the feathers. Then rub gently with a soft towel or cloth, rubbing the right way of the feathers.

After a thorough rubbing place the fowl in a coop well littered with clean straw and set it beside a hot stove—just close enough to be comfortable. As the feathers dry, gradually pull the coop back from the stove. To give fluffiness to the feathers lift them up often and fan the fowl, thus insuring a thorough drying of the under feathers. Clean the feet and toes carefully, rub the legs with alcohol and polish with a chamois cloth. Rub the comb and wattles also with alcohol. The plumage of dark-colored birds need only be rubbed with a silk handkerchief to remove the dust and bring out the lustre. Indiana. O. E. HACHMAN.

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THE DAIRY

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HOW TO MAKE GOOD DAIRY BUTTER.

I would like to hear through the columns of the Michigan Farmer how to make good butter. I don't make much butter but what I do make isn't as nice and solid as country butter should be.

Ohio. Mrs. E. C.
The making of fine butter is more of a science than an art. One must have the requisite knowledge in order to properly govern conditions and know just how to go ahead. Besides that there is an art that everyone does not possess in making the finest kind of butter. Still, after the whole subject is thoroughly understood and with a little experience the making of good butter is rather a simple affair. To begin with, one must have good clean milk from healthy cows. It should be separated as soon as the milking is done and the cream set away in a cool place, a refrigerator is best. Then at the next skimming do not mix the warm cream with the cold, but cool the cream to the temperature of the cold and then mix it. In this way accumulate enough cream for a churning. Most poor butter comes from the fact that the milk and cream from which it is made are not wholesome, there has been too much dirt and filth incorporated with the milk. The next greatest cause of making poor butter is keeping the cream too long before churning. If the cream is kept too long you cannot get a fine flavored butter. Where possible the cream should be churned every day. This is not practical on most farms, however, because the dairies are not large enough but in no case should the churning be deferred longer than twice each week. Good butter can be made if the cream is properly handled and churned twice a week. When there is cream enough accumulated for a churning it should be removed from the refrigerator and a starter added. This starter can be made from a commercial pure culture. This is done by taking some sweet new milk and sterilizing it to kill all the bacteria and then adding the pure culture which contains the right kind of bacteria. All the utensils are kept clean, and in making a first-class butter it is possible to use buttermilk from the previous churning. This should be added to the cream and the cream gradually warmed to about 70 degrees, being stirred so that you will have the cream all of a uniform temperature. Then it should be allowed to stand for about twelve hours to ripen, that is, to allow the bacteria to thoroughly develop in the cream, which gives the butter a fine flavor. The creamery butter maker tests the cream with Mann's acid test to determine just when it has the proper acidity or degree of ripeness for churning, but the housewife can hardly be expected to do this. After a little experience she can tell by the looks of the cream. It has a rich smooth appearance. No one can tell another just exactly by the looks of cream when it is ripe, but one used to churning and sampling the butter will soon learn when the cream is of a sufficient degree of ripeness to make the best quality of butter. When the cream is properly ripened then it should be cooled as low as one can churn satisfactorily. The lower the temperature the better. For dairy butter probably this will be in the neighborhood of 60 degrees. In the winter time possibly 62 degrees. Churn until the butter gathers in small granules about the size of wheat kernels. Then drain off the buttermilk carefully and wash in water of about the same temperature as the buttermilk. Wash the butter until the water drains away clear. Then add a sufficient amount of salt to suit the taste. The butter can be salted in the churn. If carefully done it will not be necessary to take the butter out of the churn to work in the salt. After the churn has revolved a few times to thoroughly incorporate the salt with the butter then it should be allowed to stand with the plug out so that the butter can drain until all the free moisture drains off, when it can be packed at once into jars, or tubs, or made into prints as one desires. In a good farm dairy where one understands the principles and the importance of cleanliness, where one has control of all the conditions and has these conditions what they ought to be, one has the opportunity to make the finest butter on the market. The trouble is that the average farmer does not provide the proper facilities for handling the cream and making the butter, and his

market does not warrant the taking of proper pains in making this butter. Where one makes his own butter on the farm he ought to get the highest price that is paid, and he can if he will only select his customers and make the right kind of butter. Eternal vigilance is the price of choice dairy butter. Everything must be watched from the milking of the cow to the ripening and churning and packing of the butter, and the average farmer does not make it in sufficient quantities so that he can afford to. To simmer it down carefully the making of good butter is largely a matter of temperature. The temperature of cream must be controlled. If the cream is kept at a proper temperature after it is skimmed and is held at that temperature, and if it is warmed to the proper temperature for the ripening process, and then cooled to the right temperature for churning there is very little trouble in having a delicious butter of the finest quality. If the cows are properly fed and the stable and utensils and everything connected with the dairy kept scrupulously clean one need have no fear with regard to the flavor of the butter. It will have its natural flavor and will always grade fancy.

The making of dairy butter is largely a lost art. Most butter is now made in creameries, and for the reasons already stated, farmers do not find that they can afford to take the pains and the time necessary in order to produce a fancy quality of butter. Then, it costs too much to find the market and to supply this market with a small amount. Most farmers have found out long ago that it pays better to co-operate with their neighbors and have their butter made in a factory where it can be made in commercial quantities in sufficient amounts so that it can be placed upon the best dairy market, and consequently the best prices obtained for the product. Here is where the question of co-operation in America has worked out for the good of the farmer, and in a very satisfactory manner.

A GRAIN RATION WITH CORNSTALKS AND BEAN PODS.

Please let me know through Michigan Farmer what feed is best and cheapest for milkers, with only cornstalks and bean pods for roughage, when oil meal is \$40 per ton, cottonseed meal \$33 per ton, dried beet pulp \$18 per ton, corn, \$25 per ton, oats, \$28 per ton, and wheat bran \$27 per ton.

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Since there is no succulent food in this ration like corn silage or roots of any character I would certainly feed dried beet pulp as a part of the grain ration. Dried beet pulp is the best substitute for corn silage or roots that I know of and it has a fair feeding value besides. Taking everything into consideration, I am of the opinion that C. E. will get the best results if he will mix corn and oats, equal parts, and grind them together; then mix in the proportion of two parts of corn and oats, two parts of dried beet pulp, and one part cottonseed meal; that is, mix nicely with the other feeds. It is a difficult matter to get it evenly distributed so it is better to feed this feed separately as indicated below. I think best results are obtained when the beet pulp is moistened before feeding to put it in as succulent a condition as possible. Wet in the morning for the night feed and in the evening for the morning feed. Then, instead of mixing the ground corn and oats and the cottonseed meal together feed them separately, feeding corn and cats in the morning and cottonseed meal at night, and feeding it on this moistened beet pulp. I think no better rule can be given as to the amount of grain to be fed than to feed each cow as many pounds of grain per day as she produces pounds of butter-fat in a week. Of course, the cows are to receive all the cornstalks and bean pods that they will eat up clean twice or three times per day.

THE DOUBLE FEED MANGER IN THE MODEL COW STALL.

In your valued paper you speak of a double manger for the model cow stall. Have you any plans of the same or could you advise me regarding same, as I think it a fine idea?

Kalamazoo Co. H. C.
This double feed manger is one of the features of the model cow stall. Originally, the bottom manger consisted simply of a feed box which could be pulled into the feed alley in front of the cow, the grain ration was there deposited, after which the box was pushed back, it being used after the same principle as a drawer in a

bureau. But in feeding ensilage it was found that this movable feed box did not prove satisfactory, and in most instances it has been discontinued. Now, the lower manger consists of a cement trough the bottom of which is on a level with the floor of the stall. The sides of the manger are simply four inches high, made of cement, and extends clear across the stall, hence, for ordinary stall it is three and one-half feet wide. An opening is left in the front of this manger into the feed alley so that the ensilage and the grain can be put into the manger. Now the hay manger is directly above this ensilage and feed manger and the bottom of it is very narrow and is 18 inches above the top of the lower feed manger. It is made out of a 2x4 or a 2x6. The manger is built perfectly straight on the feed alley side. Slats are nailed on the side towards the cow to the bottom of the manger (on the 2x6 or 2x4), and these slats slant back at an angle of about 45 degrees and project up as high as one desires. The philosophy of this double manger is that the lower manger allows the cow when she lies down to have her head directly above it and compels her to step up in front of a 2x4 which is in front of her hind feet, to lie down. Then, when she gets up the slant of the hay manger will cause her to step back of the 2x4 and thus keep her bedding clean while she is eating or standing. These two mangers will enable one to give the cow her grain and ensilage and hay, at the same time, and the cow can eat them when she desires.

ENSILOING CORNSTALKS.

What do you think about putting up a silo for cornstalks, husk the corn from the stalks and then fill the silo by wetting them as you cut them? Do you think the feed would be enough better to pay the expenses? I have 12 cows and will feed a load of steers.

Hillsdale Co. L. K.

The idea of placing cornstalks in the silo after the corn has been husked by cutting them with an ensilage cutter and moistening them as they are deposited in the silo, and leaving them to ferment and settle to make ensilage, is not a new one. This idea is almost as old as the idea of the silo and corn silage itself. Unquestionably, if one would ensilo the cornstalks in this way he would feed them with much less waste than by feeding them dry, but the idea of ensiling cornstalks has never become popular because one does not get as good results as he anticipates. The fact is, that when corn has been allowed to become ripe and is shocked, the corn cured in the shock until it can be safely cribbed, the cornstalks then are not as digestible as they were when the corn was first cut. Much of the cellulous tissue has turned to woody fibre and is indigestible, and you cannot make it digestible by ensiling it, consequently you will not get as good results from silage made from cornstalks as you would from silage made from the pure whole corn, largely from this fact. Of course, it is well understood that the ear of the corn plant contains more than half of the real food nutriment of the plant, about 60 per cent, and when this is husked and fed in another way, leaving simply the cornstalks, one could not expect to get as large a feeding value out of the cornstalks as he would out of the entire plant. Cows don't like ensiled cornstalks as well as they do ensiled ensilage corn. They are not as palatable, nor as digestible, they are not as satisfying, and they haven't the food value, but nevertheless, I believe this would be the most economical way, so far as good nutrients are concerned and waste, to feed the cornstalks. At Lillie Farmstead we generally raise corn to husk for we want the corn for hogs and hens, but these cornstalks are not ensiled, largely from the fact that the silos are filled with the regular ensilage corn. The stalks, however, are shredded and when shredded are fed as a part of the roughage ration to the cows and young stock. We do not expect them to eat up the stalks clean because we realize that a large part of the food has become indigestible, and we feed them rather liberally and let them pick out what they like and the balance being shredded makes a splendid bedding. Shredded cornstalks, when it is dry, is as good an absorbent in the stable as straw, or better, and it helps out on the bedding question. As to whether it would pay a farmer to build a silo especially for this purpose I do not know. I am inclined to believe that it would not, but I am sure that if L. E. K. would build a silo and put his corn in there before he husked it, that he would be well satisfied with the silo.

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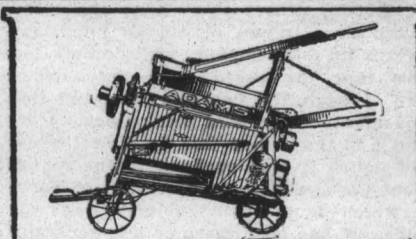
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THE INTERNATIONAL DAIRY SHOW.

The first International Dairy Show was held at Milwaukee, Wis., October 10-18. The organization selected a pretentious name, but this first exposition has done much to justify it. The Milwaukee show was a great success. In number and qualities of entries of cattle, milk, cream, butter, cheese, machinery, dairy equipment and attendance it ranked as one of the very best dairy shows ever held, and the entries in some departments, notably milk and cream classes, showed it to be really international in character. The show was housed in the splendid new auditorium building which is very well adapted to the purpose. The cattle, numbering about 500 head, were comfortably stabled in the basement and all exhibits were shown to good advantage on the ground floor.

The cattle show was one of the largest ever held. Although most of the herds came from Wisconsin, there was no lack of quality. Guernseys and Holsteins were particularly strong, being the two leading breeds of that great dairy state. There were seven herds of Guernseys, and some classes brought out five entries from each herd.

In the end animals are worth just what they will bring in supplying a commercial and economical need. Admitting the perfection of conformation and breeding in the meat and draft animals, the dairyman takes his hat off to the highly-organized business machine—the dairy cow. His ring of 35 or 40 pure-bred cows, each with an individual record of production, does not need to draw on fiction or sentiment for its valuation. It represents a solid value which is capable of returning good interest on its investment.

There was plenty of opportunity for the dairyman to enthuse at the Milwaukee show. The Guernseys, Holsteins, Jerseys, Ayrshires and Brown Swiss were shown in large numbers and of excellent quality. The Guernsey breed was headed by the wonderful Dolly Dimple who has produced more milk and butter-fat for three consecutive lactation periods than any other cow in the world. As a two-year-old her year's record was 14,009.13 lbs. of milk and 703.36 lbs. of butter-fat. As a three-year-old she produced 18,458 lbs. of milk and 906.89 lbs. of butter-fat; and at full age, five years, she produced 18,808.5 lbs. of milk and 876.36 lbs. of butter-fat. The Holsteins were headed by the world's champion two-year-old heifer, Cedar Lawn De Koh Johanna, with a year's record of 16,905.1 lbs. of milk and 707.94 lbs. of butter. Pauline Wayne, President Taft's "Whitehouse" cow was also present and added to the prestige of the Holstein breed.

The educational features were perhaps the strongest part of the show, and it is here that the dairy shows surpass the other live stock exhibitions. The herd demonstration, conducted by the United States Department of Agriculture, gave instructions in cow selection, care, feeding, stabling and general management. The cows selected were all grades. They were divided into four lots, each lot fed differently and stabled in different types of stalls and stanchions. The feeding was done to show a comparison of an average farm ration, the Wolff-Lehman standard, the Hoecker standard and an excess protein standard. The records of total consumption, total production, cost of maintenance and cost of production of milk and fat were posted every day for the purpose of comparison. The cows were milked with different kinds of milking machines, and the milk separated with different makes of separators every day. Lectures on subjects pertaining to herd management were given each day by experts.

The University of Wisconsin had an instructive exhibit of lines of work and investigation conducted by that institution. Perhaps the most interesting feature of the exhibit was the first Babcock tester, designed by Prof. Babcock of that institution. This machine differed considerably in appearance from the compact little machine now so familiar to all dairymen, but it probably did more toward the improvement and building up of the dairy industry than any other single invention. It has been to dairying what the compass was to navigation and the telescope was to astronomy—and the inventor gave it to the dairymen without a cent of profit to himself. Other features of the exhibit were studies in care of milk, in production of cheese, selection of home-grown feeds for cheapness and efficiency of rations, models of stables, silos, etc. There was also a particularly interesting demonstration of good and poor cows. Stacks

of butter tubs represented the yearly production of individuals shown by photographs. The average scrub cow showed 180 lbs. of butter per year, the good dairy cow 360 lbs. and the exceptionally good cow 806 lbs. per year.

Practical problems in butter and cheese production were demonstrated in the model creamery and cheese factory in operation each day. All of the latest and most efficient machinery was shown in operation. The machinery exhibit was an education in itself. There were exhibits of all the equipment which belongs to the industry, from the milking machine to the butter wrappers and paper milk bottles. Just a few of the interesting things to be seen in this department were a cream separator with engine attachment, a complete pasteurizing outfit, a pneumatic pressure tank water system, cork brick refrigerator room, latest litter and feed carriers in operation, and bottle washers, fillers and cappers.

The cheese contest was especially good. There were over 500 single cheese exhibited, including many different varieties. The butter exhibit was equally good but was late in being placed and did not receive the attention it deserved. The milk and cream contest was excellent. There were 115 samples entered. The wide range from which these were drawn is shown by the awards. In market milk, A. Zeuw, of Washington, won first and J. H. Whitbeck, of Utah, took second. In the market cream class, the gold medal went to Ohio, L. P. Bailey winning first and E. B. Bready, of Pennsylvania, taking second. C. W. Orton, of Washington, won first on certified milk and City Dairy Farms, of Canada, took second. The Manor Farm Dairy, of Canada, won first on certified cream, the second prize going to Howard Green, of Wisconsin. A new class was inaugurated in this contest for city milk dealers. In this class the highest score for both market milk and market cream was won by the Supplee Alderney Dairy, of Pennsylvania. There was another new class for city health departments on collective exhibits of milk coming from farms of five or more producers. Salt Lake City won first in this class, and Omaha, Neb., took second. Cleveland, Denver, Detroit and Boston make good showings in this class.

