

MICHIGAN FARMER

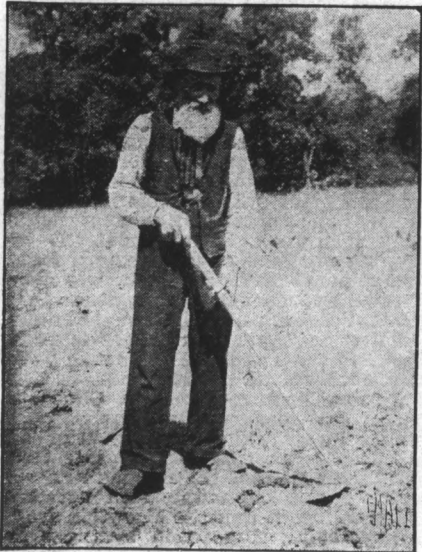
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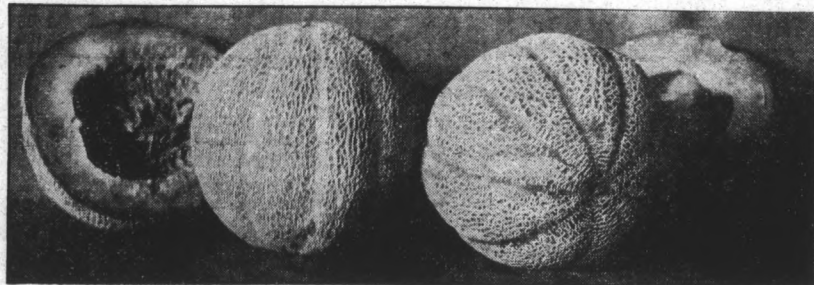


Cultivation.

MANY farms are run on the "no garden" system, but it has been found that this is not the one which secures the most cash, convenience, and comfort for the farmer and his family. It has been noticed that the family having no garden does not eat as many vegetables; the members consume more meats and store products and the cost of living goes higher apace. No farm can afford to be without a garden. If planned properly, it may be tilled almost entirely by horsepower and the vegetables may be had therefrom on a moment's notice, not to mention the added satisfaction of having the garden products fresh. It has been said "An apple a day keeps the doctor away," and well may we add, "A carrot a week keeps everyone sleek."

Next to having no garden at all, nothing is much worse than to have a garden whose plants and varieties are so poorly arranged that much unnecessary labor is required of the good wife in preparing them for the table. The garden ought to be laid out so it will provide a succession of crops for the family and the crops not used so frequently are farthest away from the kitchen door.

Can it be possible that a man would



Compensation and Gratification.

The Farmer's Garden

be so heedless and inconsiderate of the physical efforts of his wife and children that he would locate the family garden down a long lane some distance from the kitchen? In this day of enlightenment, it would seem that this condition would never be found, but the person who has not viewed a similar sight would be difficult to find. In selecting a spot for a permanent garden, it seems well to bear in mind that it is an adjunct of the kitchen and well may it be located with reference to the accessibility of the one who prepares the meals.

Permanent Garden Spot Best.

While there are those who contend the garden spot should not be permanent on any farm, due to the fact that pests are best kept under control by change of soils, yet I believe the average farm should have a permanent garden and depend upon rotating the vegetables to some extent to control the insects and diseases. The farm garden, if it deserves the name, is usually a source of pride and when some industrious old hen goes to digging in to a seeded garden, my experience is that she digs in a pretty sensitive spot. Since the hen and the garden are usually incompatible, one or the other must be fenced, and for obvious reasons, it seems most practicable to fence the garden. Then, too, if the garden is kept permanent, it may be fertilized more thoroughly each year than as though it is put here and there about the farm.

It is most economical of space, hence

time, to have the garden long and narrow with the rows running the long way. At each end a strip of sod six or eight feet wide is left so that the horse in cultivating may turn around without stepping on plants, thus ruffling a temper. Hand cultivation should be relegated to the past except in a few individual cases. Do not force the wife to care for the garden unless she wants to—the garden is important enough so that the men folks can well expend a little of their energies thereupon and when it comes to men gardening, for my part I feel "let the horse do it."

The placing of plant rows with reference to the kitchen door may be suggested thus: Radishes, lettuce, onions, turnips, carrots, spinach, beets, peas and beans closest to the kitchen; cabbages and summer squashes next; cucumbers, muskmelons, watermelons and winter squashes next, and sweet corn, potatoes and tomatoes farthest from the kitchen. Of course, this is only a suggestion and is based upon the individual tastes of our own family, together with the frequency of gathering the different vegetables.

Apportionment of Space.

If one observes many farm gardens, he will notice that there is very often an evident lack of correct apportionment of space to the different garden plants. An instance of this might be cited in the fact that one will find two rows of lettuce running entirely across the garden, while twenty feet of lettuce would have more than supplied

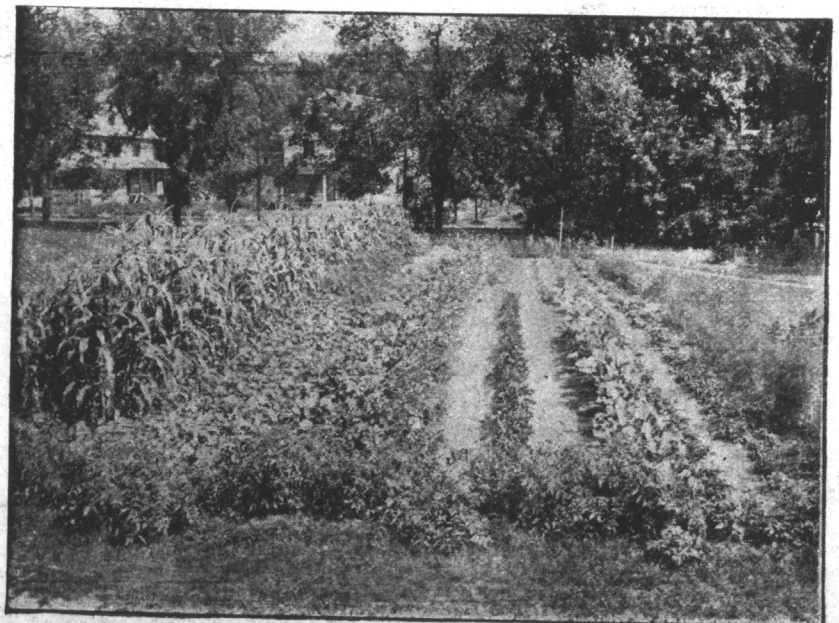


Fertilization.

the needs of the family, and none of the extra plants are utilized to good advantage. A similar illustration may be had in the observation that some gardens will be over-balanced with radishes or tomatoes or some other vegetable that is really not a favorite with the consuming family.

The mother or cook should have a large voice in apportioning the space that is to be allotted to the different kinds of plants. Most women have observed the individual tastes of each member that surrounds the board and with this in mind, they should be quite expert in determining the relative spaces that are to be given over to the various plants. A family that cares but little for beets should not burden the garden with many of them; in case they are needed for the stock, the field proper would be a better place, for here they may be cared for at less expense. Few farmers raise a garden for the sale of market products to the trade. The home table is the sole market and this being true, the matter of accurate space apportionment to the different plants proves an economy of space and an abundance of the relished eats.

Before the rush of spring work is at
(Continued on page 315).



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DETROIT, MARCH 4, 1916

CURRENT COMMENT.

Land Owners vs. Tenants. Notwithstanding the fact that much criticism has been made of the tenant system as in vogue in this country so far as its effect upon soil fertility is concerned, a number of farm management surveys which have been made under the auspices of the Department of Agriculture show that as a class in many of the sections surveyed, the farm tenants have been more successful farmers from the standpoint of making a good labor income than have the farmers who were owners or part owners of their own farms. A farm management survey recently made of four townships in one of the central states indicated that the tenants in that section not only grew more crops and sold a larger proportion of those grown than did the farm owners in the same section, but that they also farmed more land with a given amount of labor and equipment.

The average labor income made by the tenants in this particular survey was \$501 as compared with \$446 for the part owner and \$312 for the owner, while his family living expenses were less, being \$354 as compared with \$413 for the owner. This data shows in common with that provided by several other similar surveys, that with the same capital the tenant made the largest income, the part owner next, and the owner the smallest labor income. This, of course, is doubtless largely due to inventive, since a fair percentage of the farm tenants included in such survey would be young men who are working to the end of purchasing farms of their own, while the owner who has gotten onto what is, in the vernacular of the day, termed "easy street," leads a less strenuous life and practices less economy in the matter of living expenses.

In this survey, as in practically all others of a similar character, the advantage of mental training was clearly indicated, since the labor income of farmers with more than a rural school education was very much greater than that of farmers whose education stopped with the rural school. Also this data shows that the man with the higher education remained a tenant only from one-half to one-quarter as long before becoming a land owner as did those whose education stopped with the rural schools.

This survey, however, tends to show that in this section as elsewhere the object of the tenant farmer under our present system is not the maintenance of soil fertility so much as the making of the best possible labor income for the time spent upon a rented farm. The crop yields of both hay and grain were considerably lower on the farms

occupied by tenants than on those occupied by owners of the section covered by this survey, also the tenant farmer kept one animal unit for each five and a half acres of ground, while the owner kept one animal for every three and a half acres of land. Other things being equal, the larger amount of live stock kept by farm owners would have a direct tendency to conserve the fertility of their soil as compared with the soils of rented farms. Unquestionably the introduction of a system of long-time tenantry would be better for the rented farms of this country, but in order to introduce such a system it must be made as attractive to the tenant as the plan under which he now works.

Vocational Training.

In some of the sectional discussions at the meeting of the National Educational Association which was held in Detroit last week, vocational training came in for some vigorous criticism on the part of some of the prominent educators at the meeting. The idea advanced was that at the early point in the child's life when vocational education is applied it is impossible for him to have an intelligent preference as to the occupation or calling which he would follow, and that a natural consequence of vocational training would be that the children of wealthy or well-to-do parents who had forethought for them would in future years get the "white collar" jobs while the children of the laboring classes would be by the very trend of their education compelled to earn their livelihood by manual labor.

It seems quite possible that the educators offering this criticism may have founded their argument as an erroneous hypothesis. The training for which vocational education fits the child should demand the joint labor of both mind and muscle, which is the most healthful and not the least remunerative kind of employment which the child could choose for himself.

So far as a rural application of this argument is concerned, it may be said without fear of successful contradiction that country children are not competent to determine whether they will follow agriculture or some other work as a life vocation unless they know more about the possibilities of agriculture and the interesting phases of the occupation than they gain in merely doing chores and other jobs about the farm which the older members of the family so often find it very convenient to have the children do. Teaching elementary agriculture in rural schools will unquestionably unfold the attractive possibilities of farm life to the growing mind in a manner which observation from the child's standpoint would never suggest.

The teaching of agriculture in the public schools does not mean that every country boy will become a farmer. Vocational education along any other line does not mean that all students who are given such instruction will follow similar lines throughout their active careers. Knowledge thus gained cannot, however, fail to be an available asset, as was formerly recognized when every young person was bound out to learn a trade. At the same time, the mental discipline will perhaps be quite as valuable as that derived from many of the subjects now included in the country school curriculum.

Hauling the Crops to Market.

The Bureau of Crop Estimates of the U. S. Department of Agriculture has recently completed an inquiry into the labor involved in hauling of the crops grown upon American farms to the market towns or shipping points. This investigation shows that the average haul from farm to market is six and a half miles. Something of the task involved is revealed by the estimate made as a result of these investigations that it would require something like 15,740,000 days for one wagon to haul only the marketed portion of the

three most important farm products of the country, namely, wheat, corn and oats. It is estimated that it requires approximately a half day for the average farmer to make a round trip to a market town.

The importance of improved roads as a factor in the marketing of the country's crops is shown by the fact brought out by this investigation that the size of the average load hauled has nearly doubled since 1906, at which time it was estimated that an average day's marketing of wheat was 56 bushels as compared with 112 bushels at the present time and a similar comparison of averages with other important crops.

In connection with this estimate of the average haul the maximum and minimum for various sections of the country will be of interest to the reader. The longest hauls were found in the Rocky Mountain states, of which Nevada holds the record, with an average haul of all farmers of 18 miles. The shortest hauls were found to be in the middle west, Ohio being at the bottom with an average farm to market haul of four miles.