No dairy show is complete that fails to give instruction in the use and care of the dairy products in the home of the consumer. Dr. F. A. Kraft, commissioner of health of Milwaukee, had one of the most instructive exhibits of this kind ever seen. His work emphasized the fact that all precaution in the care of milk is lost on the individual who does not know how to make proper use of it in the home. It was an exhibit that should be repeated in every big city and studied by city people. Milwaukee showed its support of this show with a liberal attendance and the city papers gave liberal space to the news of the show. The management deserves great credit for the success of the exhibition. The International seems firmly established as one of the great dairy shows of the year.

WILL DISCUSS ALFALFA AND SILAGE.

The American dairy institute will hold its meetings Friday, November 3, at the national dairy show, Chicago. The officers of this association came to the conclusion that it would not be wise to attempt to cover the whole field of dairying in the time allotted, but devote the entire day to alfalfa and silage. These crops are of vital importance to the dairymen of this country and there are several reasons why they are important.

First. Alfalfa will produce more digestible nutrients per acre than any other agricultural crop. A yield of four tons of alfalfa hay per acre produces about 4,000 lbs. of digestible nutrients, 880 lbs. of which are digestible protein.

Second. Corn comes next to alfalfa in the production of nutrients for the cow. An acre yielding ten tons of green corn will produce about 3,400 lbs. of digestible nutrients.

Third. No crops complement each other better for feeding the dairy cow than corn and alfalfa. The corn put into the silo furnishes the succulence for the cow and a large amount of heat producing elements. Alfalfa provides the dry roughage and is rich in the element protein which is so necessary to the growing animal and the cow producing milk. In short, alfalfa and corn have a productive feeding value that cannot be excelled by any other combination of roughage grown on the farm.

Fourth. When alfalfa is used properly in the rotation it is beneficial to the soil.

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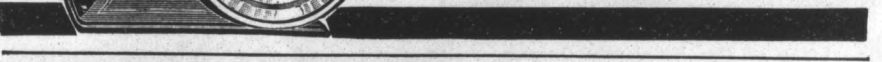
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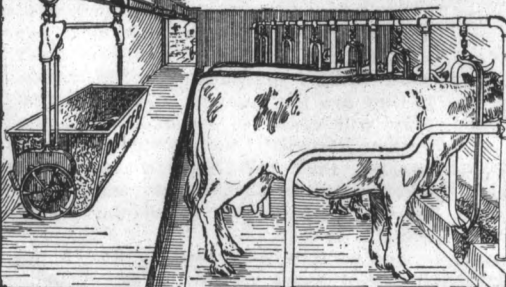
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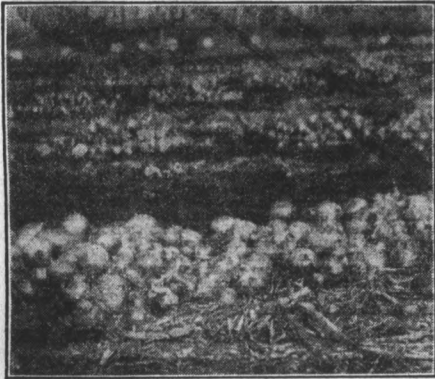
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HORTICULTURE

A GOOD YIELD OF ONIONS.

The accompanying picture and following facts were furnished us by A. Wheeler of Bay county, who owns the property upon which the onions were grown. The picture is taken from a seven-acre field located in Arenac county. Where the picture was taken the onions yielded 1,600 bushels per acre. The crop as a whole was not quite as productive as the particular portion illustrated, but it is conservatively estimated that the whole seven acres will average 1,200 bushels per acre right through. Mr. Wheeler asks if any Michigan grower can beat this.

The onions were grown on muck land, being a tamarack and cedar swamp. This is the second crop grown on the land, onions having been grown last year. The



Some of Mr. Wheeler's Onions.

onions are very large, and of the Yellow Globe Danver variety. Mr. Wheeler does not pretend to be a farmer and secured his knowledge from observation and reading farm papers. His crop last year averaged 1,200 bushels per acre. He expects next year to have 40 acres out. The onions at present prices will net him around \$5,000, or at the rate of \$700 per acre. Three years ago this land was offered at \$5 per acre, but it is safe to say that it is not for sale now.

MULCHING THE STRAWBERRY BED.

We will enumerate a few of the benefits of mulching the strawberry plants: First. Alternate freezing and thawing is what causes a great per cent of the injury to the plants. If the bed is given a good mulch it will remain frozen all winter. When left uncovered the freezing and thawing lifts the plants out of the ground and the tip plants are usually entirely killed.

Second. Mulching keeps the berries clean and we all know the greater marketable value of clean berries over muddy ones. Where the ground is left bare the beating rain gives the berries a coating of soil that is hard to wash off.

Third. Mulching is a great aid toward keeping down the growth of weeds. We all know how the cultivation of the berry bed is so apt to be neglected. Mulching really fills the office of cultivation.

Fourth. Mulching adds fertility to the soil. The decaying straw adds humus to the soil and improves its mechanical and chemical condition. In view of these significant facts it is evident that no one who has the well-being of his strawberry beds at heart can afford to neglect or omit this important duty in strawberry culture. When we stop to consider the cost we find it very insignificant as compared with the benefits received. The labor is usually the only cost for the material used would only go to waste otherwise on a great many farms.

There are a few points in regard to selecting the mulching material that should be impressed upon the mind. The material used should be loose and open in texture. The use of such material as sawdust and leaves is to be avoided for they pack down and smother the plants. Care should be exercised to avoid polluting the bed with foul seeds of any sort. Straw sometimes contains enough grain or weed seeds to grow a considerable crop in the spring. Some manure contains a large amount of seeds, also. A crop of weeds will greatly decrease the yield of berries if it does not ruin the bed entirely.

Cheapness is another item to be taken into consideration when selecting a mulching material for this cost must be considered when figuring the ultimate profit of the berry bed. Where it can be secured, slough grass is probably the best mulching material but comparatively few

growers can obtain it at a reasonable price, at least. Old wheat straw makes a satisfactory mulch and is the material most generally used. Straw manure can frequently be used to good advantage.

The first calm day in the fall when the ground is frozen sufficiently to bear a wagon up is the proper time to apply the mulch. If there is a few inches of snow on the ground, so much the better, for the mulch will keep the snow, which is a good mulch in itself from melting so quickly. But after all, it is of no use to apply a mulch unless it is applied properly. Do not heap the material on the bed; make it thin and of an equal depth. An inch or two, or just enough to hide the plants, is sufficient. The mulching material should be well shaken up so that there will be no thick, heavy bunches. Just as soon as the plants begin to make a growth in the spring, the mulch should be raked off and left between the rows. But see to it that provision is made for your supply of material now.

Ohio. SUBSCRIBER.

PRUNING AND DIVIDING BULBS.

When pruning, be careful to save all choice cuttings, especially of roses. Place them together in rows in a moist piece of ground, and with the rows just far enough apart for cultivation. They root easily if put in when dormant, and by the time upper growth commences the roots will be strong enough for transplanting to permanent quarters. It is always desirable to have young plants coming on to replace poor or superannuated ones, or to set new shrubbery.

Herbaceous plants that do not bloom well are probably root-bound or in an unsuitable location. In either case they should be lifted, and, if there are large masses of roots, be divided and reset with more room for growth. Bulbous plants have a tendency to form new bulbs over the old, and in this way they gradually work toward the surface of the ground. If they are not reset at suitable intervals they will cease to bloom, and in time even to die out. I have divided and reset peonies that had been condemned as "worn out," and the next year had the finest lot of flowers in all the country round.

And so it is with most plants. A profusion of bloom requires a corresponding amount of nourishment, and when the roots become too crowded to assimilate food in sufficient quantity the plant ceases to flower, and finally dies. I have seen many rare plants that the owners were afraid to disturb for fear of doing them harm, that would have been improved by dividing and increasing ten or twenty fold. A poor, unshapely clump of iris, phlox, anemone, yucca, or narcissus, may often be divided into half a dozen thrifty, profuse-blooming clumps, each one of which, at the end of a year, will be more flourishing than the parent stock. The secret of growing herbaceous plants is to keep the roots strong and thrifty, and this cannot be done if they are allowed to crowd.

While it is not advisable to lift hardy bulbs annually, it will be found that two or three months out of the ground every three or four years will prove beneficial. New bulbs are constantly forming, one upon another, rising toward the surface. In time the old bulb decays, but in its place are others, which gradually enlarge and multiply until there is a clinging mass, from the size of a pea to the full-grown, matured bulb. All of these send up leaves, more or less feeble and undeveloped for want of proper nourishment below. Crowding starves them, for it cuts them off from their natural supply of food.

But do not lift them as soon as their flowers decay. It is then the beginning of their growing season, and only when the green leaves which succeed the flowers turn brown should they be removed from the ground and dried thoroughly before storing in a dry, cool place in the cellar. In cast of most bulbs this will be from May to July.

Before replanting, in September or October, divide and separate the bulbs according to size, planting those that are too small to flower in beds by themselves. In this way bulbs may be increased much more rapidly, and the flowers will be larger and more plentiful.

Finally, keep a close watch over all your shrubbery, and trim judiciously and with a view to clean, symmetrical growth; and make your work light or severe according to the nature of the plants. Those that form their buds in the fall, as rhododendrons, forsythias, and the like, should only have the unflowering and de-

cayed wood cut out, more severe pruning being left until after they bloom. Smoke bushes, and such shrubs as start late, can often be trimmed until the end of May. But do not put the work off too long, or be satisfied with half doing it. Severe pruning makes stronger growth and larger flowers. Hybrid roses should be shaped carefully, and as they bloom during the summer it will be advisable to cut back all flowering wood, for it will not bloom the second time, and will only be a useless drain on the parent stem. Thin out masses of altheas and deutzias and spireas, and if any of the choice clumps of deutzias and spireas are spreading more than is desired, lift and divide and reset the surplus elsewhere.

Virginia. F. H. SWEET.

WILL EXTOL MICHIGAN APPLES.

It is remarkable how quickly the public becomes informed of mistakes it has made. Not long ago the people of our cities and a large percentage of those of country places were convinced that western apples were superior in every respect to those produced in our state. During the past two or three years, however, evidence has been given to show wherein this conclusion was false, and that Michigan apples, from the consumer's standpoint, are superior, and already our fruit dealers are taking advantage of this new information and are making known to their customers that they handle "fruit with flavor" grown on trees in the orchards of the Peninsular State. The coming show at Grand Rapids is sure to aid in fixing this knowledge more firmly in the minds of dealers and consumers of the king of fruits. Much care is being taken to present the virtues of Michigan fruit and it is even now being declared that the last claim of the western growers, which is, in effect, that their fruit is superior to ours in color, is being seriously threatened by the matchless exhibits which are now in cold storage in Grand Rapids, waiting for the great show to open. Michigan patrons should not lose the opportunity to see and know the possibilities of their own state. This will be an excellent chance to prepare one's defense of Michigan's rightful position among the fruit states of the Union, which position is at the top. The fruit show will be held at Grand Rapids, November 7-11.

HOW TO PROPAGATE MOSS ROSES.

A subscriber to the Michigan Farmer asks how to propagate moss roses. Moss roses may be propagated by cuttings made of partially ripened wood just after the plants are done flowering about the first of July. Or they may be made from dormant or ripened wood just after the leaves drop in the autumn.

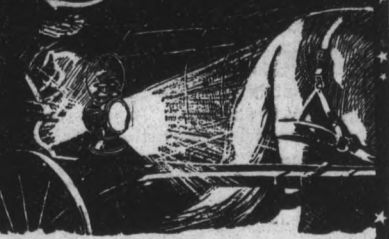
If the cuttings are made in summer, they should be eight inches long, with a clean cut at the base and all of the leaves removed except the two at the top and they can be reduced one-half. If a growing shoot is used, cut out the succulent or green portion to a point where the wood begins to get hard. Put them out of doors in some sheltered, sandy situation, water thoroughly every day and keep them shaded by means of cotton cloths or lath screens until they begin to grow, when the shading may be about now, they can be made and treated removed.

If the cuttings are made in the fall, say in the same way with the exception of the shading and the watering. They ought, however, to be covered generously with dry leaves before severe freezing weather sets in and protected so that the covering will stay on without planks or boards. The neatest and best method is to have a small cold frame with a sash made to fit. It carries the heavy snows and prevents the leaves from becoming wet and frozen. They should be left until thoroughly rooted—perhaps a year, when they can be potted or transplanted in nursery rows until they are large enough to place in their permanent situation.

Mich. Agl. Col. THOS. GUNSON.

There has been a firming up of values in the New York apple market since the offerings of early fruit started on the decline. The trade is pretty well appraised of the small crop of late varieties and is willing to let it be known to the sellers by showing more spirit in bidding for such kinds. The ruling quotations for the more popular apples range between \$2 and \$4 per barrel, depending upon the grade. Extra fancy goods packed with care command a premium.

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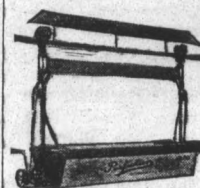
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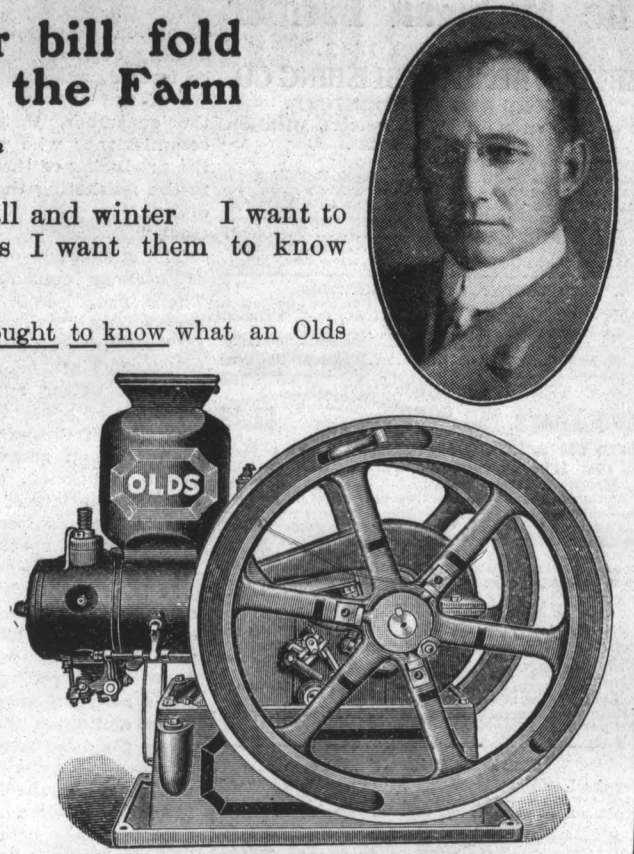
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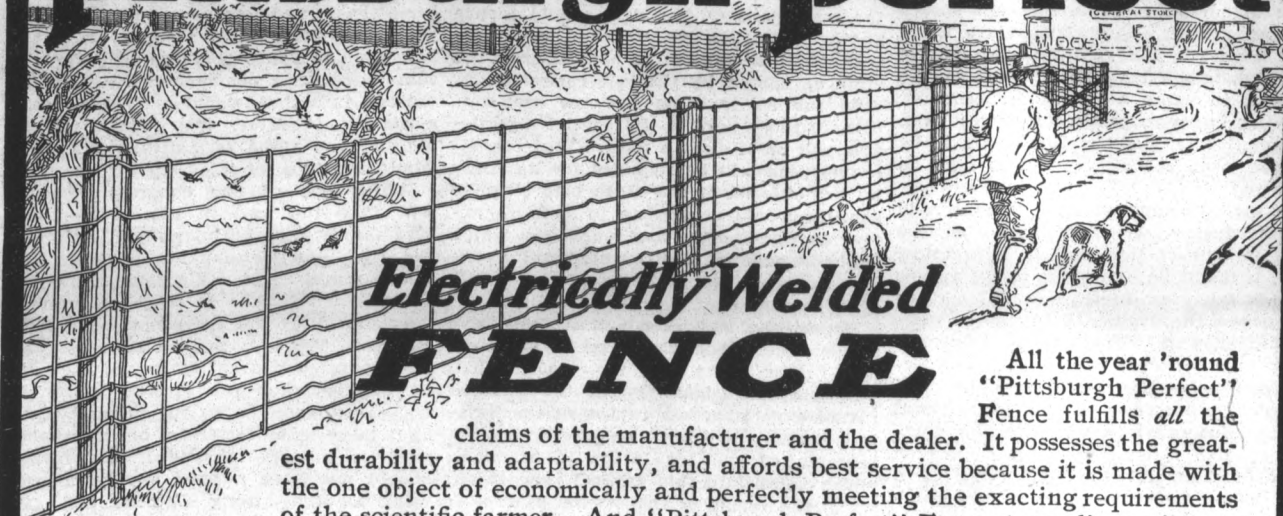
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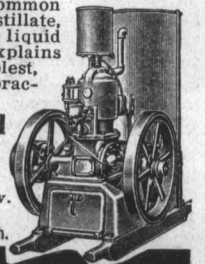
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 The Lawrence Publishing Co.,
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DETROIT, OCT. 28, 1911.