In the matter of marketing the country's crop alone any reasonable expenditure for the betterment of country roads would seem to be well justified by these statistics, to say nothing of the greater facility for travel for other purposes which better roads will insure and the more attractive appearance which they will present all along the line in every farm community.

An Agricultural Leader.

This title could be applied to few men as fittingly as to Henry Wallace, veteran publisher of Wallace's Farmer, to whom death came without warning while attending a meeting of the Iowa Laymen's Missionary movement in his home city of Des Moines, Iowa, on February 22.

While Mr. Wallace achieved well earned national prominence in the field of agricultural journalism and as a leader in various other activities hav-



Henry Wallace.

ing for their purpose the betterment of agriculture and country life, his early years were spent in the ministry. He was a native of Pennsylvania and entered the ministry in 1862, accepting a pastorate in the middle west the following year. In 1880 ill health forced him to retire from the ministry and he took up farming as an avocation. So great was his interest in, and aptitude for, agricultural work that he at once manifested qualities of leadership in his new profession, and in 1883 he was called to the editorship of a farm journal in the middle west.

In 1895, together with his three sons, he established his own paper, Wallace's Farmer, of which he was the head until his death. Notwithstanding the fact that during some years of his active life he labored under a handicap

of poor health, Mr. Wallace's period of usefulness was longer than that of most men, he having attained to the ripe age of 80 years at the time of his death. He is survived by a family of three sons and two daughters, with whom an exceedingly wide circle of friends and admirers will unite in mourning his loss.

HAPPENINGS OF THE WEEK.

Foreign.

The European War.—Last week interest was revived in the western front by the tremendous German drive on Verdun in northeastern France, which began February 21 and still continues after eight days of battle. The French lines have been forced back along practically all of a 25-mile front and the advanced positions of the Germans enabled them to strike at Verdun from three sides, the northwest, north and east. Early this week the news indicated a slackening in the onslaught of the Kaiser's forces and the renewal of confidence on the part of the French in their ability to hold out against the invaders. Last week Fort Douaumont, an armor-protected position, was taken by the Germans, together with several smaller villages, but it appears that the point still remains in dispute and was the center of a great struggle early this week. Throughout the remaining portions of the western front engagements have occurred, but none of them approached in magnitude that about Verdun. The Balkan situation remains unchanged and there is nothing reported from the European Russian front nor on the Italian lines. The Russians, however, in the Caucasus region have been pushing their troops rapidly into Turkish territory after the capture of Erzerum and the latest reports indicate that the Bagdad railroad which forms communication between Constantinople and the Egyptian front is now being threatened by these invading forces. A Turkish detachment was attacked and routed by South African troops in the Egyptian theatre last week.

The colony of Newfoundland has voted not only to prohibit the sale and manufacture of intoxicating liquors, but also the importation of such beverages.

Three merchant vessels which recently sailed from South American ports under neutral flags are reported to have been transformed into German sea raiders on the Atlantic. To prevent boats leaving United States ports for this purpose a special order has been issued to government officials in charge to maintain the closest scrutiny of all vessels sailing under neutral flags.

Gen. Carranza of Mexico, announces the authorization of an issue of a half-billion dollars in paper currency to be based on a gold reserve. Former issues of paper money will not be repudiated but will be considered a loan and as rapidly as a sound economic policy permits these loans will be redeemed. Taxes are to be redistributed and they will form an important part of the foundation to the new financial policy of that government.

Two British ships were sunk by mines off Dover, England, Sunday, and it is thought that 40 persons were drowned or killed as a result.

The German government has assured the United States that food and clothing sent from this country for the relief of the besieged residents of Poland will not be confiscated by the German forces.

National.

Violent earthquake shocks were felt at Washington Sunday morning.

A comprehensive scheme looking toward the prevention of floods in the lower Mississippi valley is receiving careful consideration from congressmen of the central states and the plan will be discussed in a conference at Washington this week. Recent floods have impressed the necessity for such an undertaking.

The different base ball clubs are enroute or have arrived at their training points in various sections of the south. The Detroit Tigers will be located at Waxahachie, Texas.

Mayors of Michigan cities will meet in Grand Rapids to plan for a campaign looking toward a reduction of insurance rates in Michigan.

Business men of Adrian are planning the organization of a military company patterned after the one started in Detroit some months ago.

An outdoor rifle range is being provided for at the Michigan Agricultural College. This will enable the students on the rifle teams to practice under more normal conditions.

The Michigan State Live Stock Commission in co-operative with county agents and government experts has inaugurated a campaign of education looking toward the control and eradication if possible, of hog cholera.

Beans and Soil Fertility

PLEASE allow me to write my observations and experiences with beans. In the years of 1864-5 my cousins, coming to Michigan from New York state, used to boast of their skill and endurance in pulling beans by hand, and assured me that bean growing was a very remunerative and important part in the farm rotation. At that date we grew no beans in Michigan, comparatively speaking, but a few years later I heard that in Northern Ohio and Southern Michigan whole fields were planted to beans, and finally the planting spread northward and was in full favor in Jackson county, Michigan, in the years 1890 to 1900. Since that date the growing of beans as a field crop has passed on to the north and now seems to be in favor in Northern Michigan and Wisconsin. No beans are grown in New York, Northern Ohio, or Southern Michigan now, as compared to the crop at one time. At or about the year 1900 my acreage was 20 to 60 acres; some of my neighbors grew 100 acres.

We grow none now and would not allow them planted on the farm. We know they are the most exhaustive and soil poisoning of any crop we ever grew. Along with rye, they have about ruined our farms, and it is time great publicity be given the facts regarding the deleterious effects of beans and rye on farming lands. Even yet, among tenant farmers most especially, one sees a field planted to beans, but as a crop they are always a failure. I think that every bushel of beans ever grown in Michigan cost the farmers of the state at least \$5 per bushel, and I have grown a carload—550 bushels—on 18 acres at one crop. Yet I think in the ten years I followed bean growing, I lost money by so doing. It takes only a glance to convince one. Just look backward, see the burned-over land, so to speak, where once they were enthusiastic over bean growing, now they do not grow them and will not allow them planted. I have asked our college men what these beans take from the soil; they do not know. The farmer of the Dakotas does not know what flax takes from his black soil, but he knows right well that flax will soon exhaust even his "bottomless fertility," and so he inserts a printed clause in his farm leases, that the tenant shall not sow flax without the written consent of the owner.

Right soon, now, the contract man will be out among the farmers, offering to let contracts and furnish the grower with seed to plant. Some farmers are already so poor from bean and rye farming, that the matter of seed is a serious problem and so they are ready to try again. My hope is that they plant corn and sow clover, and give up the bean planting and rye sowing hallucination.

Jackson Co. E. M. SANFORD.

It is unquestionably true that very many Michigan farms have been badly depleted by reason of excessive cropping to beans and rye. Formerly we believed with the writer that the blame for this fact might properly be ascribed to the bean crop, as this seemed to be indicated as the cause of the very evident effect by both experience and observation. More extended observation and a closer study of the problem has, however, more recently indicated that the difficulty lies with the poor methods used in the management of these depleted soils rather than with the bean crop, which under those methods of management contributed in a marked degree to their depletion.

The best available data shows, however, that the bean crop removes fairly large quantities of fertilizer ingredients from the soil. Dr. Van Slyke, of the New York station, in his work on "Fertilizers and Crops," gives the amount of actual plant food removed

from the soil by a 25-bushel per acre crop of beans as 60 pounds of nitrogen, 18 pounds of phosphoric acid and 19.5 pounds of potash. In addition the bean straw removes another 28 pounds of nitrogen, six pounds of phosphoric acid and 38 pounds of potash, making a total of 88 pounds of nitrogen, 24 pounds of phosphoric acid and 57.5 pounds of potash.

Inasmuch as the bean is a leguminous plant, it will, when grown under favorable conditions, secure a portion at least, of the nitrogen required for its best development from the air through the development of root nodules, so that the plant food actually removed from the soil would not suffer by comparison with that removed by a 50-bushel corn crop (shelled) which according to the same authority would, including the stalks, remove from each acre of soil 78.4 pounds of nitrogen, 27.6 pounds of phosphoric acid and 55.2 pounds of potash. Of course, in the case of the corn, the crop would generally be fed out upon the farm, and its fertilizing value thus retained. This, however, would also be the case with the bean straw, which contains the larger proportion of the potash removed from the soil by the bean crop, so that the actual value of the fertility removed from the farm by the selling of the beans is not greatly out of proportion with that which would be removed by other cash crops, as for instance potatoes, which are not generally considered an exhaustive crop in their relation to soil fertility.

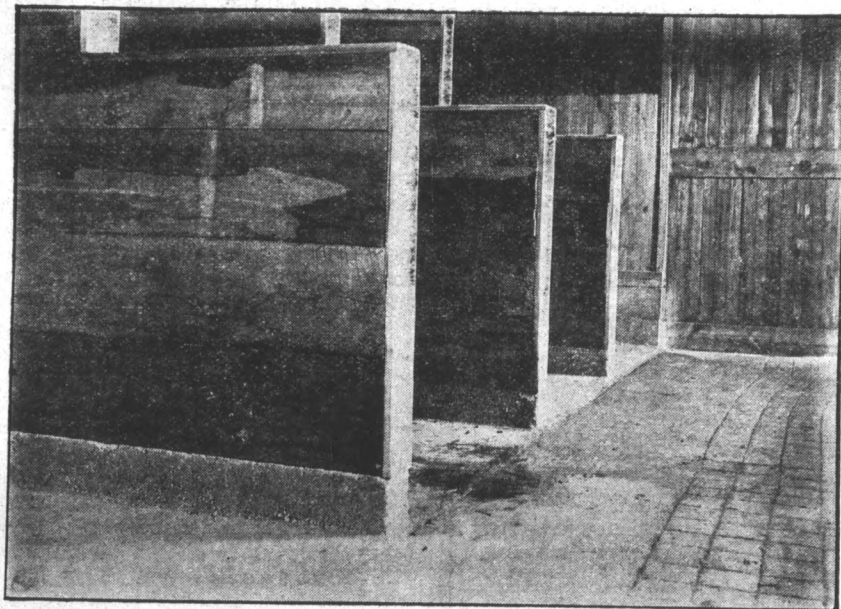
There is, however, a great difference in the usual method of soil management in the growing of potatoes and the growing of beans, at least as beans were formerly grown upon the average farm during the early history of bean production in Michigan. At that time beans were usually given second place in the crop rotation, often following corn as an extra crop in fitting the land for wheat instead of summer fallowing as the practice had formerly been. Thus, while the length of the crop rotation was not increased in point of time, a second cultivated crop was produced on the land which drew heavily on the available supply of the three principal elements of fertility in the soil. In addition to this, the humus content of the soil was rapidly depleted by this practice and its mechanical condition thereby injured, in addition to the increased draft upon the store of available fertility in the soil.

Potatoes, on the other hand, have always been given first place in the crop

rotation, generally being planted on clover sod and given good supplementary fertilization, for the reason that this has been recognized as necessary for the growing of profitable crops, since the potato crop is one upon which a good deal of labor must be expended and a good yield is essential to the making of a profit in its production.

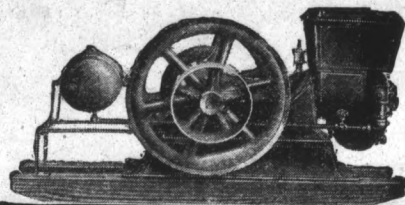
On farms where beans have been used the same way in the crop rotation, being planted on clover sod and given supplementary fertilization of phosphate fertilizers and followed by wheat in which the land is again seeded to clover, there has been no such soil exhaustion as was noted by the pioneers in bean production, particularly where rye was made the small grain crop in the lengthened crop rotation and upon failure to get a clover seeding the land was again plowed for a repetition of the crop rotation. As a natural consequence of the methods of management above noted and the leaching of the available lime content from the more open soils, many of these soils became acid and a poor home for the nitrifying bacteria peculiar to the clover family, so that even in reasonably favorable seasons, it was difficult to get a stand of clover. Continued cropping with rye under these conditions closely gleaned the available fertility from the soil, the supply of humus was quickly depleted to a point where these soils were still more susceptible to the effect of drouth, and the problem of the restoration of these lands to their former state of fertility became a vexed question to the farmers who owned them. As a natural result, the bean crop was made the "goat" in this case and blamed for this difficulty, which was very largely due in a majority of cases to faulty farm management.

The development of the bean industry in the state has indicated that the crop is more adaptable to the heavier soils as a cash crop between grass and wheat than upon the more open soils of the state, which are generally adapted to the growing of potatoes as a cash crop. Still we believe that the farmer who has the special equipment needed for growing beans cheaply and lacks the available labor for the successful handling of the potato crop may safely grow beans even upon the more open soils without well grounded fear of serious soil depletion, if beans are made to follow clover with supplementary fertilization in a short crop rotation in which they are made the only cultivated crop, being alternated with corn in succeeding cycles following clover on the same land.—Editor.



Concrete Abutments for Horse Stalls

The accompanying cut shows a horse stall designed by R. C. Reynolds, of Branch county, which has proven very satisfactory. The first place for a stall to rot is at the floor where it comes in contact with the stable liquids. In this stall that defect is entirely eliminated. The abutments are six inches high and six inches wide. This makes the top of the concrete four inches above the floor after planing the stalls. Bolts were imbedded in the concrete for fastening the stalls.—I. H. W.



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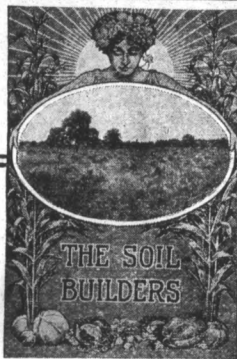
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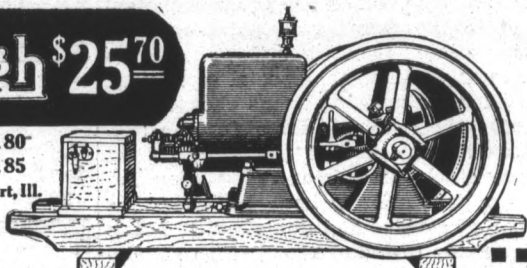
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"The coulters do the work." They cut and crush clods, turn the soil twice, pulverize and mulch at one operation. There's an "Acme" for every purpose—sizes 3 to 17 1/2 feet in width. Send for free book—now—and learn more about these most dependable of all seeded builders.

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The Farmer's Vacation

VACATION does not worry many farmers. Sometimes there is nothing of the kind on their schedule. However, the farming business requires the same skill, mental alertness and hard work that is demanded of the city business man and it follows that a change is advisable at some time during the year. A vacation should not be looked upon as a sort of oasis of joy sandwiched between a long period of dull uninteresting work entirely devoid of pleasure. The man who cannot find happiness in his own home is nearly hopeless; he will never be able to find much real joy in any other place. A vacation period does not mean that you can throw over all of the hardships of your home life, the home conveniences will be appreciated when you are away, and there will be many inconveniences accompanying travel which will make you appreciate your own home.

The city man takes his vacation to obtain fresh air and sunshine away from his usual environment. The farmer can now live a healthier life than the famed American Indian who spent the winter in a smoky tent and stuffed one week but starved the next. The farmer does not need a vacation for his health if he follows the simple rules of hygiene and sleeps with his window open. His vacation must be a mental rejuvenation which is brought about by seeing new things foreign to the usual routine of his daily life. It is the change which makes the vacation valuable.

We are apt to take our work too seriously. My city friend smiles pleasantly as he observes me seated at the milk stool. I see nothing to laugh at. He greatly enjoys my plight during spraying time when the hose bursts and deluges me with lime-sulphur at 200 pounds pressure. I see nothing humorous in the situation. I think I have jokes on him that are too numerous to mention. Both of us take our own jobs too seriously and regard the other fellow's life work with too much levity. It does the city man good to visit the country. The farmer's vacation in the city may be very beneficial as it means a change from the scenes of the daily life and it is worth a great deal to observe how the city man lives. Nearly 100 per cent of the farmers can return from a vacation in the city and thank their lucky stars for a home in the country. Their vacation gives them a new insight into the prospects in their own business and they learn to appreciate the farm.

When on the farm we are apt to envy the conveniences of city life and forget all of the handicaps. At an earning capacity equal to the average farmer who leaves the farm for the city, you may be able to live in a "cozy flat." All flats in Detroit are cozy, they are not constructed along any other lines. In many of these flats the janitor does all the work, he sweeps the walks, builds the fires, empties the ashes, washes the windows, etc. The delivery boy will bring in your food and all you have to do is to live in the place and pay the bills. In a well ordered jail you would receive the same attention as far as modern conveniences are concerned. However, you pay the bills and after collecting the usual monthly bunch of receipts you begin saving up wages for the next installment. At the end of several years you have enough receipts to paper a mansion and not enough money to buy a portable pig sty on the installment plan. That does not apply to the business man with capital. It is just an example of what can happen to a lot of people who go to a city with the idea that high wages mean affluence. Five dollars jingles big in the country except when the taxes are due. In the city you are taxed to the limit every month and there is no room for a cow and a flock of hens on the back steps of that cozy flat. A vacation pays. Go

to the city and study its conditions and then return home with more appreciation of your present possibilities. Of course the above statements do not infer that every city means flat life for the man of moderate means.

A little co-operation with a good neighbor and a two weeks' vacation is possible. The farm animals need their daily care and it simply means, "Bill, I expect to help you and you help me and we will both have a good time and not lose much money." The vacation in the city, especially a city like Detroit, will prove profitable and you can see all of the good things and not have to stay there long enough to become tired of them.

The farmers' institutes are in many cases an excellent way to spend a vacation in a profitable manner. New ideas are gathered for use during the year and the visits with friends are an inspiration. Personally I like to consider a visit to the big Round-up Institute more as a business trip than a vacation. Institutes are fine and so are picture shows, but the farmer who visits the institute and manages the trip with a ratio of one lecture to two shows, certainly misses a lot of good points that directly concern the farming business.

Michigan is a state favored with lakes. A trip through the St. Clair river and on through Lake Huron to Mackinac Island will be a revelation to the inland farmer who never has enjoyed such an excursion. It will cost a little money but not much, and it will do a great deal to make a man tighten up his belt a couple of notches and work hard for another vacation the next year.

Considered from every angle the value of vacations depends on their effect after you return home. The change should make a man appreciate his own home and make him more capable to carry on his daily work. Otherwise the vacation is a failure. Most of our time must be spent at home and consequently most of our joy in life must come from the home environment, but on the other hand, a change is necessary at times and the man who uses his vacation time properly may have less desire to leave his home farm and seek the work which other men can perhaps perform more efficiently. Every business becomes a little tiresome at times and a short vacation is just the tonic that the farmer needs at least once a year.

Ingham Co.

R. G. KIRBY.

START AN ACRE OF ALFALFA.

The alfalfa problem is one which I have studied thoroughly and now have six acres which is doing nicely. This was seeded in 1914 at quite an expense for liming, manuring, etc. I have since found from my own experience that any farmer can start one acre of alfalfa each year by saving the ashes from his stove and applying it, together with a little stable manure. I wish every farmer in Michigan could see a piece of alfalfa I have started where I raised early potatoes last year. The potatoes yielded at the rate of 200 bushel per acre. Any farmer can be as successful with alfalfa by the following method: Manure the land well early in the spring, plow early about eight inches deep. Plant early potatoes as soon as weather conditions will allow. Cultivate the potatoes often as long as you can without injury to the crop. This pulverizes the soil finely and makes a good firm seed bed. Before the last cultivation apply your ashes and alfalfa seed. Have your potatoes planted in check so you can cultivate same both ways. If the farmers of the state generally would adopt this method, they could grow profitable acres of alfalfa by such use of ashes which are now too often allowed to go to waste.

Lake Co.

S. M. LONG.

FARM NOTES.

Blighted Potatoes as a Source of Seed.

Will nice white potato seed which has been selected from a crop which was blighted, be safe to use?

Oakland Co.

F. M.

While scientists are not fully agreed as to the proposition of the extent to which potatoes grown from blight-infested seed stock will manifest the disease from that cause, yet it is pretty generally agreed that this is one method if not a principal method, by which the potato blight is carried over from one season to another, so that when favorable weather conditions appear the spores are present to a degree which makes the infection of the crop and the progress of the disease rapid.

The best authorities do not favor the use of seed from bins or pits which are infested with rot caused by late blight. A season like the present is, however, unusual, in that the blight was almost everywhere present, although not to an extent which ruined the crop as it did over a large area of southern Michigan. Under these conditions it would be difficult to secure seed known to be entirely free from such infection. Last year the blight attacked the potato crop over a large area in southern Michigan at an unusually early date, so that the plants were killed long before digging time. This fact rather than the design of the average grower, led to the delay of digging the tubers several weeks after the vines were killed, in most instances. This is the very treatment which is advised by the best authorities to prevent the serious infection of the tubers with the spores of the late blight which induces rot in storage. As a consequence, very many of the crops have kept as well as in ordinary seasons when there was little if any blight noticeable in the fields. In such cases it is the writer's opinion that it would be quite as safe to depend upon the best of this immature seed as to purchase seed of unknown quality from a distance, which might have been infected with blight at a later date and may have been sorted out from stock which was affected to a degree which would cause considerable rot.

The seed potato specialists of the country who have made the greatest reputation in that line advocate the planting of immature seed for best results. Inasmuch as the blight-infested potatoes were checked in their growth when only partially grown, they would have the same merit from this standpoint as potatoes which were dug in an immature state for seed purposes.

If one has potato stock which shows evidences of blight infection through the rotting of tubers in storage, it would be unwise to use same for seed this year. If one could be certain of getting potatoes which were not blighted, this would be a safer plan to follow, but where there is no certainty of securing such stock, the selection of good sound seed from stock which has kept well through the winter even though the crop was shortened by the blight, would seem to be the next best expedient.

A Poor Stand of Alfalfa.

I have three acres of alfalfa sown in oats last spring. Had a good stand last summer, but it seems as though it is failing. I did not lime the ground. I have found that the soil is acid. How must I treat the ground to make it grow? How much lime to the acre, and what kind of lime is best?

Ottawa Co.

L. V. E.

It is possible that the application of lime to this stand of alfalfa might correct the soil acidity and the stand be saved, but unless there should appear areas of dark healthy colored plants in the field when the growth starts next spring, this would be rather doubtful, as that would indicate that there is little, if any, inoculation of the soil with the bacteria peculiar to the alfalfa plant.

If a liberal application of ground limestone were made to this soil, however, it would tend to correct the acid

John Deere Implements



John Deere Syracuse Plows

The Plows with Perfect Fitting Parts

SYRACUSE shares fit perfectly—extra shares go on easily. A smooth joint is formed between share and moldboard and share draws up snugly to its place.

Remember that Syracuse cast shares are chilled throughout their entire cutting edge and point. The under side of point and cutting edge is also chilled—of vital importance in preserving the proper pitch and extending the period of usefulness.

Two bolts in the share instead of one and there is a rib on back of share that strengthens share and standard. Lug holds moldboard and share closely together.

In addition John Deere Syracuse Plows are built with long handles, which produce steady running qualities and make the plow handle easily in the furrow.

Write for free literature on the 31 series, combination plows, for use where land is somewhat rolling or where it is desired to turn furrows smoothly up or down on sloping land.

Also the 342 series, combination plows, for use in sandy or gravelly soil, turf or stubble; the 26 series hillside plows, light weight, clean turning plows that do excellent work in hillside or level land.



John Deere Corn Planter

The Accurate "Natural Drop" Planter

ACCURATE—because it has the "Natural-Selection" drop—an improvement over all other methods.

Kernels do not have to be tipped on edge to enter the cells. Surface of hopper bottom and openings to seed cells are oblique, or sloping. The kernels naturally move toward and fill the cells.

A full—variable drop planter. Plants two, three or four kernels as desired—all you do to change number in the hill is to move foot lever.

Drilling distances varied, and change from hilling to drilling or back to hilling made just as easily.

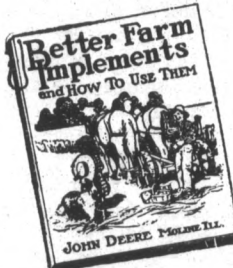
All corn plates for this planter have 16 cells. Therefore, the same drilling distances are obtained with one plate as can be secured on other planters that require 8, 12 and 16 cell plates.