CURRENT COMMENT.

In a recent interview the traffic manager of one of the leading Michigan railway systems declared that Michigan should have a commissioner of agriculture, who should be an appointive officer in order that the best qualified man might be chosen for the berth. Reference is made in the interview to the fact that the total amount expended in behalf of agriculture in Michigan in one year was \$213,710, while in the same year Wisconsin expended between \$400,000 and \$500,000 for the same purpose, and the province of Ontario in Canada voted \$621,514 to be expended in behalf of the agricultural industry of that province. Mention is made of the various development bureaus of Michigan which are working independently and the work of which, with those of the various organizations, might be co-ordinated with a state department. The state of New York is cited as an instance of the benefits to be derived from a state commissioner of agriculture to which he attributes much of the supremacy of New York as an agricultural state. Much of this benefit is attributed to the fact that the state has a spokesman in the legislature to look after the special interests of the farmers when appropriations are being asked for who is looked upon as the leader of agriculture, while under our system this work is left to almost anyone who cares to interest himself in the proposition, which results in no continuity of our policy and little initiative. Reference is made to our agricultural college and the work it is doing, and it is declared that that work might be made much broader by making a commissioner of agriculture an ex-officio member of the State Department of Agriculture which controls the institution, by which means the influence of the institution would be considerably extended if the proper man were chosen as commissioner. The work of France in behalf of agriculture is cited as an example of what might be done, also the extension work which is being done by the Ontario Agricultural College, and special mention is made of that phase of the work through which a certain number of high schools are now being equipped with a staff of one or two teachers to carry on agricultural work during the winter months. As a final argument the gentleman refers to the fact that we have a banking commissioner, a good

roads commissioner, etc., and believes that by gathering up the loose branches of agricultural endeavor a good, strong, healthy department of government could be formed, and this not only in the interest of the farmers, but as well those of the consumer, through "a wide awake commissioner who would not only see to the producing of the commodities but also to the marketing through the best of conditions."

The suggestion made is at least worthy of serious consideration and thought. There are, however, two sides to the proposition. The people of Michigan are to be congratulated on the advancement which they are making in the encouragement of better agriculture and the attracting of general attention to the advantages of the several sections of Michigan through some of the organizations above mentioned, and also for the successful solution of the marketing problem in isolated localities where other organizations of special producers have been formed with this end in view.

It is undoubtedly true that that which costs us something in both money and effort is better appreciated by the average man than that which is a gift, consequently the progress which is made by the farmers themselves, acting independently and upon their own initiative, will make for a permanency in the betterment of our agriculture in a manner which cannot be approached by state influence. It is true that some states, having an officer who might be compared in the matter of his official duty to the proposed commissioner of farming advocated in this interview have been greatly benefited thereby, both in practical results in aid extended to their farmers and in a wholesome kind of advertising for the state; but this has only occurred where the right man has been secured for the place and retained in the place for a long term of years. Kansas is a notable instance of the beneficial results which have come from this kind of work. However, where the officer is made appointive the effectiveness of the work which might be accomplished by the right man is very likely to be hampered by the political factors of the case and the man made a victim of the mania of house cleaning with which some of our state executives seem to be afflicted, regardless of the merits of the cases involved.

Then again, while it would not be difficult to educate our legislators to be liberal in the matter of appropriations for the extension of agricultural educational work in our state, experience has shown that after such appropriations are made they must run the gauntlet of executive approval, which may be withheld in the attempt to make a record for economy by the administration in power even though the need of and the benefit to be derived from the appropriations may be admitted.

So far as extension work is concerned in introducing agricultural work in the high schools of the state in a practical way, it might be a surprise to the author of this interview to learn that Michigan is perhaps in advance of any other state in the Union in this regard, this being the third year in which a Department of Agricultural education has been established under the auspices of our Agricultural College, during which a considerable number of high schools have been provided with teachers for the conducting of a well defined course in agriculture in which short course lectures for the farmers of the various communities in which they have been established have been a feature. The results of this work will undoubtedly be more beneficial in future years when the work has progressed far enough to supply teachers for common schools who are equipped for the teaching of the scientific principles of elementary agriculture.

But it is in the last idea presented in this interview that the most important suggestion is made, in that such a commissioner might aid in the solution of the marketing problem, as well as the problem of production for our farmers. The problem of production will always remain a strictly economic one. Our farmers have been soil robbers from necessity in more cases than from ignorance or choice. The progress which has been made in the dissemination of scientific knowledge relating to agriculture has been quite satisfactory during recent years, and this work is gaining momentum with each passing year, but almost nothing at all has been done with regard to the economic solution of the marketing problem.

As an instance in point we would here insert information received from a reliable source to the effect that potatoes are being retailed in Jersey City at the rate

of \$3.00 per bushel and in bargain lots at \$7.00 per barrel, with nothing said about the size of the barrel, while in Brooklyn the price at the same time was \$3.20 per bushel, or 10 cents per quart. Think of it. Potatoes retailing at such prices on the seaboard while they are available at loading points in Michigan at 50 cents per bushel with an average freight rate to the point named of less than 20 cents per bushel. Here is certainly room for some good work by the state as well as by the agricultural department of the national government in solving this proposition of economic distribution of food stuffs. In Pennsylvania the State Grange is taking the initiative in this matter and it is proposed to perfect an organization of the producers which will put the supply in close touch with the demand in the great markets of the east.

Undoubtedly the farmers of Michigan will welcome a state department which would take up this problem and aid in its effective solution. Undoubtedly more benefits will accrue to them from such a course than could possibly accrue from the threshing over of the old straw in an effort to disseminate among our farmers information which is now reaching them through other channels, such as the agricultural press, experiment station bulletins, farmers' institutes, etc., as well as through the efforts and initiative of agricultural organizations which are springing up in all sections of the state.

The proposition of calling a special session of the legislature,

which is being considered by the governor at this time, is one which interests all the people of the state. The two possible excuses for such a special session are the re-apportionment of congressional districts of the state to provide a district for the additional congressman to which Michigan is entitled at the next election and the consideration of the report of the special commission to study taxation matters, which was appointed by the governor pursuant to authority given by the present legislature at its regular session. So far as the first matter is concerned it would not appear of sufficient importance to warrant a special session of the legislature, since, by the election of a congressman at large, Michigan would secure her full quota of representation for the next congressional term. The only potent influence for a special session on this account would come from the people or the interests of Detroit, who feel that the metropolis of the state would secure another congressman under a re-apportionment based upon the population of the state as shown by the last census.

So far as taxation matters are concerned, the report of the special commission will be of such a nature that considerable time will be required for its study by the citizens of the state before public sentiment will crystallize to such an extent as would make any legislation which might be enacted in strict conformity with the views of the majority of the people of Michigan upon this vexed subject.

Experience has shown that legislative action taken at special sessions is generally rather hasty and more often than otherwise unsatisfactory in the light of future experience. A review of the legislation which has been enacted at special sessions of the legislature in Michigan will substantiate this general proposition, while the result of the special session of congress the present year was anything but satisfactory to the people of the country, except to the special interests whose ends were served in the effective revision of the paper schedule of the tariff law under the guise of a reciprocity bill, which the people of Canada were good enough to kill for us.

While a special session of the legislature at this time might serve some political ends, we do not believe it is in demand by the farmers of the state particularly, and that the action of Ingham County Farmers' Club, which passed resolutions in opposition to the calling of a special session at this time, fairly reflected the sentiment of the country people upon this proposition, believing that there are no economic problems demanding solution which cannot be the better solved by a year's public discussion and consideration.

In another column of this issue there is presented an idea which is at least worthy of careful consideration and thought. The suggestion is presented that the Japanese and Chinese might be made a suitable source from which to secure farm labor, both within and without the house. The

plan, however, has some serious disadvantages, as well as some promising features. First, the laborer would have necessarily to be retained for some years in the same employment to become efficient, whether in indoor or outdoor work, and it would be difficult to make such an arrangement sufficiently permanent under conditions which prevail in this country.

However, there is no doubt that something should be done upon the average farm toward the solution of this vexed problem. Help on the farm is sufficiently difficult to secure under present conditions, but help in the house is a much harder problem, and more often than otherwise can not be secured at all. Too often the result is that the housewife is overworked through the necessity of boarding the farm help in the home. This is a condition not to be desired upon most farms and the best remedy, where hired help must be employed, is to so arrange the farm campaign that the work will be distributed throughout the year, then build a suitable tenement house and hire a married man by the year. This kind of help will be found much more stable and dependable and the labor problem within the home will be at least partially solved. In the meantime any adequate solution of the entire problem will be welcomed by a large class of our farm people. Perhaps the suggestion above referred to is along the right line.

WHY NOT USE THE CHINESE AND JAPANESE FOR FARM WORK?

It is now conceded that one of the worst conditions found in farm life is the uncertainty and instability of the help, both as to farm hands and house servants.

No manufacturer would for a moment think of running his factory and contracting for material ahead of his wants unless he was sure of the workmen, but the farmer is made nervous and filled with a feeling of uncertainty because he is not at all certain of having help for his crops, or if he has it in March he may have none later on, consequently it makes nervous the best of them as there is nothing so hard on the nervous system as uncertainty.

It is often worse with the women folks. All can point to farmers' who are well fixed and ready to enjoy life at the old home whose wives cannot secure help of any kind for several months in the year.

We believe that the government can easily arrange to do away with all of this by allowing the Chinese and Japanese to come over and contract, say for five years, as farm laborers only, and the Japanese as house servants only for the same period. A contract could easily be entered into that would protect all concerned. Of course, they would not be allowed the right of suffrage but they would not care for it.

Which one of our congressmen now will take the lead in this matter and give the farmers his views? We allowed the Irish and Germans to come in and never regretted it. We now allow the Italians and Greeks to come as common laborers. Why not do something for the farmer? There is not a large contract now being carried out by any of the public utilities that the foreign laborer is not called upon to do the manual labor, and there can certainly be no reason why, if properly arranged, the farmer should not have a good supply of such work as the strong Chinese can give them.

Missouri. R. H. STOCKTON.

HAPPENINGS OF THE WEEK.

National.

The question of compelling two telephone systems operating in the same territory to make physical connection of their wires, is a matter to be determined soon by the courts of Michigan. The Giles Act, passed by the last legislature, is the basis for the action being brought. An explosion of powder in the O'Gara mine, near Harrisburg, Ill., resulted in eight miners being killed and others rendered unconscious by the impact. Fortunately, the accident occurred while shifts were being made and only 16 men were in the shaft at the time.

A tentative agreement has been reached between the city officials and the Detroit United Railway whereby patrons can purchase tickets at the rate of eight for twenty-five cents between the hours of 5 a. m. and 8 p. m., and six tickets for twenty-five cents the remainder of the day. This agreement was effected after extended conferences between the authorities and the D. U. R. officials. The matter must now be voted upon by the city council and go before the people for ratification.

The twenty-fourth national conference of the Unitarian Church convenes in Washington this week. An attendance of 1,500 is expected.

The attorney-generals of Virginia,

North Carolina and South Carolina, who have been in conference considering plans for the reorganizing of the American Tobacco Company which was ordered dissolved by the United States circuit court, has declared the scheme proposed by the company to be one that would not provide the relief sought and would make the victory of the government barren of any results. This conclusion is being put in the form of a petition to be filed in the United States circuit court that they may be heard in argument regarding the dissolution and reorganization of the concern.

Eugene Ely, one of the most noted aviators in the United States, fell to his death while manoeuvring a bi-plane at the state fair grounds at Macon, Georgia, last week. He was the first aviator to successfully launch an aeroplane from the deck of a ship, having accomplished this from the United States battleship Birmingham.

Because of threatened prosecution by the United States government under the Sherman anti-trust law, the United States Steel Corporation has cancelled a lease of the great northern properties which contain ore valued at \$300,000,000. The movement will likely open a field for the steel trust's competitors.

Governor Dix, of New York, has signed the primary bill passed by the last assembly of that state and makes that measure a law. The governor has approved or vetoed all but five measures passed by the last legislature.

After a very stormy session the national American woman's suffrage association re-elected Dr. Anna Shaw, of Pennsylvania, as the president of that organization. The election was finally made unanimous.

John R. Walsh, former head of the Chicago National Bank, who in 1909 was convicted of misappropriating funds of that institution and was sent to Leavenworth penitentiary, died at his home in Chicago after being pardoned by President Taft.

A meeting of vessel owners and managers operating on the great lakes is being held in Cleveland this week for the purpose of merging their interests into one large combination.

A delegation of Saginaw business men will attend the meeting of the state tax commission purposely called to demand that a special session of the Michigan legislature be called for the revision of the taxing system of the state.

Seven buildings were destroyed by fire at Milton, W. Va., causing a loss of \$800,000.

Minneapolis millers have brought action in the commerce court to break an alleged combination on the part of railroads affiliated with the trunk lines association.

After a long contest with the railroads over the high charges for carrying mixed car loads of live stock, the Chicago Live Stock Exchange, which took up the matter in behalf of country shippers, has come out ahead, the Illinois railroad and warehouse commission having induced the roads to come down from their former excessive charges. This is going to result in enormous saving of money to live stock shippers, who have been compelled in the past to pay roundly for shipping a cow or calf in a car load of hogs or for putting a sheep or a goat in with hogs.

Foreign.

The Italians are using military aviators in their campaign against the Turks in Tripoli.

The Italian sulphur mine at Trabonella is reported to be the prison of 100 workmen who were trapped by fire breaking out between them and the outside world. Rescue work has had to be abandoned until the flames are gotten under control.

After fighting 12 hours, Italian troops captured Benghazi, which is located 420 miles southeast of Tripoli on the Gulf of Sidra. While the city is not a large one, consisting of 15,000 persons, it is of much importance, being the starting point of caravans for Egypt and Wadai. The Italians captured 21 guns.