The gears are always in mesh and can be shifted at any time (even when in operation) to change drop or drilling distances.

Investigate the John Deere tip-over hoppers, quick detachable furrow openers, underhung reel and disc marker without rope.

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BOOK FREE—168 page reference book—tells all about a complete line of farm implements and how to adjust and use many of them. A practical encyclopedia of farm implements. Worth dollars. Describes and illustrates: Plows for Light Tractors; Steel and Chilled Walking and Riding Plows; Disc Plows; Cultivators; Spring Tooth and Spike Tooth Harrows; Lister Plows and Cultivators; Disc Harrows; Alfalfa and Beet Tools; Farm and Mountain Wagons; Teaming Gears; Manure Spreaders; Inside Cup and Portable Grain Elevators; Corn Shellers; Hay Loaders, Stackers, Sweep Rakes, Mowers, Self-Dump Sulky and Side Delivery Rakes; Hay Presses; Kaffir Headers; Grain Drills and Seeders; Grain Binders; Corn Binders; Gasoline Engines. This book sent free to every one who states what special implements he is interested in and asks for Package No. A-5.

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ONE man and the Aspinwall plant 5 to 8 acres of potatoes a day—and plant them right. Machine opens furrow, drops seed—any size—any distance, covers, marks next row, and if desired, sows fertilizer all in one operation. Corn, Pea, and Bean planting attachment furnished when wanted.

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60,000 Users. World's Oldest and Largest Makers of Potato Machinery. Will answer personally any questions on Potato Growing. Write for free booklet.

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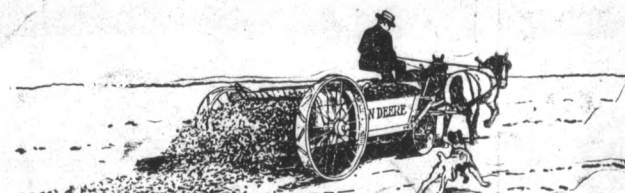
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John Deere Spreader

The Spreader with the Beater on the Axle

ONLY hip high to the top. Wheels out of way when loading. Mounting the beater on the axle is patented. Write for Spreader booklet.

Three exclusive John Deere Spreader features:

- [1] Beater on the axle—nothing else like it. [1]
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John Deere Plows for Light Tractors

High and Level Lift

PRACTICAL—the right size for the average farm. Work with any standard tractor. Controlled by the man on the tractor.

Pull the rope and all bottoms raise high and level. Another pull lets them down. Plows do not clog or gather trash on the turn.

Extra beam and bottom, readily attached, increases regular two bottom plow to three, or regular three bottom to four, as desired.

Equipped with Quick Detachable Shares—save 80% time changing shares. Write for free booklet.



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Steel Frame—Patent Auto Foot Frame—Shift

HIGHLY practical and convenient for working soil all in one direction on hillsides or elsewhere. Also adapted for plowing irregular shaped pieces of land or any other kind of plowing.

Auto foot frame shift works with great exactness. Slight foot pressure swings frame and moves working plow the degree required. Patented.

Automatic horse lift—no work for operator. Each plow independent of other—each has own depth regulating lever and lifting device.

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WHITE SWEET \$5.40 CLOVER 5 Per Bu.

BIGGEST MONEY-MAKER KNOWN—INVESTIGATE The greatest forage plant that grows. Superior to all as a fertilizer. Equal to Alfalfa for hay. Excels for pasture. Builds up worn-out soil quickly and produces immense crops, worth from \$50 to \$125 per acre. Easy to start, grows everywhere, on all soils. Write today for our Big 100-page free catalog and circular about unhulled and scarified hulled sweet clover. We can save you money on best tested, guaranteed seed. Sample Free.

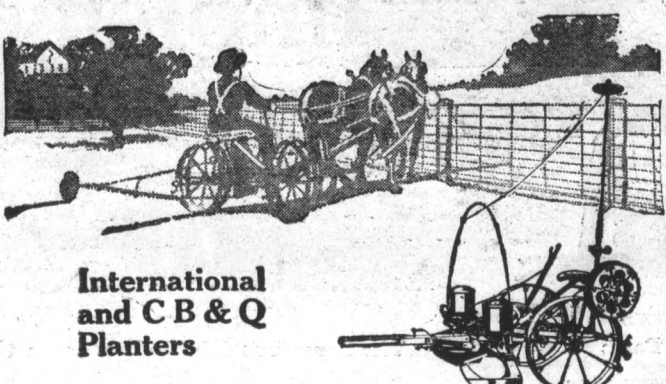
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SWEET CLOVER \$5.50 PER BU.

White Blossoms. Biggest bargain in unhulled Sweet Clover this season. Have scarified hulled seed at low prices. Wonderful money-maker. Best paying crop on the farm today. Builds up worn out land rapidly and produces heavy, money-making crops while doing it. Splendid pasture and hay; inoculates your land for Alfalfa. Keep up with the times. Investigate. It will pay you to get our free samples and prices and big Profit Sharing exclusive Field and Grass Seed Guide. It's free. AMERICAN MUTUAL SEED CO., Dept. 981 43rd and Roby St., Chicago, Ill.

PURE FIELD SEED Clover, Timothy, Alsike, Alfalfa and all kinds of PURE FIELD SEEDS direct from producer to consumer; free from all noxious weeds. Ask for samples. A. C. HOYT & CO., Box M, FOSTORIA, OHIO.

Profit from Every Hill



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REPUBLIC OF AGRICULTURE

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NEXT in importance to good, tested seed, every authority on corn raising places good planting. Evenly spaced hills; the same number of kernels dropped in each hill; even depth of planting; a reliable foot drop for finishing the field—these are the features demanded of a planter by every careful corn raiser.

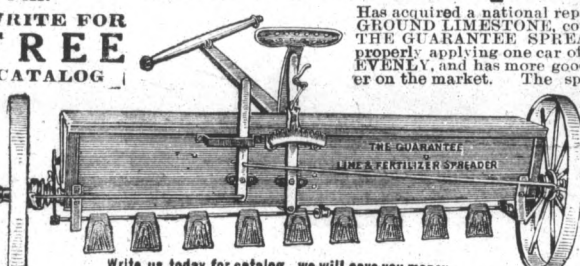
This is the standard to which the builders of International and CB & Q corn planters work, and excellent planting is the result. Note, first, the substantial frame and wheels—the foundation of the machine. Then see how simple are the arrangements that enable you to drop 2, 3, or 4 kernels in every hill, or to drill in your corn with accurate spacing between the kernels. The use of an International or CB & Q corn planter gives you assurance that every hill of corn on your farm will produce its full share of corn profit.

Try one this year. Ask the local dealers, who handle these machines, to show you their good points in detail, or write to us for complete information about reliable International and CB & Q corn planters.

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Champion Deering McCormick Milwaukee Osborne Plano

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Your Land With

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Ground lump lime, hydrated lime and ground limestone (absolutely dry).

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The Strongest in Ohio

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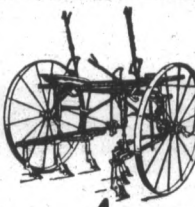
Pulverized lime rock for "sour" soils. Write for LOW PRICES DIRECT TO YOU and we will send sample and full particulars. Write to office nearest you.

LAKE SHORE STONE COMPANY,
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LIMESTONE

For general farm use. Finely pulverized, made from highest high calcium stone. Quick shipments in closed cars. Let us send sample and price. Northern Lime Co., Petoskey, Mich.

Costs You Only 3 Cents Per Acre



The KRAUS cultivator costs only 1 1/2 to 3c. per acre as compared with 9c. on the average cultivator according to government figures. These figures show you the economy of buying the

KRAUS PIVOT-AXLE CULTIVATOR

A touch of the foot lever moves shovels and wheels sidewise, simultaneously. Cultivates hillsides, uneven land and crooked rows as easily as level ground. Hatchet gauge secures even depth of cultivation.

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The Grand Detour Junior is the lightest tractor plow built, yet it is reinforced and double-braced where other makes are weakest. Hitch a Junior on behind and watch your plow troubles vanish. Send today for information—name size and make of tractor.

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condition and it could be plowed and re-seeded to alfalfa if the stand did not thicken and make satisfactory growth. We have seen alfalfa make a profitable stand the third year when it did not make sufficient growth to cut any hay at all the first and second seasons. This would indicate that the plants which survived had reached down through the surface soil into a soil area where lime was more plentiful, and that natural inoculation had gradually taken place.

In the writer's opinion, it would be a better plan to delay the application of lime until the soil is again fitted for clover or alfalfa, unless inoculated areas or plants are plainly visible next spring, in which case an application of lime would very materially benefit the stand.

When to Sow Sweet Clover.

When is the best time to sow sweet clover? I have about nine acres to sow. My soil is a sandy gravel.
Hillsdale Co. C. A. S.

Most farmers who have had success in the growing of sweet clover on run-down, sandy soil advocate sowing in the early spring, although like other clovers, it may be successfully sown at any time up until August 1, provided a suitable seed bed is made and weather conditions are such as to permit the early germination and rapid growth of the seed.

Sweet clover requires a firm seed bed for best results, hence it is better to sow on fall plowed ground or land that is fitted without plowing in the spring, otherwise it would be preferable to delay seeding until a firm seed bed could be formed, so as to provide more nearly ideal conditions for the growth of the young plants.

Noxious Weed Seeds in Manure.

Will noxious weed seeds, such as quack grass and Canada thistles, and others, germinate, when put out on the land in manure that is well rotted, or that is freshly made, and make the land foul?

Ingham Co.

R. F.

Experiments have shown that most of the seeds of noxious weeds are effectually destroyed so far as their germinating quality is concerned, by composting in the manner ordinarily practiced by market gardeners. Where the manure is hauled on the land as soon as it is made, or from the yard where it accumulated, the germinating power of the weed seeds which is contained is very little injured and the land will be accordingly made foul by same.

Sowing Lime on Clover Seeding.

Would it be well to sow lime or limestone on last season's seeding this coming spring? If so, about how much to the acre?

Oakland Co.

W. L. L.

While it has been the writer's experience that a poor stand of alfalfa can be improved by sowing lime on the surface without working same into the soil, there would not seem to be the same incentive for sowing it on a clover sod, since under the best methods of farm management and crop rotation the clover seeding will not be utilized for hay or pasture more than one, or at the most, two years. If there is a good stand of clover in the spring when the lime would be applied, there is a reasonable certainty of a vigorous growth of the plants and a good yield of hay or forage.

The principal object in sowing lime to promote the success of a clover or alfalfa seeding is to place the soil in a fit condition to encourage the multiplication of the nitrogen-fixing bacteria peculiar to these legumes. If a good seeding of clover has been secured on this land and it winters through in a reasonably good condition, this is very good evidence that these bacteria are already present in sufficient numbers to insure a maximum success of the clover crop. Very much better and quicker results will be secured in the correcting of an acid condition of the soil by applying lime or ground limestone to the surface of the soil and working it into same when it is being fitted for a crop, as this insures a thor-

ough mixing of the lime with the soil particles so that it can act upon same in solution with the soil moisture. When applied to the surface of the ground it can only so act as it is brought into solution by the rain or snow and percolates into the soil with the moisture thus introduced. For this reason it will be much slower in its action than where applied to cultivated land.

HELPS TO MORE PROFITABLE TIMBER UTILIZATION.

As the woodlot owner is about to remove trees for use as fuel, or to be sawed into lumber, there often arises the question as to which form of product is the more profitable. At such a time, a knowledge of the methods for converting from terms of one form of product to terms of another becomes of value.

Relation of Cords to Cubic Feet Volume of Logs.

Our standard cord of wood measures 4x4x8 feet, but in most sections of the state, the single or short cord is recognized, which contains sixteen-inch stocks, but otherwise has the same dimensions. The standard cord contains 128 cubic feet, but piles of wood have considerable air space between sticks, so that only about 70 per cent of 128, or 89.6 (approximately 90 cubic feet), is solid wood. The short or sixteen-inch cord contains one-third of 90, or 30 cubic feet of solid wood.