It is difficult to arrive at any conclusions regarding the conditions in China. But few reports reach the outside world because of the strict censorship over messages from that country. It is certain, however, that fighting has been going on and meagre reports that have sifted through the wall of censorship indicates that the fighting has been severe and likely will continue for some time as the rebel army appears to be determined in its campaign and the imperial forces are loyally striving to save the Empire from dissolution. An unconfirmed report states that the main army of the Chinese government under war minister Yin Tchang was defeated at Kwang Shui of Hu-peh province. The imperial forces numbered 20,000 men, while the rebel army consisted of only 15,000. This attack was preceded by severe fighting which resulted in the federals occupying Hankow, who afterwards drove the imperial troops several miles to the north. The imperial government has ordered 25,000 more troops to the front with which it hopes to stem the forward movement of the rebels. The victories are encouraging to the rebel forces and making it more easy to enlist larger numbers in their cause. An imperial victory is the only thing that can check the favor which the insurgents are meeting. Four provinces are now claimed to be under the control of the rebels. European countries are watching the situation very closely. Rear Admiral Murdock, commander of the American Asiatic fleet has departed from Manila for Shanghai to be nearer the seat of war. Lord Kitchener has been appointed British agent for Egypt. This position has grown to be one of importance under ordinary circumstances, but now that trouble between Turkey and Italy is in progress, difficult problems will be presented. Admiral Togo, of Japan, who recently made a tour of England and the United States, arrived home last week. He expressed himself as highly pleased with

the hospitality of the American Republic. Because railways refused to blacklist firms having labor troubles, Irish employes held a mass meeting Monday evening at Dublin, to consider calling a general strike on three of the principal systems of railway of the country. Considerable activity is evidenced among the royalists of Portugal, who for some time past have been quietly making plans for the restoration of that country to the royalist party. It is believed, however, that the strength of the republican government is such as to resist all efforts of the old party.

CROP AND MARKET NOTES.

Mecosta Co., Oct. 19.—The latter part of September and fore part of October was quite wet. Many of the farmers on low, wet ground lost almost their entire potato crop. Potatoes were better than many had thought for earlier in the season. They range from 75 to 250 bushels per acre. Most of the crop is dug and much of the crop was marketed out of the field at 45 and 50c per bushel. Much of the corn crop is husked with a yield below last year's and much more soft corn than last year. About the usual amount of fall seeding was done this season, more wheat and less rye being sown than usual. Many of the farmers raised a crop of contract beans; something you will not see next year, in our opinion. The same with cucumbers; the growers demand a better price for next year's crop. Cattle do not look as well as usual for this time of year. The fall work is well in hand by all.

Cass Co., Oct. 20.—Practically all of the wheat and rye of the county has been sowed. Never for 20 years has the sowing of wheat been so late. We have had so many rains and such hard ones that the ground has been fitted over and over before the sowing was finally accomplished. The present pleasant weather is being used to harvest the apple crop. More orchards have been sprayed and cared for this year than usual. Thousands of barrels are being shipped from the different towns. The high winds of a week or two ago blew off many apples. Cider apples are shipped at 28c per hundred. Barreled apples are selling for \$1@1.50. Rye has touched a higher mark than wheat this fall, consequently more rye has been sowed than usual. Not much corn has been husked so far, but many will begin this week to husk. Chickens, old, are bringing 10½c; young, 11½c; eggs, 22c. Potatoes are yielding pretty well this fall and are mostly of marketable size, selling at 45c per bushel. The grapes are about all marketed.

Branch Co., Oct. 23.—The weather has been very changeable, having lots of rain. Good. Have had no hard frosts. Many Corn all cut and wheat sown and looking have commenced husking and corn is turning out fairly well. Fodder injured by so much wet weather. Apples, largest crop in years, but no ready sale. It is very hard to sell them for \$1 per bbl. Cider apples 30c per hundred. Clover seed light crop and injured by wet weather. Pasture looking good for this time of year. Late potatoes are turning out an average yield. Hay selling at from \$14 @20 per ton. Much straw is being fed and considerable corn fodder will be shredded for feed. Are getting the following prices for produce: Wheat, 92c; corn, 63c; oats, 42c; potatoes, \$1; clover seed, \$8@10.

Lapeer Co., Oct. 14.—Fine weather for the potato harvest, the job that farmers are now rushing, and hauling the crop to their local buyers where they get 50c per bushel, not as good a price as present conditions would allow, but many potato growers seem much in need of money and therefore rush the popular potato to the market if they are green. The bean crop seems to be now all secured, after such a long time with continued rains and so many repeated turnings. But little corn husked as yet, only about enough for feeding. Lots of wheat was put in late on account of the ground being too wet, some not drilled in until October. Fall pastures much improved. Clover seed not all secured yet. This surely has been a good season for apples; large quantities are being shipped. Sugar beets are being hauled to cars and are a nice crop, but the prices are not satisfactory. No sale for Kiefer pears. The usual amount of rye is being put in. Hay brings a big price. Not much of a boom in the sale of farms.

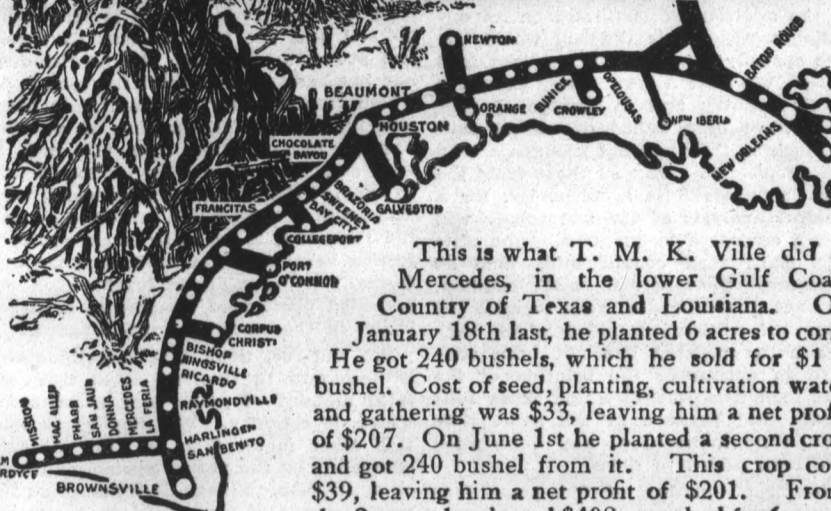
Indiana.

Steuben Co., Oct. 23.—We have had no killing frosts yet, but lots of rain. The wheat was about half in when it began to rain and kept it up for about two weeks so it was impossible to go on the fields; then it was finished in the mud, but it has continued wet and warm so most of the fields look green at this time. Corn is moulding some in the shock and the fodder is nearly spoiled. Husking has just commenced and the yield is about an average in quality and quantity. Late potatoes are a big crop and farmers are selling them at 50c. It is doubtful if any one ever saw more apples in this county than there are this year; a good many car loads have been shipped for cider at 20c per 100 lbs., and a few hand-picked winter apples are sold in town for 40c per bu. Pastures are good and stock is looking well. There are not as many hogs or fall pigs as common and hogs will not be made as heavy as last year on account of high prices for feed. Other live stock is very dull because of a short hay crop.

NATIONAL MEETING OF INSTITUTE WORKERS.

The annual meeting of American Association of Farmers' Institute Workers will be held at Columbus, Ohio, November 13 to 15, inclusive. At the same place and beginning November 15 will be held the annual meeting of the Association of American Agricultural Colleges and Experiment Stations.

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PRACTICAL SCIENCE.

THE FUNCTIONS OF THE SOIL.

BY FLOYD W. ROBISON.

If all the material which represents the organic structure of plants came directly from the soil, we may imagine that without the addition of fertilizers on an exceedingly large scale the soil would become speedily exhausted of its plant food supply. We have a great many examples in this country and in Europe of soils which have been called exhausted soils inasmuch as they will not produce a crop at a profit. To many of these soils the term "exhausted" is a misnomer, for a chemical analysis of the soil proper will show a considerable quantity of the ultimate plant food constituents, such as potassium, phosphorous and calcium. They act like exhausted soils because the system of cultivation under which they have been operated has not been adequate to encourage the solution of the plant food constituents which these soils contain and because at the same time perhaps no manures of any description have been added to them.

The first function of the plant food constituents in the soil is probably not as a direct source of plant food at all. Their primary function is no doubt an administrative one. By far the greater bulk of plants is made up of Carbon, Hydrogen, Oxygen and Nitrogen, elements which do not deplete the soil a particle. We would not lose sight, of course, of the fact that the mineral elements, particularly phosphorus, iron, calcium, and some others, do form an integral part of certain organic products in plants but they are present there in an exceedingly minor ratio to the organic elements present and which latter did not come directly from the soil. It seems that a certain more or less balance of these plant food constituents is desirable in the production of a maximum crop but it is necessary on most soils to arrange this balance through the instrumentality of a very effective system of cultivation so that a maximum crop may be produced for many years. The real function, we say, of the mineral elements in the soil is an administrative function. We mean by this that it is in the presence of these mineral elements, lime, phosphorus, potassium, etc., that the different organic compounds in plants are built. The amount of phosphorus, and the amount of lime, and the amount of calcium, etc., used in the manufacture in the tissues of the plant of the different organic compounds which we find at maturity in that plant cannot be measured by the analysis of the plant at maturity. We know, for example, that starch and sugar cannot be formed in the absence of potassium, phosphorus, calcium, etc. On the other hand, the analysis of starch will show not a trace of one of these elements mentioned. By means of this administrative function, so to speak, of these mineral elements in the soil, such a condition has been brought about that the plant is enabled to manufacture the starch, the sugar, etc. The analysis of the plant material also shows that a surprisingly large amount of the mineral elements are present in the organic structure in the inorganic form, by which we mean that much of the so-called plant food material, when taken into plants, is taken in by a more or less mechanical process and is not a constituent part of the cell structure at all. This again shows to us that the greater office of the mineral plant food is an administrative office. It is in the presence of these mineral elements that plants form and accumulate from the atmosphere the major portion of the substances of which they consist. We do not mean to imply, nor do we wish it understood, that the mineral elements of the soil are not in any capacity direct food for the plant because a certain amount of these mineral ingredients do not enter into the structure of the plants. For example, the embryo of the plant seed contains a considerable quantity of phosphorus and to the phosphorus is attributed much of the so-called vital influence of the seed. Again, in the chlorophyll, or coloring matter of the leaves of the plant, the mineral element, iron, seems to bear a very important relationship to the synthesis of this substance, chlorophyll.

Certain it is, as we have learned from the history of the so-called exhausted soils, that no matter how much Nitrogen, Potassium, Phosphorus, or Calcium there

is in the soil, that until it is in the state of fine division plant rootlets will derive very little nourishment from it.

In the Sister Islands, in the Niagara river, one of the very interesting features is to see large trees growing seemingly on solid rock. There is practically no soil and yet the tree has developed and grown to maturity. Its nourishment has not been derived from the rock upon which it stands for the rock is so massive in size that the amount of material passing into solution from the rock is very small indeed, and by far insufficient to support the needs of the growing tree. The roots will be found entwined around the rock and, if we observe closely, projecting below into the water, and the tree is really living a life of luxury upon the so-called plant food brought to it in solution in the waters of the Niagara.

We will see, then, that something else is necessary in the soil other than the total amount of plant food constituents which it contains. We may guess that this other factor is in a large measure controlled by the proper system of tillage or cultivation. Tillage does not effect the total amount of plant food in a soil except as it may reach into the subsoil, but it tends to separate the soil particles, and it tends to promote a healthy condition of capillarity in the soil which encourages a more speedy solution of the plant food in the soil and thus makes it available for crop production.

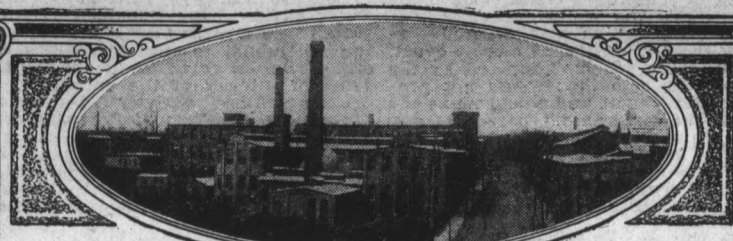
We will not have opportunity to go into an academic discussion, here, of these various terms used. They are ordinary terms and most of us will, without much effort, fully appreciate their meaning. It may be sufficient to state that by the term "capillarity" we mean the tendency of water to rise to the surface in the soil in just the same way that oil rises in the wick of a lamp, or in just the same way that water will rise in a cube of sugar when one corner of it is tipped to the surface of water. These are every day, under-the-eye, comparisons and practically everyone will understand their significance.

Most soils will respond to proper tillage because tillage tends to keep the soil water, that is, the capillary water of the soil, more or less constant in its content of plant food material. Under proper tillage it is therefore possible to produce for a considerable period a maximum crop without resorting to the use of artificial manures.

Lawes and Gilbert, in England, in one of the most elaborate series of experiments known, demonstrated that soils may be made to produce many years without use of fertilizers, provided proper cultivation of the soil be practiced. On the other hand, their experiments have likewise demonstrated that it is a very easy matter indeed to speedily place a soil in such a condition that it will not respond to crop production.

On exhausted soils commercial fertilizers have produced very decided results, not only because they have supplied ingredients which were entirely lacking in the soil, but because, by the use of fertilizers, the soil water has been put back to its normal condition. It is possible that in many of these soils this same result might ultimately have been reached as well as by the aid of artificial manures. It is certain that it is not in the interests of economy to use artificial manures to take the place of systematic cultivation. It is many times advantageous to supplement thorough cultivation by the addition of artificial manures. It is desirable that not only should the soil contain a considerable quantity of the mineral food agents, Potassium, Phosphorus, etc., but that its mechanical condition should be such, likewise, that the capillary water in the soil is enabled to put this so-called plant food material into solution. We must emphasize again that the plant cannot derive nourishment through no matter how great a quantity of plant food there may be stored in the soil unless that plant food is in solution in the water of that soil.

We would assume, then, that the first requisite of a soil is that it shall contain an abundance of the plant food agents, which we have discussed, and second, that its mechanical condition shall be such that these agents may be taken up by the soil water and thus be enabled to exercise their administrative function in the building of the cellular structure of the plants. This first consideration leads



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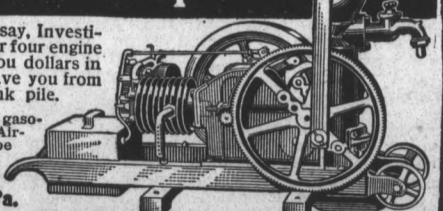
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us to make a chemical analysis of the soil to determine the abundance of its so-called plant food material. The second consideration involves a mechanical analysis for the purpose of determining the availability, we may say, of that plant food material.

ON ECONOMICAL PRODUCTION.

One result of the experimental studies on dairy cows and steers which have been conducted at some of the state experiment stations is to cause the feeder to pay greater attention to the comparative values of different feeds which he has to buy. There has been a popular opinion among feeders that the succulent ration has many points of superiority over the strictly dry ration. Just why has not been clear. Some experimenters have dismissed this opinion by an experiment which seemed to show that the succulent feed had no greater digestibility than the dry feed. Still the feeders have refused to set aside their opinions in this matter. To our mind much injury has been caused by the lack of sufficient foresight in planning experimental work. Too frequently the end in view is too remote throughout the experiments to warrant satisfactory conclusions being drawn in the end, and in their haste to pass upon some popular opinion the experimenters have been content to let the results of some simple experiment decide the case at hand. Many experiments have been made which seemingly tend to show that the factor of succulency in the ration is not of sufficient importance and of sufficient moment so that it may be measured in the economical feeding of the animal. Experimenters have not realized that perhaps the very methods employed were not extensive enough to take into consideration the differences that might exist.

We know now to a certainty that a succulent feed has a decided advantage over the dry feed in that, as quite plainly shown by the writer* in his series of experiments on dairy cows, the succulent feed is always digested at less cost to the animal system than is the dry feed. In other words, the percentage of net available energy from the succulent feed is considerably greater than from the dry feed. About this same time the Ohio station began a series of experiments on cutting down the cost of the ration by substituting a succulent feed, i. e., corn ensilage, for a portion of the grain in the ration of dairy cows. These experiments extended this to a very desirable field. One of the main forces acting against the economical production of milk at the present time is the exceedingly high cost of feeding material. If, then, it is possible to substitute corn ensilage or other succulent food for a portion of this grain ration, it will be to the decided advantage of the feeder.

*(Mich. Ex. Station—Factors of Succulency).

Williams, at the Ohio station, fed the following rations to two sets of dairy cows. The cows receiving the dry ration were fed the following feed: 4.7 lbs. stover; 6.4 lbs. mixed hay; 5.0 lbs. corn meal; 6.0 lbs. bran; 2.5 lbs. oil meal.

This gives a total of dry matter of 20.51 lbs., containing in all 2.9 lbs. protein, 3.8 lbs. crude fibre, 11.9 lbs. nitrogen free extract and .7 lb. fats.

The other set of dairy cows received the following ration: 58.0 lbs. corn ensilage; 6.8 lbs. mixed hay; 2.0 lbs. oil meal; 2.0 lbs. bran. The total amount of dry matter showed 20.1 lbs.; protein, 2.9 lbs.; crude fibre, 5.0 lbs.; nitrogen free extract, 10.0 lbs.; fat, .9 lb.

It may be observed that the amount of crude fibre in the silage, or succulent ration, is slightly in excess of the crude fibre in the grain, or dry ration, while the percentage of protein in each ration is approximately the same. This would indicate that, ordinarily speaking, the succulent ration was slightly less available than the dry ration, did we not take into consideration the factor of succulency at all. On the other hand, we have shown that the factor of succulency in the feed tends to counteract, and does counteract to a great degree, the excess of fibre which that feed contains.

The average cost per month of the succulent feed was \$4.04, while the average cost of the dry feed per month was \$5.32, showing an advantage from the cost standpoint in favor of the silage, or succulent feed, of \$1.28 per cow per month. The amount of milk produced per 100 lbs. of dry matter from the cows on the succulent ration was 96.7 lbs. and the amount of fat per 100 lbs. per month on this same ration was 5.08 lbs., while on the grain ration, or dry

ration, the amount of milk per 100 lbs. dry matter was 81.3 lbs. and the amount of fat, 3.90 lbs. per month, showing an advantage here again in favor of the succulent ration, of 15.4 lbs. of milk and 1.18 lbs. of fat per 100 lbs. dry matter consumed. This caused 100 lbs. of milk on the succulent ration to cost 68 cents, whereas on the grain ration, or dry ration, it cost \$1.05. A pound of fat on the succulent ration cost 13 cents, whereas on the dry ration it cost 22 cents. It should be remembered that ensilage was not used to the total exclusion of grain and, in fact, we think that it should not be used to the total exclusion of grain. There is, no doubt, a point which is the optimum point so far as the amount of silage is concerned, and likewise so far as the amount of grain is concerned. In the succulent ration in this instance more than 50 per cent of the total amount of dry matter was derived from the silage and less than 18 per cent derived from the grain, whereas in the dry ration over 50 per cent of the dry matter was derived directly from the grain, no silage being fed at all. On the silage ration the average net profit per cow per month was \$5.86 while the average net profit per cow on the dry ration was but \$2.46. It seems very clear that the use of silage may be extended very materially as a supplement to the grain ration at a great reduction in the cost. The amount of silage that should be used we think may be governed largely by the individual herd. Some cows will consume to advantage greater quantities of silage than will others and the best way to arrive at this, at least so far as any present knowledge we have is concerned, is for the feeder to gradually cut down the grain ration, introducing silage instead until he has arrived at the most favorable point.

FLOYD W. ROBISON.

LABORATORY REPORT.

Beet Sugar vs. Cane Sugar.

What is the difference between beet sugar and cane sugar?

Mrs. G. H. R.

Beet sugar and cane sugar differ only in the source from which they are obtained. The sugars themselves are no more different than water obtained from a watermelon is different from the water obtained from a muskmelon. Beet juice is different from cane juice, and therefore a syrup made by the evaporation of beet juice would be different from a syrup made by the evaporation of cane juice. The sugar present in beet juice, or beet syrup, however, is identical with the sugar present in cane juice, or true cane syrup.

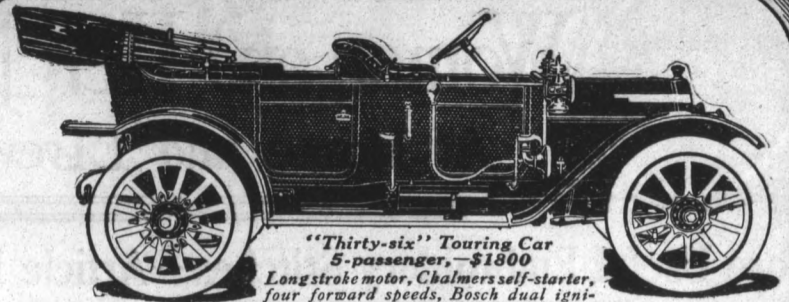
We are aware that there is a popular impression that beet sugar is not only different from, but inferior to, cane sugar. The writer is reminded of an incident in a grocery store in Lansing when a grocer was demonstrating from two open barrels of sugar, the superiority of cane sugar to beet sugar. The barrel of beet sugar was a product of a local beet sugar factory whereas the supposed cane sugar came from the refinery in New York city. To the writer's knowledge both barrels were beet sugar, but the one came direct from the factory, whereas the other had been further purified.

When beet sugar was first manufactured in Michigan some of the first sent out was inferior in color and besides had a considerable beet odor. This product was the main cause of the odium which has clung to beet sugar since, and now any sugar which is dark and inferior is immediately called beet sugar.

For several years much of our granulated sugar has been imported from Germany and all that comes from Germany is beet sugar. It is subjected to a refining process, however, in this country, and when refined there is no evidence remaining of its beet origin. We consumed beet sugar in Michigan long before we produced a single pound.

CATALOG NOTICES.

J-M Asbestos Roofing is fully illustrated and described in catalog No. 303 and will be sent upon request to the H. W. Johns-Manville Co., 100 Williams Street, New York city. This 52-page booklet tells all about the superior merits of asbestos roofing, both as to the material which is used in its manufacture and the methods used in its making. Many testimonials are printed with regard to the service secured from this roofing, including instances in which it has rendered adequate service for a quarter of a century and still remained in good condition. Mention the Michigan Farmer when sending for literature which will tell all about this water and fire-proof roofing.



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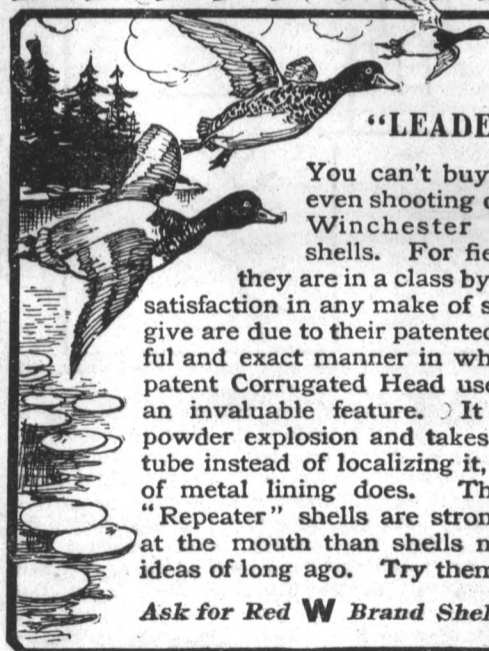
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Woman and Her Needs

At Home and Elsewhere

More Useful Embroidery Stitches—Article 11.

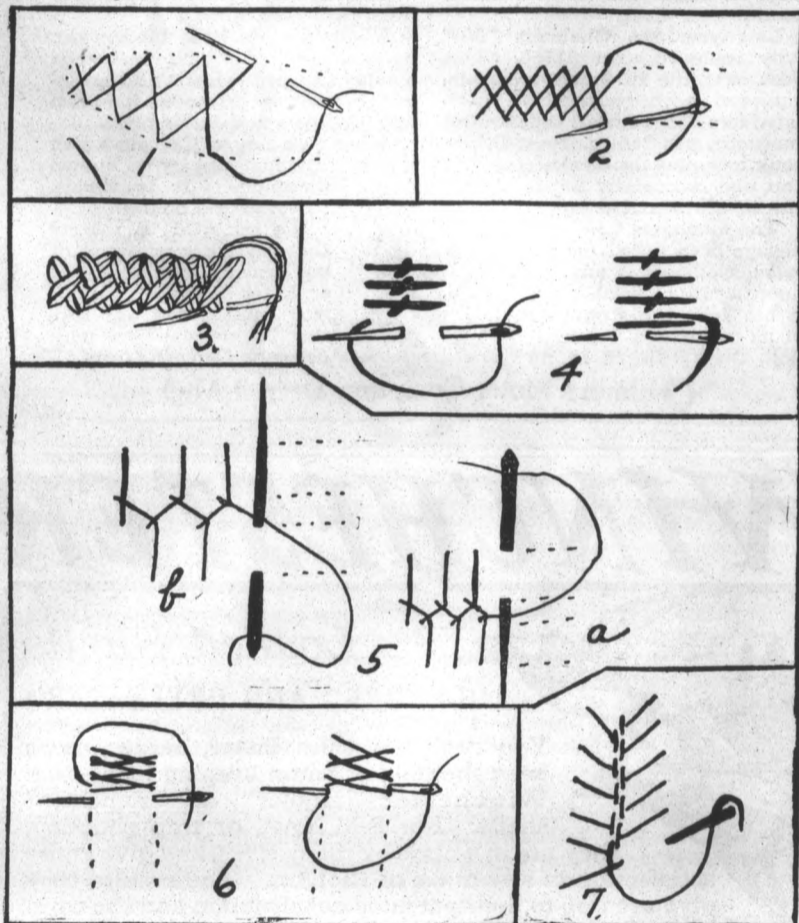
By Mae Y. Mahaffy.

Ismit stitch is a favorite one for quickly covering rather wide spaces, whether in floral or conventional designs. It may be used in borders, also, the space covered being uniform throughout. It is in reality an adaptation of the common herringbone stitch, but is used for wider surfaces, and the under stitches meet, so that the long stitches cross, forming diamonds, similar to some kinds of couching. Indeed, these crossed threads may be couched down with short stitches in wide spaces, producing an attractive all-over effect. A short stitch is taken first on one edge and then on the other, the needle pointing toward the starting point, and always being brought up at the point where the last line left off, as in illustration No. 1.

A conventional stitch known as Janina, No. 2, is used for oval figures, bars, etc. Like the Ismit stitch the lines intersect across the space, but in such manner

is sometimes planned so that the short central stitches are placed somewhat beneath the stitches on the edges, thus drawing the crossing threads down a little by the short ones in the center. This gives a slant to the two halves of the long stitch, which is highly appropriate for leaf forms, the short stitches acting as the midrib. Larger figures, leaves, flowers, and conventional shapes are also covered by close set rows of this stitch worked straight, as in the illustrations, the stitches on one edge being placed close in between those of the previous row. The result is an undulating effect which is decidedly ornamental, particularly so when several shades or colors are made use of.

Cretan and other eastern work often incorporates the Cretan stitch, so-called, which is almost like buttonholing from side to side. It is shown in No. 5 in its two steps. Four lines should be simulat-



that an extra row of diamonds occur. The stitches may be set quite closely, so that a covering of solid color is secured, or they may be spaced a bit.

Number 3 illustrates the Persian stitch, used in much of the work of Persia, as well as elsewhere, and is made by carrying three threads, of one or different colors, in the needle at one time. These stitches also resemble the herringbone in their arrangement, being taken from side to side, working from left to right, but each short stitch along the edge is taken so that the needle is brought up between the two preceding stitches, thus crowding the stitches quite closely together. This is a rich, handsome design when made in artistic colors.

An easily mastered, quickly made stitch is frequently seen in eastern embroideries and is known as Roman or Roumanian stitch. It is shown in figure 4. Two parallel lines are traced or presumed, and the thread brought up on the left line near the top. Then insert the needle on the opposite line and bring it up near the center, as in the first half of the illustration. The remainder of the diagram shows the next step. Insert the needle below the crossing thread, just a trifle to the side of where it was formerly brought up, and bring it out on the left edge. It is then ready to proceed with the next stitch.

This stitch is used for leaf forms, and

ed, and the two central ones may be placed rather close together or some distance apart, this movement producing a great difference in the effect of the stitch, as will be seen by a little practice. Bring the needle up on the lower central line; insert it on the upper line a little in advance and bring it out on the upper central line directly below, keeping the thread under the point of the needle. See "a" in the diagram. Now insert the needle on the lowest line, bringing it out on the lower central line, as in "b," keeping the thread to the right, as before. Repeat these two steps as long as may be necessary to cover the required space. This stitch may be widened or narrowed by making the stitches longer or shorter, and is thus admissible for use in leaf forms and similar figures.

Basket stitch is satisfactorily used as solid line work, or for representing basketry, etc. It is made between two parallel lines, and will look best when a strongly twisted thread is used. Bring the thread up on the left hand line; insert on the right hand line about an eighth of an inch below, bringing it through on the left hand side directly opposite. See first half of diagram No. 6. Now insert the needle on the right hand line above the last stitch on this side, bringing it out on the left hand side directly opposite, as in remainder of the

sketch. Continue thus for the desired space. The stitch, like so many of the others, may be closely set or spaced, and may be made wide or narrow.

Number 7 is known as fish-bone stitch, and is made something like feather stitch, one of the buttonhole variations. In fish-bone, however, the stitches outward at either edge are much longer than those down the center, and the straight effect is produced rather than the undulating. Bring the needle up at one side of the center; insert it on the farthest edge, bringing it out a little below and to the side of the starting point, the thread being held under the needle's point. Work this from side to side, either for straight lines or for covering leaf and other forms.

Who is Everybody?

EVERYBODY does it." What slaves we women are to those words. How many needless things we do, how much good money we wickedly spend, because "Everybody does, you know."

There's the matter of clearing the dining-table between meals, for instance. All our lives we have saved ourselves work by leaving the cloth on the table and the sugar bowl, salt and pepper shakers and other articles that are used every meal. All of a sudden some woman discovers that in the homes of the wealthy where there is plenty of help the table is cleared of everything and a handsome centerpiece put on between meals. Immediately she adopts the idea and assures us that "Nobody lets the table stand any longer." That is enough for us. We certainly must keep "in," so we add to our already heavy work by clearing our table three times a day.

We took up our carpets and laid rugs, too, because "Everybody does." And we try to serve a five-course dinner every time a friend comes because that is "right." We buy cut glass, not because we like it but because "Everybody has it." We join clubs and societies when we feel we haven't the time to give to them and do not care a pin for the women who are members, just because "Everybody is in it and we can't afford to be out."

Houses away beyond our means are a positive necessity, not because we couldn't get along without the modern improvements but because "Everybody has them." Clothes that are not only uncomfortable but unbecoming and ugly as well must be worn, because "Everybody is wearing them this season." Even our food is not exempt and we serve certain viands that we positively dislike because "Everybody" demands that we eat them or be under disapproval.

And who is "Everybody?" "Everybody that is anybody," we reply. And that, if honestly interpreted, would mean the few supercilious individuals in every petty little social circle who have only brains enough to ape what the leaders in the circle next higher are doing. We allow our standards to be set by people who have not individuality enough to lay down rules for themselves but can only copy what they see someone else doing. We are afraid of the few self-constituted leaders in our own little world.

Just stop and think what the term "Everybody" literally means. Then pause to consider how many people there are in the whole wide world. In Michigan alone there are 2,810,173 persons. In New York city, 4,766,883; in London, 4,866,480; in the United States, 93,402,151; in the whole world is about 1,500,000,000. Of that stupendous number if we should sit down and count up all we could remember from earliest childhood, I doubt if we would know more than 500 souls. Yet we dub the few we know "Everybody," and of those few it is only the least worthy those who live only for conventions, that we mean when we use our pet phrase.

How far away from your home is your "Everybody" known? If you go into the next village your leaders are small fry, twenty miles away they are unheard of.

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How foolish, then, to let them rule our lives.

And where is our "Everybody" when we are in trouble? When we need help do we turn to the women whose dictum we fear and whose favor we court, or to those old-fashioned friends who have individuality enough to live their own lives in their own way, unmoved by the sneers and ridicule of "Everybody?"