The first step is to determine the number of cubic feet contained in the log in question. The only measurements necessary, are the average diameters of the large and small ends of the log, and its length. The volume of the log can be found by the following formula (3.14 x the square of one-half the average diameter x the length of the log in feet). Taking as a concrete example: A log which we wish to find the contents of in terms of cords, has an average diameter of 18 inches and a length of 16 feet. One-half the diameter is three-fourths of a foot, and the volume in single cords is found thus: (3.14 x three-fourths of a foot, squared, x 16), which equals 28.27 cubic feet. To find the number of standard cords, the process is exactly the same, excepting the volume of the log in cubic feet is divided by 90 instead of 30.

Relation of Cord Volume to Board Feet.

A problem which arises more often than that of finding the number of cords contained, from the measurement of logs, is to determine the relative amounts of lumber and cordwood a stand will yield, knowing the estimate of the standing timber, or the scale of the felled timber in board feet. There will, of course, be no question whether the cordwood or lumber has the greater value, if the trees in question are white oak or any of the more valuable lumber species, and markets and saw mills are within reasonable distance. The conversion factor for single cords is 183.3, or 550 for standard cords. If, for example, the timber estimate or the log scale indicates that a number of trees contain 9,000 board feet, the number of single cords is determined by dividing 9,000 by 183.3, and the result is 49.1 cords. In similar manner, the number of standard cords can be determined by dividing the number of board feet by 550. Applying these conversion factors, and the prices of cordwood and saw timber that can be realized, to the results, the exact relative value of the two kinds of product can be obtained.

Woodlot products are harvested with very little knowledge of their actual value, or the relative value of different kinds of wood material into which they can be converted. It is positive and unwarranted waste to cut a tree into stove wood, when it will bring greater returns as saw timber, ties, posts, piling, or any other form of product.

Mich. Ag. Col.

W. I. GILSON.

Fruit and Garden Fertilizers

By FLOYD W. ROBISON

IN most of the discussions which we have had the problem concerning the use of fertilizers has been considered more in its relation to general farming than in its relation to specific farming. Whether or not the wheat crop is benefited by this or that particular fertilizer, or what fertilizer to use on corn is a consideration which concerns simply the question of the securing of a maximum crop of these materials. We knew well that at this time a careful study of fertilizers is essential in order that a maximum amount of wheat may be produced economically or that other general farm crops may be put in the position of showing that small gain over the cost of production which is the essence of the farmer's profit.

Fruit Grower and Vegetable Grower Interested in Quality and Early Maturity.

In the production and marketing of small fruits and vegetables, however, there are other items of consideration. Of course, the fruit and vegetable grower is interested in a maximum crop but he must take into consideration likewise the influence of the particular kind of fertilizer which he uses, on the quality, as well, of the crop which he produces. Not only this, but he uses fertilizers as well to expedite the growth and early maturity of the crop. It makes very little difference at just what exact period the ripening of wheat takes place. It does make a difference whether a particular fertilizer hastens or prolongs the growing period of corn because, in the state of Michigan the growing period for corn is not any too long and we find this same thing to have been true regarding other crops during the past year. But generally with our general crops the farmer is not greatly concerned with the question of the early maturity. He is concerned solely with the question of maximum crop. In vegetable and fruit growing, however, one of the great essentials is early maturity and the more prominent vegetable and fruit growers know that with early maturity the intelligent use of commercial fertilizers is very closely wrapped.

With such vegetables as radishes, lettuce and melons the question not only of early maturity appears, but the question of flavor and texture of the mature product, and experience has shown that all of these items are more or less connected with fertilizer considerations.

The Vegetable Farm Soil is in Constant Use.

On soils which are handled in an intensive way, that is on which vegetables and small fruit growing is practiced, intensively, there are numerous drains upon the soil itself. It has no period of rest and relaxation, and there is not the opportunity for the application of cover crops and green manuring which is such a rejuvenator of soils in general farming operations. Consequently the humus of which the soil is continually robbed must be replaced through the medium of fertilizers. This is probably the reason why ordinary farmyard manures have been so popular among vegetable growers and fruit growers. We venture to say that there is no fertilizer available of any description which has such an untold benefit upon the soil of the market gardener and fruit grower as barnyard manure. Consequently it is decidedly unfair to this organic fertilizer, the manures, to compare them with other commercial fertilizers from the standpoint of the nitrogen, phosphoric acid and potash which they contain. It is always unfair under any consideration to compare barnyard manures with commercial fertilizers from a basis of the administrative agents alone, which they supply for it is the general toning up of the condition of the soil,

the particularly adaptable form of humus which it promotes and the biological conditions which are favored by the introduction of barnyard manure which gives it such a decided advantage over other forms of fertilizers.

According to Durst, compiled after Wolf and Goessman, the following represent the average fertilizer ingredients removed from the soil by the various vegetable and farm crops with the values estimated of these products.

Value of Administrative Agents Removed in Vegetable Crops.

Take, for example, the potato crop, with its estimated yield of 150 bushels per acre. This yield of potatoes will remove from the soil an average of 30.6 pounds of nitrogen, 6.3 pounds of phosphorous and 43.2 pounds of potassium, with a computed value of \$9.34 per acre.

The turnip yield of 800 bushels per acre will remove 79.2 pounds of nitrogen, 13.2 pounds of phosphorous and 105.6 pounds of potassium, with a computed value of \$23.50 per acre.

The carrot, with an estimated yield of 500 bushels per acre will withdraw 55 pounds of nitrogen, 12.5 pounds of phosphorous and 62.5 pounds of potassium. The value of this crop from the fertilizer consideration alone is \$16 per acre.

Onions with a yield of 600 bushels per acre withdraw 92.3 pounds of nitrogen, 20.6 pounds of phosphorous and 72.2 pounds of potassium. The value of the fertilizer ingredient at current prices is \$34.25 per acre.

Lettuce, showing a yield of 10,000 pounds per acre removes 23 pounds of nitrogen, three pounds of phosphorous and 30.1 pounds of potassium, at a value of \$6.71 per acre.

Asparagus yielding 3,600 bushels per acre withdraws 11.5 pounds of nitrogen, 1.4 pounds of phosphorous and 3.6 pounds of potassium, with a value of \$2.66 per acre.

Cabbage with a yield of 12 tons per acre removes 72 pounds of nitrogen, 12 pounds of phosphorous and 86.4 pounds of potassium. The fertilizing value is \$20.78.

Tomatoes, with a yield of 500 bushels per acre, withdraws nitrogen, 48 pounds; phosphorous, 5.6 pounds; potassium, 14.29 pounds.

Cucumbers, yielding 500 bushels per acre, withdraw 40 pounds of nitrogen, 12.5 pounds of phosphorous and 50 pounds of potassium, with a value of \$12.25 per acre.

Compared with this we have corn with an estimated yield of 100 bushels per acre, which is very high, which removes 100 pounds of nitrogen, 17 pounds of phosphorous and 19 pounds of potassium, with a value at the above rates of \$22.84 per acre.

Wheat, 50 bushels per acre, removes 71 pounds of nitrogen, 12 pounds of phosphorous, and 13 pounds of potassium, with a value of \$16.18 per acre.

Oats with an estimated yield of 75 bushels per acre removes 49.5 pounds of nitrogen, 8.3 pounds of phosphorous and 12 pounds of potassium, with a value of \$11.45 per acre.

Vegetables Draw Heavily on Potash.

The interesting thing as shown in the above tabulations is that the vegetable crops remove fully as much, and in most instances more, plant food material and the value of these mineral ingredients is greater in a small fruit and vegetable crop than in our standard farm crops. It is significant, however, that this difference consists almost entirely in the excess of potassium which is removed by the vegetables. Nearly all vegetables, especially those of the root type, draw heavily upon the available supply of potash in the soil and that is the element which at the present time is giving us our greatest concern.

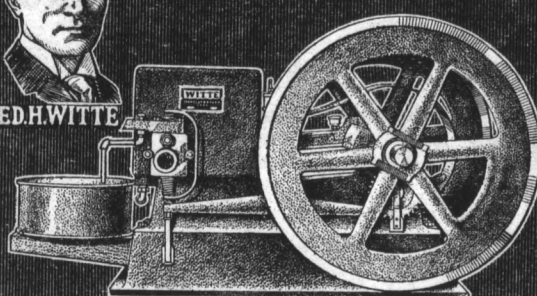
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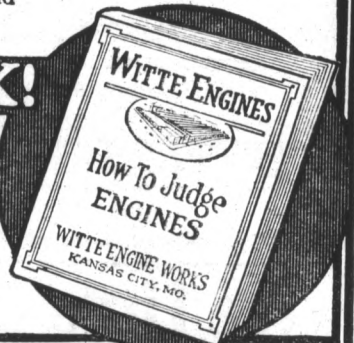
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Equipped with vine separator, which deposits trash and vine at side of row. Elevator is 7 feet long and 22 inches wide—designed to accommodate the heaviest rows. Hillside lugs and stone shovels furnished when desired. Write for free circular of "FARM MACHINERY OF MERIT" and detailed description of THE LITTLE GIANT—THE PERFECT DIGGER.

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THE RAINY SEASON CONQUERED BY THE TOWER SYSTEM OF CORN CULTURE

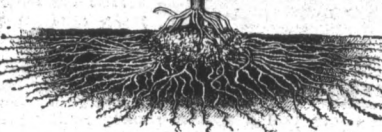
Tower Cultivators went into the fields three days earlier than the shovels after a rain. Earlier maturity of the corn was the result.

V. H. Peck, Hull, Ill., writes: "We can use surface cultivators after a rain three days sooner than a shovel plow and do a better job."

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Spares All Corn Roots



These Corn Roots within Five Inches of the Surface.

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Many thousands of farmers of the country use the "Tower" exclusively. Nearly every grower of Seed Corn uses the Tower System because it is proved the best known.

Reader, be sure your Cultivator this season has the name "TOWER" on the tongue. Write us for free literature.

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WANTED: Man to run grain and stock farm, must be thoroughly competent; one with technical knowledge would be more favorably considered. Farm about 400 acres, near Detroit. Application with references only will be considered. Box M. 212, in Care Michigan Farmer.

from the soil by the root and vegetable crops it is interesting to note how intimately nitrogen is associated with the potassium and phosphoric acid in building up the enormous superstructure which is needed in most vegetable crops. We know that nitrogen and organic matter have very much to do with the size of the growth of this type of farm products. In fact, it is so directly associated with the growth that on those soils which may happen to be what is known as "over-fertilized" with organic manures, the growth of stalk and stem and leaf is so great and rapid that little opportunity is given the plant to build tuber and root. Consequently in vegetable growing there is very much need for a careful study of the proper relationships which should exist between the nitrogenous and organic need of a fertilizer which tends indirectly to promote a preponderant growth of leaf, stalk and stem and the other basic mineral administrative agents, particularly phosphorous and potash. Consequently vegetable growers and fruit growers are finding that about as desirable a place to arrange this relationship between the various administrative agents is in the fertilizer itself and before same is put upon the field.

Raw Phosphate in the Stable.

We have advocated from time to time the use of raw phosphate and also the use of acid phosphate as an absorbent in the stable. Our reason for the advocacy of the use of acid phosphate has not been simply to produce an absorbent. There is great necessity for the use of an absorbent in the stable, and as a neutralizing absorbent whereby the ammonia fumes which are given off can be neutralized, acid phosphate is for this purpose admirably suited indeed, but the real desideratum for the use of phosphorous in the stable is that the organic manures there produced will be intimately mixed with the administrative agents in which they are deficient themselves, and there is no better time or place to do this mixing than in the stable. Even raw phosphate or ordinary, finely ground phosphate rock can be used to a decided advantage at this point, for in putting it in contact with the organic manures in the stables, which are at all times and under all conditions undergoing a considerable change, there is brought to bear upon the phosphate rock the agencies which contribute to its solubility and hence by allowing it to come in contact with the manures in the stable and later on, on the compost heap, by the time the manures are spread on the field, a great deal of the phosphoric acid, which if sown directly upon the field would be more or less inert, has had an opportunity to become changed into an available product.

Phosphates Check Stable Losses.

Not only this, but the use of these products in the stable and on the manure heap tends likewise to conserve the losses which ordinarily occur in the exposures of manures. Various experiment stations from time to time have attempted to show how great these losses are. At the Maryland station, as explained in bulletin 122, 80 tons of barnyard manure allowed to dry in a pile were reduced to 27 tons at the end of a year's time. The Ohio Experiment Station, bulletin No. 183, shows that in three months, January, February and March, 38.75 per cent of the organic matter and 30.29 per cent of the nitrogen, and 23.76 per cent of the phosphorous and 58.84 per cent of the potassium were lost from manure placed and exposed in the barnyard. If farmers are going to give value to manures and many of them are so doing, and it is right that they should do so, then obviously these tremendous losses must be checked.