Individuality is what we women need. For, after all, we must live and die alone. We alone know what is most needed in our own homes and own lives. And if our little world scoffs at our way of doing we can take comfort in the thought that outside is a great, big wonderful world where the scoffers would themselves meet with derision.

DEBORAH.

THE WINTER'S BEDDING.

BY ELLA E. ROCKWOOD.

Now that the long cold nights are almost here the bed clothing may need replenishing. With plenty of fresh air in the sleeping rooms after the healthful fashion of the day, more covering is required to retain bodily heat.

For most families good cotton filled comforters are practical and durable, as well as economical. Where time is no object very pretty covers for these are made of patchwork. Cut in squares and set together, either in blocks or strips, two colors of worsted make a very attractive comfort cover. Old wool dresses may be washed and utilized in this way most acceptably.

A very pretty one is of dark red and black in alternate three-inch squares. Another is a plaid and plain blue set together in the same fashion.

The log cabin design is always good for these worsted quilts, some of them being extremely handsome. Silkolene makes an excellent lining for these.

Pieced quilts and comforts become really works of art in the hands of the expert and are an adornment to any home.

Cotton bats the full size of the bed can be bought and are superior to the single pound bats usually sold, for obvious reasons. Wool bats made the same way can also be bought at the better class of stores. The latter as a filling is really luxurious, ranking only short of down in this respect. Where pieced covers are not desired pretty silkolene makes very desirable ones. Seven yards of goods three-fourths of a yard wide, will make one side.

TELEPHONES ON THE FARM.

BY INEZ DE JARNATT COOPER.

Users of the telephone who observe the following customs save themselves trouble and derive more benefit from the 'phones.

First and foremost have a tablet and pencil attached to your telephone. You have no idea how handy they will be nor how often you will use them. Take a strong paper clip and fasten the leaves of the directory so that the book will open at once at your own district. Should you want a name outside the clip can be removed readily. On the back of your tablet, write or print in large letters the names and numbers of friends whom you call oftenest in order that you may find their numbers without the trouble of referring to the directory and without the use of glasses.

Every now and then wash the transmitter with soap and water. They are cleansed often at exchanges. Think how often they are breathed into and you will see the wisdom of this.

Never say anything over a party line which you would not like to have repeated. There is often a third person listening. We cannot prevent this but we can guard our own words.

One of the most surprising things about telephones is their height. Most farmers, no matter how handy they subsequently found their 'phones had them primarily that the "women folks" might use them for visiting. Why, then, should the 'phone be put half way between the floor and the ceiling? Statistics taken would undoubtedly prove that one-half the women users of the telephone have to converse standing on tiptoes. If your 'phone is not so that you can use it seated, have it lowered at once. You may then enjoy the luxury of a desk 'phone.

SHORT CUTS TO HOUSEKEEPING.

To take off water stains from a glass or earthen water pitcher, pour in enough vinegar to cover the stain. Let set a few hours and wash in suds. It will

leave the dish as smooth and glossy as when new. If vinegar is scarce, half vinegar and half water may be used, but in this case it must stand longer before being washed.—V. C.

In making fried cakes and cookies after mixing let them stand a few hours before baking. They will be better than if baked immediately.—E. L.

Rub some laundry soap over the bottom of the stew pans several times. When the pan is washed the black comes off like magic.—D. T.

A LITTLE TIME AND FEW PENNIES WILL SAVE THE WINDOWS.

BY WALTER JACK.

Why not a little putty and paint on the window sash before the bad weather of winter? It will save a lot of time, discomfort and subsequent replacement of windows. Almost every building has one or more windows that need doctoring with the putty knife. Everyone knows how to apply putty, but few appreciate the real value of it.

In buying putty from country stores it is very often too dry to be applied successfully, and should be mixed with linseed oil. Use very little oil, dip the putty knife in a dish of oil, and chop the putty into small bits, continuing the dipping process. It will not take more than a half dozen dips to secure sufficient oil to reduce to the proper consistency quite a little quantity of putty. If you should make the putty too thin, mix in flour. If your hands become smeared, it will wash off readily with kerosene. After applying putty a coat of paint should be given it to protect the putty from the heat and storms. This paint can be made by mixing linseed oil and lamp black. In fact, most all painters consider paint of this sort as their "standby" in painting the outside of a window sash. Use a small round brush and apply the paint lightly over the line of putty, allowing some of the bristles to touch the edge of the glass slightly. Then make a slow, steady stroke away from you. When the brush fully from the sash at the end of the stroke. If care is taken no paint need be becomes emptied of the paint lift it care-gotten on the window pane. You will find that the life of the window thus painted will be prolonged, that windows, too frequently held only by glazier's points, will cease their rattling, and that putty carefully painted will last a period of three to a half dozen years and still be as firm as the surrounding wood.

That complaining husband who accepted his wife's proposal to swap places with her, was probably much wiser wife-ward, when, after four days, burned, blistered and aching, he gave up his job, and I feel that there are many like him who fail of fully realizing how large a factor the housewife is in the home-making process—fail, not in all instances by any means, because they do not care, but because they are careless and thoughtless and the absorbing tendency of their own duties.

Many a seeming little thing that she does, as for instance, setting a room in order, or preparing a meal, looms large when we stop to consider its cost in actual effort to do. I fear we too often sooner think of what they cost us in the pocket.

Yet at all times is the housewife faithful, seldom thinking of credit withheld, or lost appreciation, planning unceasingly her little economies and often lending aid far out of her true province.

How important that so indispensable and faithful a worker should be recognized as not only the most valuable asset on the farm or elsewhere, but as the most unselfish and worthy of companions. And above all, how important that we do all that is possible to conserve the health of so worthy an object.

The nearest divine of anything upon this cold earth, whatever she gets of life's blessings she hath more than earned.

"Yet was there never a battle, but side by side with the soldiers Stern like the serried corn fluttered the souls of the women

As in and out through the corn go the blue-eyed shapes of the flowers; Yet was there never a strength, but a woman's softness upheld it,

Never a Thebes of our dreams but it rose to the music of women—

Iron and steel it might stand, but the woman had breathed on the building; Yea, no man shall make or unmake ere some woman hath made him a man."

—A. P. REED, M. D.

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Iowa	18.1	27.0	22.0	17.8	89
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Kansas	13.0	28.2	18.0	14.2	79
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HOME AND YOUTH

GRANDFATHER'S DAY.

BY L. M. THORNTON.

Grandfather never rode, they say,
In a great big auto, of red or gray;
Grandfather went on the lake to float
But never raced in a motor boat.
He did not kodak, or learn to play
At basket ball, though he liked croquet,
And his life, though no one was then
to blame,
Must have been, I think, just a little
tame.

Grandfather read by candle light,
Nor saw an aeroplane make a flight.
He couldn't visit, when all alone,
By calling up on the telephone.
No elevators went up and down;
No trains went snorting from town to
town,
And life, I fancy, from fall to spring,
Might sometimes have seemed a hum-
drum thing.

Grandfather, though, saw bears at play,
And elk and caribou, in his day;
And he tramped the forest from morn-
'till night,
Glad in the free-born settler's right.
And he felled the trees, and he worked
the soil,
And soundly slept after hours of toil.
And Grandfather's life, from spring to
fall,
Must have been a pretty good life after
all.

BALLOONS AND FLYING MACHINES—
PAST AND PRESENT.

BY W. J. GRAND.

I suppose every boy and girl who has
read the story of "Darius Green and His
Flying Machine" wonders whether it will
ever become possible for men to fly.
Shouldn't we fly? Indeed, why shouldn't
artificial wings work as well as those
made by nature?

So not only children, but many learned
and eminent men, have reasoned in by-
gone years, and vast numbers of attempts
to navigate the air have been made.
Wings have been invented, kites of huge
dimensions have been tried, and still
stranger modes of flying have prevailed
in the popular belief. We hear of witches
flying through the air astride of broom-
sticks, and wonderful magicians who could
soar easily from place to place. At one
time it was seriously believed that if an
eggshell were filled with fresh dew gath-
ered early in the morning, and then placed
at the foot of a ladder leaning against
a house, it would, as the sun rose higher
and higher, be attracted upwards, mount
gradually from round to round, and at
last reach the very tops of the chimneys.
One brilliant genius actually proposed to
make huge artificial globes resembling im-
mense eggshells, fill them with certain
chemicals instead of dew, and have them
lifted by the sun's attraction into loftier
regions of the air.

There are a great many legends about
men who have succeeded in flying, or
who have made machines which could fly.
Archytas, a famous Greek geometer, is
said to have constructed a mechanical
dove which flew by means of strings con-
cealed within it. Everybody has heard of
Icarus, "him and his daddy Daedalus,"
who managed to get up such a nice little
accident some one hundred years ago.
Their wings were made partly of wax, and
Icarus, soaring too near the sun, was
thrown too near the earth and killed,
because his pinions melted. Some other
failures of a similar kind have happened
in modern times; and people trying to fly
from lofty places have met with serious
falls. A few centuries ago an Italian
priest contrived a pair of artificial wings
and flew from the top of Sterling Castle
in Scotland. Falling to the ground, he
broke his thigh, but even then did not
quite lose faith in the possibility of flying.
His excuse for falling was very queer.
He said that in constructing his wings
he had used feathers of all sorts, those of
dunghill fowls as well as those of eagles.
He had put in too many of the former,
and their natural attraction for the dung-
heap had brought him down.

But why did all these attempts fail?
Why has every flying man had his tum-
bles? Simply because his wings were not
large enough to support his weight; and
if they had been large enough, he would
not have possessed the strength necessary
to manage them. But the birds have
wings of sufficient size, and strength
enough, too, for their control. Yes, but
the birds have certain great advantages
over us. Their bones, being hollow and
filled with air, their bodies are very light;
for the express purpose of working their
wings, they are provided with muscles of
the most powerful kind. It is even said
that a swan can strike, with its wings, a

blow so severe as to break a man's leg.
Just examine a fowl prepared for table,
and notice the great quantity of meat up-
on its breast. The rest of the body may
be mere skin and bone, and yet the breast
will be full and solid. All this meat is
simply the muscle which worked the
creature's wings. If we had hollow bones
and such large breast-muscles, we, too,
might soar.

But, although we are unable to fly, and
can hardly hope even to succeed in so do-
ing, we have yet other means of navigat-
ing the air. The invention of the balloon
has enabled us to travel from place to
place with great velocity, and to ascend
to heights where even the most coura-
geous and powerful birds dare not ven-
ture. We merely fill a large, silken globe
with something lighter than cold air, and
make it lift us with it as it rises. We
may use either heated air or hydrogen
gas, the latter being the better of the two
and exclusively employed at the present
day.

Before the balloon was actually invent-
ed, many conjectures were made as to the
possibility of such a contrivance. At last,
two brothers named Montgolfier, paper-
makers at Annonay, France, constructed
the first balloon. This was a small cloth
bag, which, filled with heated air, rose to
the ceiling of a room. Soon after the ex-
periment was repeated out of doors on a
large scale, with perfect success; and, on
the fifth of June, 1783, the brothers gave
the first public exhibition of their dis-
covery. A large balloon of cloth was
filled with hot air, in the presence of a
vast assemblage of spectators. After ris-
ing a thousand feet, and traveling hori-
zontally for more than a mile, it descend-
ed without the slightest injury. A great
many experiments followed, and France
became wild with enthusiasm upon the
subject of balloons. They were sent up
in Paris before immense multitudes, hy-
drogen gas, which is only one-fourteenth
as heavy as air, being used to fill them.
The balloons went up alone, mere spec-
tacles to be gazed upon, no one ascending
with them.

This did not last long, however,—only a
very few months. Soon a very large bal-
loon was sent up, carrying with it, in a
basket, a sheep, a cock, and a duck.
These creatures rose to a considerable
height, traveled quite a distance, and
descended in safety. Men grew bolder,
and, on October 15, 1783, a young French-
man, Pilatre des Rosiers, ascended to a
height of eighty feet in the car of a bal-
loon held down by ropes. Two days later
he repeated the experiment, and on fol-
lowing days, part of the time with a com-
panion, he made three ascents, mounting
at last 324 feet into the air. The balloon
was filled with heated air from a fire of
straw built upon a grating of wire in the
car.

But the great journey was yet to be
made. In all these trials the balloon was
held by ropes and allowed to rise only a
little way. On October 21 the first genu-
ine trip was taken. The balloon was a
gorgeous affair, richly gilded and painted
with ornamental designs, and much more
beautiful than the dingy globes which we
see in use today.

At one o'clock in the afternoon, Rosiers,
accompanied by the Marquis d' Arlandus,
got into the car, kindled the fires, and
rose majestically upward for half a mile.
Keeping the fires well fed, they traveled
about a mile and a half and descended in
safety with three-fourths of their fuel
left.

On the first of December following, two
other adventurers, named Charles and
Robert, made a good ascent in a hydrogen
balloon and alighted without injury after
quite a long tour. These ascents, all at
Paris, proved beyond a question that men
could navigate the air. People grew more
enthusiastic than ever and began to talk
about trips to the moon and stars. All
sorts of wild projects were devised. Bal-
loons were to carry armies, and to drop
bomb-shells into besieged cities. There
seemed no end of the wonderful things to
be hoped for.

But nearly all these great expectations
have failed of realization. Only a little
has been really accomplished with the
balloon. It has found one or two uses,
but, after all, has not been very much
more than a toy. Today it is no better
understood and no better managed than
it was seventy-five or eighty years ago.
The trouble is that the balloonist cannot
steer his craft. He is at the mercy of
the winds, which blow it hither and
thither in spite of any steering apparatus
that can be made.

With the aid of balloons, however, men
have explored the atmosphere at heights
far above the tops of the greatest mount-
ains, and obtained knowledge of much

value in science. In 1862, a couple of
Englishmen, Messrs. Glaisher and Cox-
well, rose to the prodigious height of
37,000 feet, or more than seven miles. The
highest mountain in the world is not
much over 29,000 feet high. At this great
elevation the travelers suffered intensely,
both from cold and from the thinness of
the air. The thermometer marked twelve
degrees below zero, and Mr. Glaisher was
so much overcome that for a short time
he became quite insensible. The escape
from death was extremely narrow. Other
courageous balloonists have been among
the clouds during thunder storms, with
the lightning playing around them, and
have met with all sorts of perilous adven-
tures.

Some long journeys have been made
with balloons, and at very great speed.
About three years after the balloon was
invented, two daring men sailed through
the air from England to France, encount-
ering grave dangers on the way. In 1836,
a couple of Englishmen started with a
balloon from London, and at the end of
eighteen hours alighted in a little village
of Germany. But a longer journey was
made in our own country, when, in 1854,
two balloonists, Wise and La Mountain,
rose from St. Louis, intending to reach
New York. They finally descended on the
shores of Lake Erie, having traveled 1,150
miles in twenty hours. Longer flights
have, however, been made in this country
so recently as to be within the memory
of all.

Balloons have proved useful in warfare.
In 1794, the French defeated the Austrians
in the battle of Fleurus by means of in-
formation gathered from a balloon. The
balloon was held by ropes, and its com-
mander could easily look down upon the
enemy and distinguish all his movements.
In our great rebellion balloons were also
used. One aeronaut had his balloon con-
nected with the earth by a telegraph wire,
and sent down frequent messages de-
scribing what he saw. In the last siege
of Paris the beleaguered Frenchmen em-
ployed balloons in sending dispatches past
the Prussian army to their friends in
other cities.

What of the Future?

Balloons, airships and flying machines
have been the subject of exhaustive study
and trial for the past hundred years. Dur-
ing the past five years unlimited funds
and the best efforts of scientific experts
from all parts of the world have been
given to this work, and it would seem
that the limitations of the balloon and of
the more modern flying machine should
now be recognized by all intelligent in-
vestigators. Any vessel which depends
for its upward motion upon its displac-
ement of air, must, of necessity, be so
large as to preclude the possibility of prop-
elling it against even a moderate breeze.
Few even of the most visionary enthusi-
asts should now believe that the day will
ever come when buoyant airships will
navigate the heavens in any governable
direction.