Phosphorous and Organic Matter Work Together.

Experience has shown, and shown very decidedly, that the economic use of phosphorous in the soil depends al-

most directly upon the presence of a considerable available supply of organic matter. Probably the reason for this is the exceeding tendency which phosphorous even in soluble form has to revert to the more or less insoluble form. Consequently even though a perfectly soluble phosphoric product is put upon the soil it is probably true that it is immediately, or almost immediately, again thrown out of solution or precipitated in very finely divided particles throughout the surface layer of the soil. We are apt to ask ourselves, therefore, why it is necessary that phosphorous and phosphatic fertilizers should be placed in available form at all if they are going to be precipitated out of solution at once upon coming in contact with the soil. The answer to this question is simply this. Nature has seemingly provided against the economic waste of perhaps her most valuable administrative agent, that is, phosphorous, by making it exceedingly difficult for any leaching process which may go on through rain and various other natural agencies. Nitrogen in soluble form does not revert to the insoluble condition of the soil. Even potassium once in soluble form, with difficulty reverts to the insoluble form and while it is difficult to harmonize the thought that nature has not been interested in the retention of potash in the soil, with our present knowledge of the great need of potassium we do know that nature has made it possible for man to be even prodigal in his use of the nitrogenous salts for there is a beautiful balance by which nitrogen can be had for the asking by any intelligent farmer. Phosphorous, however, is not included in this economic balance. For when a soil becomes exhausted of its phosphorous supply it is indeed an exhausted soil.

Consequently we find that nature has provided great checks to prevent the waste of this all-essential agent, phosphorous, and so when a soluble phosphate is spread upon the soil, a phosphate which will go into solution in ordinary rain water, the almost immediate act of nature is to cause that solution to revert to the semi-insoluble form, in which condition it will not leach readily from the soil, but when it is thus precipitated from solution it is precipitated in the form of exceedingly minute particles, in which state of division it is possible for the digestive agents in the soil to lay hold of the phosphorous and utilize it for the plant needs, while at the same time this same form protects it from the solvent action of the free water of the soil. Therefore, we put our phosphate rock, finely ground, with organic manures because they are intimately related in their action in the soil and it is the decomposition of the organic manure which accomplishes apparently at the same time the breaking up of the otherwise insoluble, phosphate rock. The fruit growers and vegetable grower's fertilizer problem is one which should require definite study by him, and their possibilities, from a financial standpoint are closely wrapped with these intelligent, scientific, economic considerations of the use of commercial fertilizers.

KILLING GRUBS ON NEW LAND.

How can I keep green stumps from sprouting when cut this time of year? Kent Co. R. J. S.

The very best way to keep green stumps from sending up a new growth on recently cut-over hardwood land is to burn the brush as well as practicable, scatter on a liberal amount of grass seed, including clovers and timothy, and pasture with sheep. Sheep are fond of the browse and will keep the tender shoots nipped off as rapidly as they appear.

Where this cannot be done the only available method is to cut off the sprouts in August, which will discourage the growth and kill the grubs after a few years' treatment.

The Vegetable Garden

By C. W. WAID

MOST farmers give too little value to their garden. One farmer told the writer that when he placed the value of his garden at \$100 for the season, when questioned at the time of assessment, that the assessor was very much surprised. The reason was that most figures given him very much under this amount.

There are several reasons for the lack of appreciation of the garden. In the first place a very large number of farmer's gardens are not of much value because they are poorly planned or cared for. Then, too, it has become so much of a habit for some farmers to get vegetables from the garden without giving this part of the farm any credit as a money maker or saver, that they do not take the garden into account in their consideration of the farm income. The garden, like the house, goes with the farm and that is the extent of their calculation in this connection. There are some farmers, we are glad to say they are in the minority, who so dislike to take a few hours time off the regular farm labor for the garden work, that they prefer to under estimate the value of the garden.

A well planned and well managed farm garden will not only furnish much healthful food for the family, but will reduce the grocery bill very

the family and the available demand for surplus vegetables should help to decide the size of the garden. Row one in the following plan is four feet from the edge, row two is five feet from row one, and row three is four feet from row two. All other rows are three feet apart.

A Suggestive Plan for a Farmers' Vegetable Garden.

Size of plot 40x200 feet, rowed the long way.

First Row.—Blackberries, black raspberries, red raspberries, one-third row each.

Second Row.—Currants, gooseberries, one-fifth row each; asparagus, two-fifths row each; rhubarb, perennial onions, one-tenth row each.

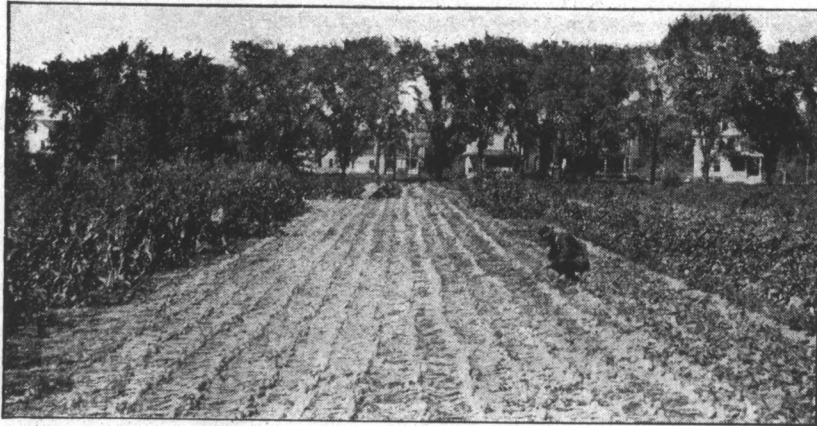
Third Row.—Strawberries, early potatoes, followed by strawberries, early potatoes, one-third row each.

Fourth Row.—Parsnips, salsify, spinach, one-fourth row each; carrots, one-fifth row; parsley, one-twentieth row.

Fifth Row.—Leaf lettuce, head lettuce, turnip radishes, long radishes, (followed by string beans), one-tenth row each; onion sets, one-fifth row; early peas, (followed by bush lima beans, two-fifths row).

Sixth Row.—Early cabbage, beets, white onions, red or yellow onions, one-fourth row each.

Seventh Row.—Medium early peas,



Straight Rows Add to the Attractiveness of the Garden.

perceptibly. In some families the boys or girls do much to make the garden a success and such an experience is a valuable training for them.

Economy of time is of greater value to the farmer than economy of ground. By laying the garden out in a long narrow strip field methods can be employed in the preparation of the garden for planting. By spacing the rows wide enough apart practically all cultivation can be done with a horse cultivator. If the work is well done and done at the proper time, very little hand work will be necessary.

A carefully worked out plan should be drawn up before the work of planting begins. This will prevent, in a large measure, loss of time when the planting is done. The manure should be applied in the fall or during the winter unless the garden is so situated that the manure water will run off on the surface. Fall plowing on some soils is desirable.

After all, success or failure with a garden depends very much upon the personal element. If someone in the family really likes to work in the garden the time for the work will be forthcoming, and the work is quite sure to be well done. The personal element also enters into the arrangement of the garden to such an extent that no two gardens are alike.

The accompanying plan is one possible arrangement for a farm garden. It provides for a large assortment and a long season supply. The size of the plot is 40x200 feet, and the rows are run the long way. This plan can be applied to a larger or smaller garden garden as well. It is better to have a small garden well cared for than a large neglected garden. The size of

late peas, string beans, cauliflower, one-fourth row each.

Eighth Row.—Tomatoes, one-half row; peppers, one-tenth row; late cabbage, two-fifths row.

Ninth Row.—Early corn, medium early corn, one-half row each.

Tenth Row.—Late corn, one row.

Eleventh Row.—Bush summersquash
Twelfth Row.—Cucumbers, bush summer squash, one-fourth row; sweet potatoes, one-half row.

Varieties.

The question of varieties is very largely one of personal choice. It is better to have one variety of high quality than two of low quality of the same season of ripening. Well-tried varieties should be given preference over novelties. By planting one variety at different times a succession can often be provided more easily than by the use of different varieties which vary in the season of ripening. This does not hold true where there is a wide range between varieties in season of ripening as is the case with tomatoes and corn.

Use of Hotbed.

A hotbed may be described as a glass covered box-like frame, artificially heated. It can be used to good advantage in connection with any garden. It is not only used to grow such crops as lettuce and radishes early, but in which to start plants for setting in the garden when the danger of frosts is over. Certain crops can also be grown late in the season and protected by the hotbed sash after frosts have killed outside crops. Fresh horse manure made up of about one-third litter and two-thirds droppings, is the most satisfactory material to use for

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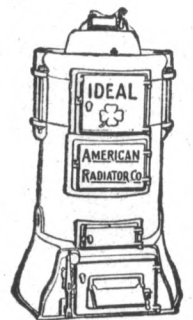


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ON FRUIT GROWING
Trees, vines and shrubs warranted, true to name, up-to-grade, free from disease, correctly packed. From Grower to planter. Satisfaction guaranteed. Established 1865. No agents. Low price. Free catalog is a text book on planting, and treatment of trees—"pointers" that you need. Get a copy before you order from anybody. Postal will do. J. B. MOREY NURSERY, 70-80 Morey St. Dansville, N. Y.

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FARMER OR FARMER'S SON

With rig or auto to call on regular trade with the big Shores Line of Family Medicines, Spices, Extracts, Toilet Articles, Veterinary Remedies, Oils, Etc. Our new, successful plan for increasing business assures you of over \$150.00 per month profits. Ask about it. No experience necessary. Don't worry about capital, but write quick.

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BABCOCK-LASHER-FORMULA

An original spray material for control of insect life. Write for descriptive pamphlet. It will soon be time to spray. The pamphlet includes a treatise on correct time and manner to destroy aphids. Arrived after eleven years observations and experiments. If stated directions of fighting aphids are followed, exactly, satisfactory results must be obtained.

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relating the highly efficient results obtained in large operations against

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Have you ever experienced satisfactory results in the past using any one material in fighting both scale and aphids? We know there is nothing better than Babcock-Lasher Formula to kill aphids. Results obtained point the same way on scale. The cost is decidedly less than cost of any combination of materials used to fight both scale and aphids.

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Destroy the fungi and worms, and thus be sure of large yields of perfect fruit. Excelsior Spraying Outfits and Prepared Mixtures are used in large orchards and highly endorsed by successful growers. Write for our money-saving catalog, which also contains a full treatise on spraying fruit and vegetable crops. WM. STAHL SPRAYER CO., Box 725 Quincy, Ill.

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You can save \$100 by buying a Bull Tractor of us, either the large or small machine. We have a few machines purchased before the advance which we now offer at \$100 less than the present prices. These are new machines. The Bull Tractors have proven the most successful tractor in the U. S. Write us at once. Sevison & Tracy, Distributors, Constantine, Mich.

Will You Take Orders?

Your spare time is worth \$10 a day demonstrating the 1917 Model, Steel, 18-in-1 Automatic Handi-Tool. Equals separate tools costing \$100. Lifting and pulling jack; fence building tool; stump and post puller; halter; press; hoist; vise; etc. No experience needed. Demonstrator free. Credit given. Exclusive territory. Write for special factory agency offer. Chas. E. Benefield Co. 295-C Industrial Bldg., Indianapolis, Ind.

PLANT MICHIGAN GROWN CORN

I have a limited stock grown right here of fine dried seed corn, Madison Yellow Dent, germination about 98 per cent. Price while it lasts, per bushel, on ears, (70 lbs., net) \$6.00, shelled from choice ears \$5.00 per bushel. No discount. 5 sample ears by express 25c. Cash with order. This is the best Yellow Dent grown in Michigan. H. C. OVEN, Ovid, Clinton Co. Mich. Near Owosso.

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in oats. Simple to treat. Sent direct on trial where we have no agent. Free Booklet. Local agents wanted. Established 1906. Sporicide Chemical Co., Atlanta, N. Y.

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20 APPLE ONLY \$1.