With flying machines, however, the
case is radically different. In the first
place, the flying machine follows the an-
alogy of nature as no airship could. Ships
float on the water in very much the same
fashion that fish and many aquatic birds
float in and upon it. But the balloon
finds no prototype in its sphere. The
specific gravity of water and that of ani-
mals is so nearly the same that an equi-
poise is easily established in various ways.
But the specific gravity of the air is so
very much less than that of most other
forms of matter that an equipoise is very
hard to establish. As has been observed,
no living animal can support itself in the
air without supplementing the specific
gravity of the air by an expenditure of
muscular energy, and in most cases this
expenditure is very large.

It is, then, only by means of some
strong, light structure, plus a large
amount of energy, that we may hope to
imitate nature and traverse the heavens
with both speed and certainty of course.
But when the inevitable conditions are
once accepted the outlook for success is
by no means discouraging. The obstacles
in the way of a successful flying machine
are such that any decade of our age of
aggressive science may surmount them.
There is nothing at all absurd in the
notion that men may learn to fly. Not
by means of their own muscles—of
course nobody expects that—but by means
of mechanical ingenuity linked with the
tremendous power of steam or with the
magic of that wonder-working force
which we call electricity. At the present
time there is a general feeling, not only
among wild enthusiasts but among men
of sober judgment, both in the scientific
and in the business world, that a practical
flying machine is among the near possi-
bilities of the future. Learned and con-

SHIFT

If Your Food Fails to Sustain You,
Change.

One sort of a diet may make a person
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change to the kind of food the body de-
mands will change the whole thing.

A young woman from Phila. says:

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down, miserable sort of condition, was
depressed and apprehensive of trouble.
I lost flesh in a distressing way and
seemed in a perpetual sort of dreamy
nightmare. No one serious disease
showed, but the 'all-over' sickness was
enough.

"Finally, between the doctor and fath-
er, I was put on Grape-Nuts and cream,
as it was decided I must have nourish-
ing food that the body could make use of.

"The wonderful change that came over
me was not, like Jonah's gourd, the
growth of a single night, and yet it
came with a rapidity that astonished me.

"During the first week I gained in
weight, my spirits improved, and the
world began to look brighter and more
worth while.

"And this has continued steadily, till
now, after the use of Grape-Nuts for only
a few weeks, I am perfectly well, feel
splendidly, take a lively interest in ev-
erything, and am a changed person in
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servative societies have lent to this belief a very considerable degree of favor, while the faith of the commercial world is attested by the recent formation in European and American cities of companies with enormous capital which are devoted entirely to the building of fly machines.

But when one examines carefully into the possible utility of flying machines he is forced to the conviction that no great benefits to mankind are reasonably to be expected from even the most triumphant success in this line of invention. It is really curious that so many people assume, without reflection, that a successful flying machine would mean either increased speed or increased carrying power over our present methods of transportation. "The successful trial of an airship would, in twenty-four hours' time, cut down half the value of all the railroads and steamships in the world, because it would afford an opportunity of cheapening, to an incredible extent, the cost of transporting persons and merchandise," is one of the extravagant statements that has been made. This is sheer nonsense; and it is worthy of confutation only because it is a kind of nonsense to which people who talk on this subject seem to fall victims in a very unthinking way.

The one sole advantage of aerial transit lies in the directness of route it would find possible. A flying machine could (theoretically) go from New York to San Francisco, or from London to Constantinople, in a line much more nearly straight than is now possible for a railroad or a steamship. But what other advantage could possibly attend aerial transit? Many persons speak of "traveling through the air" as if air would be an entirely novel medium to travel through. They seem not to realize that steamships and railroad trains at the present day travel through the air, with the great additional advantage of having a solid base beneath the air to rest upon. Would a cargo of goods, or a cargo of passengers, lost its weight if it were elevated above the earth's surface? If not, then this weight must rest upon something. And if it rests upon the air, the friction will be far greater than if it rested upon the steel rails and well-lubricated wheels of a first-class railroad. The more yielding the substance on which a moving weight slides the greater the friction. As a ship, resting on the yielding sea, finds much greater resistance to its motion than does the same weight resting on steel rails, so would a vessel resting upon the air find much greater friction to overcome than if it rested upon the sea. An express train now travels through the air and through no other medium. By resting upon the earth it secures a grip for its driving wheels and a hard, smooth surface to slide upon. What advantage could result from increasing the friction and putting forth a tremendous power to support the weight of the train, at the same time removing the driving wheels to a region where they could get no grip upon the thin and fleeing air.

And it is absurd to hope for an increase of speed; it is even more palpably impossible to secure an increase of transporting power by means of flying machines. A moment's sane reflection ought to convince any man that the power consumed in lifting a dead weight 100 feet into the air must enormously exceed the power necessary to remove the same weight an equal distance along the earth's surface. Even so crude a vehicle as a stone-drag enables a horse to pull for miles a load of rocks which he could not lift 1,000 feet. Two horses will trot and pull 100 passengers along the smooth rails of a tramway. Of how many horses would the strength be required to support the same careful of passengers in mid-air an hour, to say nothing of moving it along rapidly at that elevation? A force of ten pounds, advantageously applied, would move a ton in a horizontal direction. To sustain the ton in the air and simultaneously move it at the same speed in a horizontal direction, obviously would require a force of ten pounds plus 1,000. Here, again, one is constrained to ask, what advantage is it to put forth the enormous power necessary to sustain the weight in mid-air when the weight might just as well rest peacefully upon the earth, the transporting power required being in both cases substantially the same? The whole absurdity originates in the unthinking notion that a bird on the wing weighs less than he does when sitting on a perch.

No triumph of ingenuity, no availability of new substances, such as aluminum; no appliance of electricity or other power will ever enable man and freight to

travel through the air more speedily or cheaply than, with the same advantage of material and power, they can be transported through the air while resting upon the earth. So long as the force of gravity remains unaltered, transit through mid-air must be handicapped by disadvantages which no conceivable mechanism could overcome—disadvantages which forever preclude serious competition with transit on the earth's surface.

Flying machines are among the near-possibilities; an enthusiast might say probabilities. Man may yet harness himself into a light, tough framework of aluminum and, compelling the electric current to do his will, mount the ether like a lark or cleave the clouds like an eagle. But the world has as little practical use for the flying machine as it has for the North Pole. Scientists would be deeply interested in them; the rich might conceivably use them as luxurious playthings; adventurous cranks would play mad pranks with them; but the spectacle of the perfected flying machine, tomorrow curving its graceful spirals above the modern skyscraper, need not shake by a ripple the watery instability of the most dropsical railroad stock in the world. The mass of mankind will live and move forever on the earth's surface. The power that binds solid substances to that surface will never be defied or evaded to any beyond the most limited extent.

AN UNFORGOTTEN LESSON.

BY EUGENE F. CRANZ.

Once a lot of boys were throwing stones at some woodpeckers, when a passing man remonstrated with them, whereupon one of the boys replied, "Them ain't birds, them's woodpeckers."

A better day has dawned for the woodpeckers, and they are now justly entitled to be classed as birds, for, taken as a whole family, they are among the best friends of the farmer. I have a special reason for admiring the "flicker" or yellow-hammer. Next to the quail, I doubt if there is really a more useful and friendly bird to the farmer. The reason? Well, many years ago, in company with several other boys I came upon a flicker's nest in an old stub. The young were of the age to begin at once their monotonous noise that has been likened to the singing of a telegraph pole. One of the boys suggested that one of us climb the stub and throw the young birds out, as flickers were woodpeckers and all woodpeckers were bad birds! To our everlasting shame the suggestion was carried out.

The nest was quite high up from the ground, and the young birds were chock-full of breakfast and dinner. One of them on striking the ground, burst open, and the sight we saw is green in my memory to this day. Actually, a handful of cut-worms spread upon the ground around that dead nestling! Mixed with the cut-worms there were numerous big ants.

How industrious must a pair of flickers be to provide food enough for six or eight such hungry nestlings? It will be putting it low enough to say 500 worms and insects a day for two or three weeks, and all taken from the fields near-by. Later in summer and autumn they feed largely upon grasshoppers. Let us cultivate a friendship for this beautiful and useful bird. I love to hear him drum on some dead tree top in early spring.

SMILE PROVOKERS.

"What's the hardest thing you encounter in flying?" queries she. "At the present stage of the game," returned the aviator, tenderly rubbing a bump, "the hardest thing we encounter is the earth."

"It was a terrible sensation," says the man who is narrating his experiences while almost drowning. "After I went down for the third time my past life flashed before me, in a series of pictures."

"You didn't happen to notice," asks the friend, edging forward with interest, "a picture of me lending you that ten dollars in the fall of 1898, did you?"

Into a general store of a town in Arkansas there recently came a darky complaining that a ham which he had purchased there was not good.

"The ham is all right, Zeph," insisted the storekeeper.

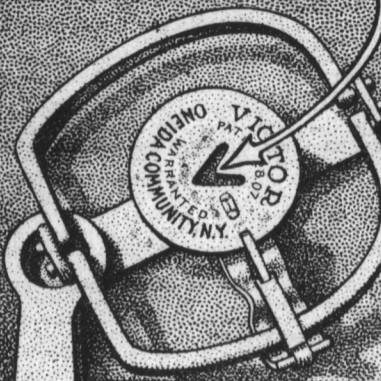
"No, it ain't, boss," insisted the negro. "Dat ham's shore bad!"

"How can that be," continued the storekeeper, "when it was cured only last week?"

The darky scratched his head reflectively, and finally suggested:

"Den mebbe it's had 2 relapse."

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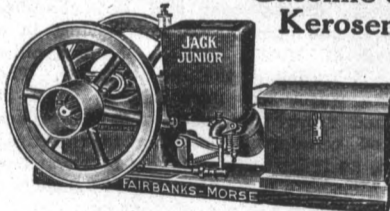
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HUNTED.

BY CHAS. E. JENNEY.

Stalked in the open and sought in the thicket;
 Dogged in their footsteps from cover to cover;
 Vain is the guard of their vigilant picket,
 Spectres of death 'round the band seem to hover.
 Never a moment in waking or sleeping
 May they the boon of security know;
 Sharp on their track there is ceaselessly creeping
 Ever their bloodthirsty, merciless foe.

Down in the valley where Peace might have dwelling,
 Gleaning perchance on the fat of the land,
 Sudden the rattle of shot comes pell-melling,
 And ranks must close up in the far-scattered band.
 Up on the mountain where Freedom reposes,
 Still the avenger comes hot on the scent;
 Dies their last call beneath the wild roses,
 Where with the petals their life-blood is blent.

What is this band of outlaws? What maulers
 Have brought retribution so strong on their head?
 A band of guerillas harassing our borders?
 Or convicts at large, filling all with their dread?
 Their name? Ah, well may the lightsome grow sober.
 Will not the form tremble, the visage grow pale?
 The law hath proclaimed, since middle October
 The season is open for killing of quail.

THE MAN WHO NEVER FELT FEAR.

BY MARY L. DANN.

"One place is about as safe as another, in this part of the country, where every Indian is ready to pepper a fellow with shot, or shoot him so full of arrows that he'll look like his mother's pin cushion," said Samuel Maclay, surveyor and hunter, as he wiped the moisture from the barrel of his rifle and sat down on a large stone to consider.

There was no one for him to talk to but Jack, the dog, but dogs often understand a great deal more than we give them credit for, and when one wanders about entirely alone for weeks, it is a relief to talk even to a well-meaning dog. Jack sat down at his master's feet and cocked his ear comically to listen, as Mr. Maclay resumed: "You and I must stay some place, Jack, and we must have something to eat, even if our fire does attract the red boys, hey, old fellow?"

A violent wagging of his tail was Jack's eloquent answer, emphasized by a series of short, delighted barks.

"Down, down there, Jack; don't you know better than to bark these times? If you keep on getting reckless, Chief Sleep-till-noon will be dangling your master's scalp from his belt and Squaw Greasy-cheek will be roasting you in the coals," scolded Maclay, and Jack dropped his tail in a very forlorn and penitent manner.

Mr. Maclay, on this surveying excursion, in the year 1767, a short time after the capture of Fort Duquesne and before peace had been established with the Indians, knew not what bush concealed a deadly, redskinned enemy. However, he coolly set about preparing his evening meal.

The place he had chosen to utilize as kitchen, dining-room and bed chamber was a fine open lot near a spring, in a valley in Mifflin county, Pennsylvania, near a branch of the Juniata river. The spring water was pure and sweet, as it gushed from the earth, and the place looked wonderfully inviting to the tired man, as it lay in the hollow between two low hills. He untied his hunting sack and took from it a piece of venison.

"And you would like a morsel, too, would you, you old rascal?" he queried of Jack, as he builded a fire of dry twigs, that it might make as little smoke as possible to attract the attention of any stray Indians who might be lurking about with a burning desire for a lock of his hair. Soon the delicious fragrance of broiling venison permeated the evening air.

Mr. Maclay, like the boy campers of our own day, could not refrain from "trying it on the dog;" so he cut off a large slice of the tender meat and gave it to Jack. The manifestations of enjoyment on the part of the affectionate animal must have satisfied him that his own cooking was not so bad, for he himself commenced to eat with a relish.

Having finished his supper, he drank deeply from the spring and, preparing himself a comfortable bed of leaves, drew his blanket about him and threw himself

down, with his feet to the fire. Jack stretched himself close to his master, yawned noisily and laid his head on his outstretched paws. In a short time both were in a sound sleep.

It was in the gray of the early morning that Mr. Maclay was suddenly awakened from his slumbers by Jack's muffled growls. He opened his eyes and saw the dog's lips drawn back from his white teeth and his eyes gleaming yellow in the first rays of the sun. Looking in the direction indicated, he saw, outlined in bold relief against the clear sky, the figure of a large Indian, only a few yards from him, on the low hill opposite. This unexpected visitor was in the act of cocking his gun, with the barrel resting on his left arm, at the same time looking intently upon Maclay. Surprised but not unnerved, Maclay sprang to his feet, seizing the rifle that lay by his side.

To his surprise, the Indian did not move a muscle, nor did he, as Maclay expected, take to a tree, but remained in the same attitude, without further motion of firing. Neither stirred, but each stood gazing at the other, the tenseness of each figure seeming to increase with every heart beat. Suddenly the Indian opened the pan of his rifle and threw out his powder.

The white man felt his muscles relax and a strange weakness come over him. He followed the example of the Indian, and with outstretched hand, in token of peace, approached his uninvited guest, who grasped it with the warmth of a brother.

Maclay was amazed at the courage of this dusky son of the forest who could thus throw the priming of his gun when facing an armed enemy of another nation and color in time of grievous war between the two races. He was still more surprised to learn that his early caller was none other than Logan, the celebrated Mingo chief, who afterward suffered such outrageous treatment at the hands of the white brothers whom he loved that every one of his kin were exterminated. From the anguish of his bleeding heart, he cried out, in the words that nearly every American schoolboy knows by heart: "Logan never felt fear. He will not turn on his heel to save his life. Who is there to mourn for Logan?—Not one."

The spring near which this incident occurred still bears the title of "Logan's Spring."

THE SEASON FOR RUBBER FOOTWEAR.

The season for rubber footwear is approaching, and each and every Michigan Farmer reader should be properly equipped with footwear to protect them from the effects of the cold, muddy, snowy or slushy weather. The preservation of health demands this and no better investment can be made than in footwear which will protect every member of the farm family from the danger of health exposure due to the varying weather which is characteristic of Michigan winters.

In the purchase of rubber footwear, true economy lies in getting the best makes, which, indeed, is the case with practically all goods. However, there is a wider difference in quality between different makes of rubber goods than in many other lines of manufacture, and it will prove profitable in every instance to buy a well known brand, the manufacturers of which have their trade-mark, and have a reputation to sustain in the quality of the goods sold. In this way the purchaser will get the benefit of the first quality at practically no increase in cost, since the manufacturers of the best trade-marked brands of rubber goods distribute their product direct to the retailer, thus eliminating the jobber and his profits in the distribution of their product. There is room for the exercising of good business judgment in the purchase of rubber goods for winter wear on the farm and the above suggestions will be helpful to many in solving the problem in a satisfactory manner.

"I should like to chat with you a while, Mrs. Duggan," says the young lady who has taken up settlement work. "I want to talk with you about—" "Are ye one of them uplifters?" interrupts Mrs. Duggan, without taking her hands from the washtub. "Well—in a sense, that is my hope." "Well, I've just this to say. I was one day behind with my washin's last week because of helpful visitin' committee ladies, an' from now on them that wants to improve my condition in life will either have to do th' washin' while I sit an' listen or pay me 50 cents an hour f'r hearin' them through with an interested an' aspirin' expression."

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GRANGE

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

THE NOVEMBER PROGRAMS.

State Lecturer's Suggestions for First Meeting.

Co-operation Day program, recognizing the rapid increase of co-operative enterprises.

Debate—Resolved, that to sell farm produce through co-operative societies, organized on the Rochdale plan, would be of more financial value to the farmer than to increase the production of his farm.

Recitation. Why can the Grange run a fire insurance company more economically than a farmers' mutual covering the same territory?

What are the special features of the Michigan Grange life insurance company? Roll call—responded to by each member giving a thought, quotation or instance of co-operation.

Music, interspersed throughout by orchestra and choir.

Cake contest, in charge of social committee.

THE PLOWING MATCH A SUCCESSFUL GRANGE EVENT.

Charlevoix county is, so far as known, the only county in Michigan that holds an annual plowing match. For years it has been one of the big events in this county. Barnard and Marion Center Granges have fostered and encouraged the holding of these annual matches in years past, but this year the plowing match was held under the auspices of Ironton Grange during the early part of October.

Other Granges in Michigan that are seeking means for the improvement of their financial condition, for making an opportunity for their members to fraternize with the citizens of their neighboring towns and cities, and at the same time bringing about improvement in the first principle of good farming, viz., plowing, may be interested in learning how a plowing match is conducted.

The first thing is to get a good list of prizes. Call on the business men and officials in your home town or city and ask them to contribute something toward the prizes. Ironton Grange this year secured about \$150 worth of prizes for the plowmen and the victors in the field day sports.

The plowing begins in the morning and is judged by points for straightness of furrow, start, finish, etc. The plowing is finished by noon, by which time the plowmen, as well as their friends who have assembled from all parts of the county, are ready for the chicken-pie dinner which is always a big feature of the event and brings a goodly sum into the Grange treasury.

After dinner an auction of quilts, aprons, etc., which the Grange sisters have been manufacturing during the year is held, and the treasury gets another boost. The rest of the afternoon is taken up with field day sports, everybody being out for fun and a good time. Supper, with more money for the treasury, comes next and the day closes with a dance.

Throughout the entire year the boys, and men, too, are practicing for the plowing match, so that real benefit in the advancement of good husbandry is apparent, as well as the big sum of money it brings to the Grange.

GLENN M. DUBOIS.

FACTORS IN RURAL EDUCATION.

(Concluded from last week.)

The Grange can have no higher mission than to fit those within its gates for better service. To this end it should do its own work well. It is the duty of every officer to be prepared to discharge the responsibilities of his position with credit to himself and profit to the Grange. He should be prompt and regular in attendance. He should know his part in the opening and closing ceremonies, in order that the work may not drag but rather be performed in an interesting and inspiring manner. The entire membership should support the officers heartily, and in every possible way. The degree and ritualistic work should be properly executed.

Under the "District System" of Grange supervision we spent a year in the effort to improve the degree work in Michigan Granges. The result was highly gratifying. Indeed, I doubt if we ever received a better return in any line, considering the effort put forth.

Wherever possible, the Grange should have a good degree team. The language

of the ritual is too impressive, and its lessons too valuable to be passed over lightly. The drilling required to fit a degree team for good work has much of value in itself to any company of young people engaging in it. Apart from the beautiful and helpful sentiments expressed, the work teaches discipline, and discipline is most essential in all the activities of life.

Every Grange should be a school in agriculture. It should encourage the reading of agricultural literature. It should co-operate with the farmers' "Institute Society" and any and every agency that tends toward better agriculture. It should promote corn contests, contests in potato growing, efforts toward the improvement of fruits and grains—in short, it should do everything possible to interest our boys and girls in the farm and to prepare them to live there with a greater degree of independence, with less fathers and mothers have known.

The Grange should cultivate a taste for good literature. It should be a school in current events. It should discuss freely and without prejudice great public questions that are not partisan in their nature. It should be deeply interested in the public good. It should stand for the conservation not only of our material resources, but of those priceless stores of mind and soul that are indispensable to our highest happiness.

The opportunities of the lecture hour are all but limitless. At once a school in farming and homemaking, an inspiration to higher citizenship, a literary society, a debating club, and more, can we crowd into that short hour if we will.

But what are we doing about it all?

FARMERS' CLUBS

OFFICERS OF THE STATE ASSOCIATION OF FARMERS' CLUBS.

President—B. A. Holden, Wixom.
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Secretary—Mrs. C. P. Johnson, Metamora.

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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.

A MESSAGE TO LOCAL CLUBS.

The annual meeting of the Michigan State Association of Farmers' Clubs will be held in Lansing, (senate chamber), December 5-6, 1911.

What are you doing for it?

Each Club should send at least one delegate, two are better, with full instructions to pay the state dues, take copious notes and give a full report of the meeting to the local Club at its next session.

The delegates should give some thought to their reports of their local Clubs, for the Conference of Local Club Workers. Spicy, condensed reports, embodying



Sparta (Kent Co.) Grange Choir on the Occasion of this Grange's Annual Exhibition of Farm Products.

Think of it, reader! A Grange in each of eight hundred neighborhoods in Michigan, most of them meeting twice each of eight hundred neighborhoods in Michigan! What could we not accomplish if we lived up to our privileges in these meetings? The greatest need of the Grange today is not a larger membership but better work. This work will be performed only as the result of an ideal, and into that ideal it must needs be our aim hard work and more leisure than their to build all that is best in thought and life.

W. F. TAYLOR.

Benzie Pomona is planning for a county exhibit of fruit in connection with its November meeting which will occur at Inland. The members also propose keeping this exhibit intact for the purpose of taking it to Kalamazoo when State Grange meets there in December.

COMING EVENTS.

National Grange, forty-fifth annual session, opens at Columbus, Ohio, Wednesday, Nov. 15.

Michigan State Grange, Thirty-ninth annual session, at Kalamazoo, Dec. 11-15.

Pomona Meetings.
Gratiot Co., with Sumner Grange, Saturday, Nov. 4. Hon. Geo. B. Horton, state speaker.

Gratiot Co., with Sumner Grange, Thursday, Nov. 9. Hon. Geo. B. Horton, state speaker.

Ingham Co., with Capital Grange, Friday, November 17. J. C. Ketcham, state speaker.

Lenawee Co., at Adrian, Thursday, Dec. 7. Annual meeting and election of officers.

special methods of work, management, etc., will not only add to the interest but save much valuable time in this session. All delegates must be elected in November as the meeting occurs so early in December.

A strong program has been arranged, but the local Clubs must supply the crowd and enthusiasm without which the best program is nothing. Work for it, plan for it, come to it, and make the meeting of 1911 the record breaker, both in attendance and enthusiasm.

MRS. C. P. JOHNSON, Sec.

CLUB FAIRS.

Hadley and Elba Club.

The Hadley and Elba Farmers' Club, of Lapeer county, held its annual Club fair at the Hadley town hall, October 19. The fair was a great success in every department, in spite of the many conflicting influences. The prolonged rainy weather put the farmers so behind with their work that every pleasant day must be improved now, while a wedding and the funeral of our dear Mrs. Murphy claimed many of our Club workers.

Mrs. Arthur Hurd and Mrs. Arthur Rusk kindly brought a beautiful exhibit of Irish linen, fancy work, paintings, blackthorn canes, etc.

Mr. F. A. Smith exhibited an old sewing machine, and a cane made from a spar of Perry's flagship, and Mrs. Smith a fine collection of hand-embroidered towels and pillow slips.

Large collections of old relics and curios were shown by Mrs. C. Burlingham, Mrs. C. H. Mills, Mrs. George Schanck, and others, and a sewing bird and an old, old sewing machine deserve special mention.

The fruit display was fairly good, but

the grain and vegetable departments were poorly patronized.

C. P. Johnson told "How he would keep house if he were a woman," much to the edification of his lady hearers, while Mrs. J. W. Tower, in her inimitable manner, convulsed her audience by telling "How she would manage a farm if she were a man." Mrs. DeClercq read the beautiful poem, "When his hand is on your shoulder in a friendly sort of way." The Club fair has come to stay and we are already planning for 1912.

The next meeting will be held with Mr. and Mrs. Chas. Davenport, November 16. This will be "Apple Day" and the program is in charge of a special committee, with Mrs. C. A. Bullock as chairman.—Mrs. C. P. Johnson, Cor. Sec.

Columbia Club.
The October meeting of the Columbia Club, of Jackson county, was a most enjoyable one held at "Sunnycrest," with Mr. and Mrs. M. C. and W. F. Raven. A good attendance was present to listen to the address by Prof. H. J. Eustace of the M. A. C. Preceding this Miss Lila Webster entertained the company with a recitation, "Grandfather's Story." In the exhibit there were 23 varieties of apples shown, most of them grown by Messrs. Frederick and Weeks. There were nine varieties of corn displayed, Reed's Indiana being shown of superior quality, in contradiction to the assertion that it could not be grown in Michigan. Among the several kinds of potatoes shown an early variety, Wisconsin Reds, were noticeable. Among the other products displayed were some fine nuts from the Crego farm, also from the Weeks farm. Cucumbers, melons, pumpkins, beets and other produce made a fine exhibit. The juvenile exhibit of farm produce was mostly raised and exhibited by Leon Peterson, also a pair of Belgian hares. Among the domestic articles shown were pastry by Alice Boyce, needle and fancy work by Gertrude Boyce and Ayesha Raven, each of whom received first prize. The general exhibit was very good, some beautiful specimens of needle work and crochet being shown by Mrs. Boyce, Miss Crego, Mrs. Ladd, Mrs. W. F. Raven, Mrs. Freeman, Mrs. R. F. Peterson, Miss Flint, Mrs. Dunn. Some old relics were also on exhibition. A most abundant supper was served and all returned to their homes counting this another profitable and pleasant Club fair meeting. The designation of Mrs. W. F. Reading as secretary was accepted and Mrs. C. H. Hewitt appointed in her place.

The November meeting will be at "Millbrook Farm," with Mr. and Mrs. George Conover on November 11.

The Care and Value of Fruit.—Prof. Eustace's lecture was a most comprehensive one on the care and value of fruit; one of the best the Club has been favored with in some time. He pronounced Jackson county one of the best sections in the state for apple growing and this with an extended acquaintance with the orchards of Colorado, California, Oregon and Georgia, saying that the Michigan and New York apple ranks higher in flavor than any other grown in the United States, and Jackson county had ideal soil and climate conditions. He spoke of a sample of "Grimes' Golden" raised by W. Weeks as the finest he had ever seen. He said for old orchards, prune well and don't be afraid to cut the tops well off, so you can spray them. Look out for San Jose scale. It will kill the orchards in a few years. Spray with a solution of lime and sulphur early before the leaves or buds start, for the first time. Second spraying, just before the blossoms open use same solution, adding arsenate of lead to the solution; and in about two weeks use a fourth spray of the lime and sulphur without the lead, for winter fruit. Spraying should be done as late as early August. He told of some orchards that had been rented around Hillsdale and had netted the renters thousands of dollars. If you won't either rent the orchard so someone can take care of it, or cultivate it yourself, cut it down, for without some care it will profit but little. The time has gone by when one can produce good fruit and not spray. A good spraying outfit can be bought from \$12 to \$20. You cannot get too many Spys, Baldwins, Steel Reds, while the Canadian Red will only grow to perfection through a small section of Michigan and New York and the demand for them is great. It will pay to thin the trees when too heavily loaded. In regard to peaches he said if they could be grown in this section without the destructive yellows it was a most valuable crop. No known remedy exists for that. One man near Grand Rapids had planted a new orchard on new soil with trees raised in Texas, but in a few years the disease had appeared. For curly leaf spraying was most effective. For the blight that affected pear and quince, cut out the old wood, cutting out far enough back to insure all healthy wood, as this is a germ disease. Then use the Bordeaux mixture in spraying. Spraying for potatoes was also advocated. It has the effect of stimulating the plants, causing the tops to keep green longer and so continuing the growth of the potato. Prof. Eustace spoke of the excellent market advantages here compared to those where the fruit had to be shipped half across the country, thus losing much of the value. He was asked if the market did not afford a better price for highly colored apples, such as was produced in the west, in preference to ours. He said on the whole, "no, taste and flavor were bound to win." He had paid five cents apiece many a time in the city for apples of choice variety and flavor.

"Northeastern Michigan" is the title of a report issued by the Northeastern Michigan Development Bureau and addressed to the members of boards of supervisors, and contains much interesting information regarding the work done by the Bureau during the past year.

Your Gain From Our Sacrifice of a Million Dollars Profit

It costs us one million dollars a year to put into "BALL-BAND" Rubber Footwear the additional quality which you get in the longest wear and the utmost comfort and satisfaction.



TO supply the demands of more than eight million people who wear "BALL-BAND" Rubber and Woolen Footwear, required in 1910:

1,252 carloads of raw material, supplies, etc. This material, if put into one continuous train, forming a hollow square, would enclose more than 3,600 acres with a solid wall of fully loaded freight cars.

In 1910 we shipped to "BALL-BAND" dealers 1,030 carloads of finished footwear aggregating over \$10,500,000 in value. The shipments would make a train similar to the above, solidly enclosing 2,500 acres.

Placed toe to heel in a straight line, the footwear would make a dry walk of over 3,300 miles, or from New York to San Francisco, with a long stroll down the coast in addition.

It required 5,000,000 square yards of sheetings, cotton duck, cashmerette, wool linings, etc., to make these goods—enough cloth to cover 1,033 acres completely.

We spun one and a quarter billion yards of yarn for knit boots, lumbermen's sox, etc.—almost enough to form three strands from the earth to the moon.

We could withhold this million dollars of value—add it to our profits—and purchasers would not know the difference until the goods began to wear out.

For rubber footwear in the store looks pretty much alike. Only an expert can tell the real quality.

So when you buy rubber footwear you have to take it on its record of wear, and faith in the manufacturer. That is just what more than eight million wearers of "BALL-BAND" do.

Many of these millions have worn "BALL-BAND" for years. It is to these that we refer you. Doubtless your friends and neighbors are among them.

Let them tell you how much it pays to insist on the footwear with the RED BALL trade-mark. You find this trade-mark on every article of "BALL-BAND" footwear. Be careful to look for it.

The business of the Mishawaka Woolen Manufacturing Company originated in the manufacture of All-Knit Wool Boots and Socks, which the Company continues. As the business grew, the Company could neither obtain the quantity nor the quality of rubber goods which had to be supplied with its woolen footwear.

The company therefore went into the manufacture of its own rubber footwear.

There was large competition then, as there is now.

We realized that to succeed with rubber footwear we must make our product a little bit better than the best rubber footwear on the market—and keep on making it better.

"BALL-BAND"
TRADE MARK
(Red)
"BALL-BAND"

In all the years this company has not, nor will it ever cheapen the quality of its goods to meet competition.

This is the explanation of the widespread confidence in "BALL-BAND."

This is why it is worth your while to look for the RED BALL sign when you go to buy rubber footwear.

The extra quality that our sacrifice of a million dollars pays for has created a demand for more than ten million dollars' worth of "BALL-BAND" Rubber and Woolen Footwear every year.

Forty-five thousand dealers in all parts of the country sell "BALL-BAND" goods.

Many of these dealers display these signs in their windows or store fronts for your guidance.

Whether you see the sign or not, you are sure to find the RED BALL trade-mark on all "BALL-BAND" goods.

If your dealer cannot supply you, write us, mentioning his name, and we'll see that you are fitted.

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MISHAWAKA WOOLEN MFG. CO., Mishawaka, Ind.

"The House That Pays Millions for Quality"