No. 2 Homegrown Wagons at Gobleville, Mich., Nurseries. I have examined Gobleville Nurseries. 9, 25, 15. L. R. Taft, State Inspector.

SEED OATS

Sweedish Select Graded and Tested. Extra quality. Special prices on quantities. PLEASANT POINT FARM, Hillsdale, Mich.

120 bu. per acre The Corn Belt Oat. Description, prices and sample free. Muncytown Stock Farm, Flat Rock, Mich.

FOR SALE: Having gone out of the orchard leasing business, I offer my new power sprayer for sale very cheap. W. W. FISK, Jackson, Michigan, In care Fisk Coal Co.

SENSATION—123 bus. per acre. Also Learning OATS and Reid's Yellow Dent Seed Corn. Samples and catalog free. Theo. Burt & Sons, Melrose, Ohio.

YPSILAND FARMS Seed Oats—great yielders and choice. Ypsilanti, Mich.

SWEET CLOVER Builds Worn Out Soil. Has higher protein content than alfalfa. Write for prices and information. Everett Barton, B. 129, Falmouth, Ky.

Seeds That Grow more for your money than others give. Special prices on garden peas per Bu. Catalogue Free. Allens Seed House, Geneva, Ohio.

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This Empire King

(Mounted Barrel Sprayer) leads everything of its kind. Throws fine mist spray with strong force. No clogging. Strainers are brushed and kept clean and liquid stirred automatically. For catalog, spraying formula and directions address FIELD FORCE PUMP CO. Dept. 1, Elmira, N. Y.

the heating of the hotbed. It should be piled at least ten days before it is placed in the hotbed and forked over two or more times to prevent burning and to distribute the heat evenly. It should be placed in the hotbed pit in layers when ready and firmly tamped especially around the edges. A two-inch layer of straw between the manure and dirt will help distribute the heat evenly through the soil. Four to six inches of good garden soil is next placed over the manure and in from a week to ten days it will be safe to sow the seeds.

Heavy applications of manure, deep and careful plowings and thorough preparation of the seed bed to a good depth are all factors having to do with the making of a successful garden. The water supply is also important. Many garden vegetables are badly injured or made unfit for use because of lack of sufficient moisture in the soil. The overhead system of irrigation is ideal and practicable where an elevated tank or gasoline engine is in use to supply water for other purposes.

Remember that a "stitch in time saves nine," and that a stroke of work done in the garden at the proper time may save many more.

If you are in doubt as to the value of a garden on a farm keep a record of what the vegetables from your garden would cost if purchased of a retail dealer.

PLANTING AND PRUNING.

Fruit trees should be ordered at once if they are to be set out this spring. Careful tests at the Missouri Agricultural Experiment Station have shown that fall planting is better, but if the

from the ground. All side limbs of peach trees should be cut off close to the trunk and the main trunk should be shortened. Cherry trees should be so pruned that only three, four, or five branches are left, but none of its branches should be cut back.

Well-branched apple, pear, and American plum trees should have the main leaders cut out to form open spreading heads that will let in the sunshine to aid in ripening the fruit. Their side limbs should be so shortened that they are only half or two-thirds as long as at first. The number of main limbs should be finally reduced to three, four, or five, which are to form the framework of the tree, but it is often better to leave more limbs than this at the end of the first season and make final choice of the limbs that are to be saved the next year.

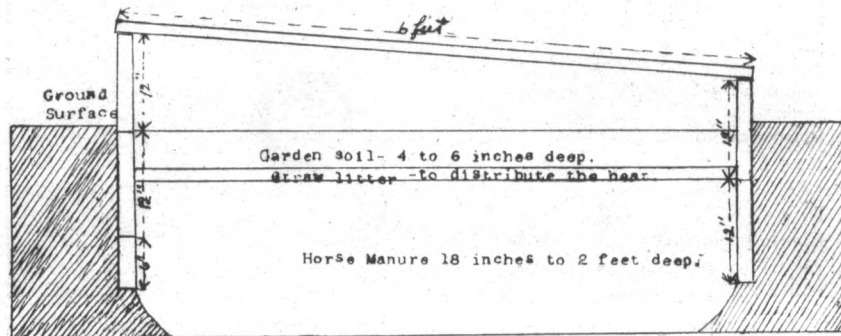
TROUBLE DEPARTMENT.

Peaches for Home Use.

I want to set out a few peach trees for home use on a gentle slope to the northeast. The location will admit of one row of trees extending north and south about 215 feet. Will some peach man tell me what varieties and how many of each to buy? How far apart should I set them and how old a tree should I buy? The idea is to have as long a peach season as the climate will permit. The trees would be protected by the farm buildings and other trees to the west and north.

SUBSCRIBER.

Peach trees should be set about 20 feet apart. The following are the best varieties for home use when one desires to have peaches throughout the peach season: Mayflower, Admiral Dewey, St. Johns, New Prolific, Kalamazoo, Gold Drop, Lemon Free and



Cross Section of Hot-bed.

work was not done last fall it will be better to do the work this spring than to wait until next fall and lose another year of growth.

One-year-old trees that have been properly grown are usually preferable, but two-year-old apple, pear, cherry, or American plum trees are most commonly used because of the difficulty of getting good year-old stock.

The bark will show just how deep the young trees were before transplanting and they should be reset to about the same depth in holes just deep and broad enough to admit the roots in their natural position without any bending. Cut any broken or diseased parts from the roots and be sure that the ends are smoothly cut instead of left ragged. Trees that cannot be planted as soon as they come must be heeled in to prevent the roots from drying out or molding.

Shake fine moist (not wet) soil in between the roots and tramp it firmly with the feet while the hole is being filled, but be sure that the roots are covered in a natural position and not trampled into bad positions. After the soil has been tramped in level with the surrounding ground, an inch or two of loose earth spread over the surface will help to prevent baking.

As most trees cannot be reset without the loss of many roots, the top must be trimmed accordingly or there will be more of it than the remaining roots can support readily and even young trees which are not transplanted should be pruned severely, and the proper shape given. The one-year-old tree which has no side limbs should usually be trimmed to make it head out from two to two and a half feet

Salway. The first two varieties mentioned are white peaches, but the others are all yellow and freestone varieties.

For ordinary table use one tree of each variety should be sufficient, but if you desire peaches for canning purposes, I would suggest setting at least two trees each of the Gold Drop and the Lemon Free. The Kalamazoo is also a good variety for canning purposes.

Practically all the peach trees that the nurserymen have for sale are one-year-old trees; these are the most desirable, as they start better than older trees.

If the protection that the farm buildings and other trees will give the row of trees you intend to set out, is a dense one, it will be of no special advantage to the trees, as it will prevent to some extent the circulation of air which is quite necessary in protecting the trees from spring frosts. Locations that one might call cold in the spring so that the buds are kept from swelling as long as possible, are the safest for peach trees.

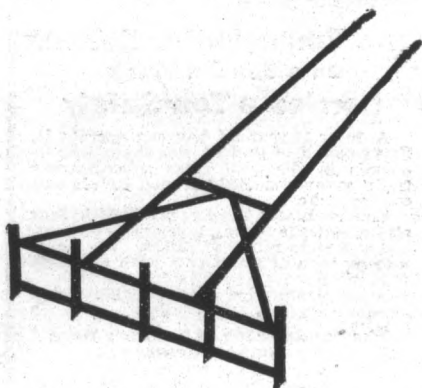
BARK WOUNDS FROM HEELS.

Whenever it is necessary to climb into a fruit tree for pruning, thinning, harvesting, etc., I have found more or less difficulty in preventing injury to the bark with ordinary shoes. Sometimes the wounds have been serious enough to take two years to heal over. This is a mistake that can easily be avoided by using rubber soled and heeled shoes during the summer, or "arctics" during winter. No damage results from them. M. G. KAINS.

A HANDY GARDEN MARKER.

A handy garden marker can be made of the scrap material found on nearly every farm and it will prove a time-saver during the spring planting time and more efficient than using two stakes and a long cord for every row that must be marked. The marking pieces should be placed at distances apart depending on the width of the rows. Twelve or fifteen inches will usually be the best distance which will make the marker either four feet or six feet in width.

An old pair of buggy thills will be satisfactory handles if they can be ob-



tained, or strong slender branches from trees will do fully as well if they are straight and six or eight feet in length. If the soil has been finely pulverized in readiness for the garden seed, this marker will make straight lines by simply pulling it over the soil. If the ground is not smooth and rather stony it will be necessary to weight down the marker and this can be done by placing stones in a sack and tying them to the frame.

Ingham Co.

R. G. Kirby.

GROWING PRIZE TOMATOES.

Methods of producing good tomatoes interest almost every farmer. Even those who do not grow them for canneries or city markets raise them for home consumption. The method here described is applicable to the small patch or the large acreage and is almost sure to produce good results, as practically all the fruits will be of marketable quality. As frequently grown a considerable portion of the crop is small and scrawny and not infrequently injured by disease. If, by a little extra work, the entire crop is salable, the effort should be considered worth while.

In growing tomatoes for either canneries or market, select some variety like the Stone, rather than the tree varieties. Make the ground rich with rotted manure or any quickly-available fertilizer. Plow deep and get the land into a mellow condition. Mark off in rows four feet apart one way, and then run the marker the other way in rows two feet apart. At the points of intersection set stakes five feet or more tall and on the south side of each stake set a tomato plant. We set plants fairly deep, as this gets the roots down where they will be able to get hold of moisture during the dry period of summer. By making the rows four feet apart one way, cultivation may be kept up all summer.

Train the plants as they increase in size and tie to the stakes with strips of cloth or binder twine. Allow only one shoot to grow and train that closely to the stake. When it reaches the limit of the stake clip the top as often as new buds appear. This will induce the strength of the vine to go into the fruit and hasten the ripening. From the time the little plants are ten inches tall little shoots will appear in the forks and axils of the leaves. These should be removed persistently, as this is where the strength of the ordinary vine is lost. Along with the little shoots will appear blossoms and buds. Leave the buds and fruit will develop early and rapidly. The average tomato patch runs largely to vines.

Trained in this way, the energy of the plants is largely expended in producing fruit. At the same time the ripening process is hastened; fruit being well above ground, is not liable to develop rot; having free access of sunshine, there will be no hard spots, and the flavor will be first class.

New Hamp.

C. H. Chesley.

AMONG THE FRUIT GROWERS.

M. F. Russell, a Van Buren county newspaper publisher, has bought the Wadsworth Bros.' fruit farm located near Bangor. It contains 30 acres and is all set to apples, pears and peaches.

The Lenawee County Horticultural Society holds interesting meetings each month during the year at the court house, Adrian. At the recent annual meeting officers were chosen as follows: President, Byron E. Niles, Blissfield; vice-president, Frank Ehlinger, Adrian; secretary, B. F. Matern, Adrian; treasurer, N. A. Ward, Adrian. E. W. Allis, who has served as secretary for years, is chairman of the executive committee.

Roland Merrill, the Benton Harbor grower, lost his melon crop during the past season but he is not discouraged and will have a larger acreage in 1916. He had 60 acres of melons in Berrien and 80 acres at Three Rivers, in St. Joseph county, but the crop was a failure due to weather conditions. This season he has contracted for over 100 acres near Constantine, in addition to his other holdings, and he expects to ship upwards of 100 cars of melons to the large cities.

Kent Co.

ALMOND GRIFFEN.

THE FARMER'S GARDEN.

(Continued from first page).

fever heat, the garden should be planned—and the plan put on paper. "Plan your work and then work your plan," is a commendable bit of advice. A plan in the hand is worth ten in the head. Decide upon the garden, then go out and pace off its dimensions and put them down on paper. Next figure out exactly how much space will be given to onions, carrots, beets, cucumbers, in each case showing the exact number of rows and feet in each row. In this way, one will be able to determine just how much seed will be required. The desultory way in which garden seeds are often ordered is anything but economical for few farm gardeners know just how much seed of each plant they want; they order a certain amount and if that isn't enough they either order more and put the seeds in late, or they put the space to some other less desirable vegetable. The varieties for planting cannot be mentioned explicitly but should be so selected that the family may have the vegetables in season throughout the summer. Two kinds of corn, early and late, should be planted, early and late peas, beans for string and dry, and radishes planted every two weeks keep the table well supplied with this palatable root.

Illinois.

I. J. MATHEWS.

THE DORMANT SPRAY.

Spraying is an important consideration in the dormant months. Look well to it that you are not neglecting your fruit and shade trees, and that spring and summer do not come to find trees and shrubbery half destroyed by scale and other pests. Let your "ounce of prevention" be dissolved into a good liquid and spray trees and bushes around your lawn and garden. At the same time do not forget that your neighbor's carelessness in such matters may negate everything you have done, for no fence ever kept off insects, scale or blight. It will pay you to talk over the matter with Mr. Neighbor, for there is little doubt of his co-operation in your efforts to preserve the fruits and the natural adornment of your yards, lawns and gardens.

LAMBERTVILLE RUBBER FOOTWEAR

Made by a concern whose reputation for forty years is based on QUALITY.

The Lambertville process welds all the pieces of the boot into one composite whole, and, in addition, adds greatly to the toughness of the rubber compound.

This means that Lambertville Rubber Footwear gives you more wearing quality for your money than any other line of rubber boots you can buy. Moreover, they are

As Comfortable as They are Strong and Sturdy

The footwear shown here are the "Snag-Proof" Four-Buckle Arctic and the "Snag-Proof" Short Boot. Both are made of heavy duck and pure Para rubber.

Ask to see these sturdy styles at your dealer's. Should he not have them, send us his name and we'll quickly make it possible for you to secure these goods at regular prices.

Lambertville Rubber Footwear is also made in red rubber. Ask for "Red Skins."

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The more thorough the spraying operation the greater is the profit from the crop. HAYES Power Sprayers are guaranteed to maintain 300 lbs. pressure. 300 lbs. completely atomizes the solution into a penetrating, fog-like mist that seeks out and adheres to every particle of foliage. Saves time and solution, and gives a better quality and larger quantity of salable fruit.



Large Hand Sprayer

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Write! Send postal for FREE Book 45 on High-Pressure Spraying and 64-page Catalog. Hayes Pump & Planter Company Galva, Ill.



1 1/2 H. P. 110 Gallon Tank 300 lbs. Pressure

Write to the Men Who Know

There is a great difference in spray pumps and spraying apparatus. One kind is made by practical orchardists and has been improved through over 20 years of orchard success. Write a letter or postcard to Morrill & Morley Mfg. Co. Find out about

Eclipse Spray Pumps

In use in more successful orchards than all other makes. Used by U.S. Department of Agriculture. Find out what Eclipse offers in more profits for orchards, vineyards or potato fields. Address Morrill & Morley Mfg. Co., Box 6, Benton Harbor, Mich. Send for Free Catalogue

We Have a Story for You

Eureka Potato Planter

For Large or Small Growers, 1 or 2 rows Opens furrow, drops seed any distance or depth required, puts on fertilizer (if wanted), covers up, marks next row. Accurate, automatic and dependable. Operated by one man. Furrow is opened directly under axle and seed is dropped in plain sight of operator. Made of steel and malleable iron, assuring long life and few repairs. In stock near you.

It does not injure seed
EUREKA MOWER CO.
Box 532,
Utica, N. Y.



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SUDAN GRASS 9 1/2 C Per Lb.

Northern-grown—Extra Fine Quality—Very Pure—Free Johnson Grass—High Germination. Do not fail to plant this wonderful forage crop this season. Heavy hay producer; equal to cane—quality far superior. Excellent pasture, not affected by drought. Cheap to plant and grows abundantly either wet or dry—on all soils—no failure. Write today for circular and 100-page catalog and Free Sample. It will pay you big.

A. A. BERRY SEED CO. Box 1231 CLARINDA, IOWA

SCOTT'S FIELD SEEDS

Wet weather damaged nearly all seeds. Most are full of blasted grains and weeds. Buckhorn, Thistle, and Dock. Ours are not, and are far the cheapest to sow. Scarcity of good seed makes early buying advisable. Samples and instructions "How to Know Good Seed" Free. Write today. O. M. SCOTT & SONS CO., 36 Main St., Marysville, O.

SEED OATS: Alexander. Awarded Gold Medal for Seed Oats: largest yield in pedigreed Oat Contest for Mich. First premium for quality. Potatoes: Late Petoskey, Blight resisting, heavy yielding. Wallace Bros., Bay Shore, Mich.

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10000 NEW 1916 GALLOWAY SANITARY CREAM SEPARATORS

Special Proposition from Now till Grass—in addition to my new low prices. My way of opening new territory and making further sales, as one separator sold in a neighborhood always sells from one to twenty-five more. Every customer boasts—their statements coming from my lips would be called "exaggeration." Every Galloway Separator is equal to if not better than other separators selling for \$75 to \$85—users say "way ahead."

I only ask one thing—before you buy a separator of any make, kind or at any price, get my big book—pick out the separator you want, try it 90 days—180 times—at my expense. If you decide to keep it (you don't have to) I'll give you the choice of 5 open, fair and square selling plans and guarantee my separator for 10 years against defective workmanship and material! A \$25,000 bank bond backs every sale!

NOTE THIS BUILT-IN QUALITY

Heavy, high carbon steel gear shafts and bowl spindle; extra long bearings; strong, sanitary bowl, discs not fastened together; oil bath lubrication; big, roomy, seamless, pressed steel supply tank; both gear shafts and both spindle bearings supported by one solid casting; heavy sanitary tinware; low bowl speed reduces wear on bearings and gears. No raw, sharp edges in the bowl to cut the globules of butter fat.

Guaranteed 10 Years

4 Sizes Skimming
\$75 to \$90 lbs. per hr.
4 New Low 1916 Prices.

MY NEW 1916 250-PAGE BOOK FREE—Handsomely printed, beautifully illustrated in four colors. Tells all about my new 1916 Sanitary Cream Separators, how I built them; gives my 4 new low prices on 4 good sizes; also my 5 easy selling plans, cash or terms, etc. I'll also send my special proposition on 10,000 Galloway Sanitary Cream Separators. Drop me a postal today. Separators shipped from Waterloo, Kansas City, Council Bluffs, St. Paul or Chicago.

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The Hinge-Door Silo

The most convenient and best equipped silo made. Doors always in place—swing open and shut easily. The hinges form a perfect ladder. Best material throughout. Makes perfect silage and that is what you want. We also make the Lansing silo with loose doors. The Chicken silo for the small farmer.

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MEN WANTED

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Practical Auto School, 66-W Beaver Street, New York

Wanted—A good sober Dairy Man with two good boys able to milk. By the Year.

B. C. Banfield, Owendale, Michigan

Dairy Problems

How to Feed "Run-down" Dairy Cows.

I would like to know how to feed a bunch of run-down mixed dairy cows. I am a young man from the city and I am working this farm on shares. I have clover hay and poor ensilage. I get oats, and have been trying bran and cottonseed meal. From five cows I get 70 lbs. of milk a day. I am selling my milk to a cheese factory, the milk testing 3.6 per cent.

Washtenaw Co.

T. S.

Trying to make a profit with a herd of run-down cows is much like trying to make money on a run-down farm—it is a difficult problem. The first thing to do is to see that they have plenty of proper food. But you can't feed cows not used to a liberal ration a good liberal ration all at once. They must be worked up to a full ration by degrees, careful feeding is required.

You have the basis of a good ration, clover hay, corn silage, oats, bran and cottonseed meal. You can get nothing better. If cows will not yield a good flow of milk on these foods they won't on any. If it is in them to do well they will, if they are properly cared for and properly milked.

I had a man once who was such a poor milker that he could not make my cows pay. He simply could not do it. He could not learn to milk. A splendid cow, when milked by a poor milker, will only give a moderate yield.

T. S. does not state in what period of lactation these cows are in, whether they were fresh last fall or are coming fresh this spring. Seventy pounds of milk for five cows is a poor yield unless the cows are strippers coming fresh this spring.

If they are coming fresh early this spring this may be all that one can expect of them. If the cows are well along in the period of lactation it is practically impossible to increase the flow of milk much for this period. The only thing to do is to get what you can and wait until they freshen next time. Keep up the grain ration while they are dry. Feed them well. After they freshen you will get your money back. Don't let them get run-down. It is hard, slow work to get them up once they get run down.

I can suggest no better ration than you are feeding. Give them all the clover hay and ensilage they will eat up fairly clean morning and night. For grain give two pounds of cottonseed meal to each cow if they are comparatively fresh. If they freshen this spring I would give them no cottonseed meal at all. Feed a good liberal ration of bran and ground oats, equal parts. Give one pound of grain for every three pounds of milk produced.

Corn and Oat Chop for Cows.

Are ground corn and oats of much value as a milk producing food for milch cows? Is there anything gained by feeding ground cull beans to milch cows? My cows don't seem to give as much milk as they should. Have one four-year-old heifer which is fat enough for beef. She came fresh last May and is not giving any milk now and does not come fresh until the sixth of May. When cold weather comes she seems to dry up at once and I can not keep her giving milk. She is a fine large cow and excellent for giving milk in the summer. What can I do for her?

SUBSCRIBER.

There is no better grain food to be obtained anywhere than corn and oat chop if fed with clover and alfalfa hay. But if you feed cornstalks, corn silage or timothy hay for roughage then this grain does not contain enough protein for a balanced ration. In this case ground cull beans will be a valuable addition to the ration because beans are richer in protein than either corn or oats.

Many cows, good looking ones, too, are not good dairy cows, and never can be fed and cared for so they are of much profit as milk producers. Their feed goes to flesh instead of to milk. They can't help it. They were made that way. The only thing to do in such cases is to sell them for beef and try again.

Amount of Silage in Silo.

How many tons of silage are there left in a silo 8x30, which was refilled after being fed from for three weeks? The silo was filled with corn and soy beans, cut a quarter of an inch long. Corn was well eared and the silage was well tramped while filling. I have about 15 feet left. I am going to move and want to sell what silage I have left. So please tell me how much silage in tons there is in last ten feet and how much less if eight feet, or how much more if 11 or 12 feet. I can get \$4 a ton for it. Is that about the right price with timothy hay about \$12 or \$13 a ton? Is the silage worth more with soy beans in it?

It is estimated that a silo eight feet in diameter and 30 feet deep will hold 30 tons of silage. If only 20 feet deep, 20 tons, and 10 feet deep, 10 tons. But the bottom of the silo is packed more and will weigh more per cubic foot. In all, probably the bottom 10 feet would weigh 12 tons, and eight feet deep would approximate 10 tons; \$4 per ton is a good price for silage if timothy hay is \$12. Soy beans mixed with the corn makes the silage more nearly a balanced ration, and it has a greater food value, but just how much is difficult to say, as the amount of soy beans is not given. I think \$4 would be a fair price for the silage, even though it is part soy beans.

Cow Falling off in Milk Flow.

I have a cow, five years old, that freshened the last of December, and has always given 12 quarts of milk and now she only gives two or three. I am feeding her ground oats, wheat and corn with clover hay and cornstalks as roughage. She weighs about 1,000 lbs., seems to be healthy and is in good flesh. Can you tell me what has caused this and what to do for her?

Allegan Co.

R. N. L.

This cow ought to keep up her flow of milk fairly well on this ration. She should have a little more protein in her ration. I would suggest two pounds of oil meal or gluten feed.

Another thing, is the cow properly and regularly milked? No cow will keep up a good flow of milk if she is poorly milked. Regularity in feeding and milking are both very important. But sometimes when everything is done that can be, a cow will fall off in milk flow this way. It can not always be explained. It can not always be remedied. Cows that have always done well simply quit. Usually there is some cause that a careful observer can discover and remedy. But sometimes the cause is beyond human knowledge.

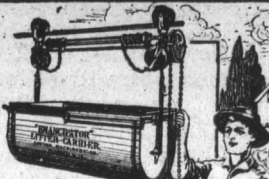
COLON C. LILLIE.

BUTTER FROM SCALDED CREAM.

In the issue of February 12 of the Michigan Farmer, L. M., of Genesee county, asks: "Can butter be churned when the milk, a day old, has been heated to make the cream rise more quickly? I have churned for hours when temperature was right, and got no butter. Will scalded milk make butter?" In Mr. Lillie's reply he says: "I think your trouble came from not ripening the cream before churning. Warm it to 70 degrees and let it stand 24 hours, then cool to 60 degrees and churn." I do not wish to dispute Mr. Lillie's assertion that the trouble came from not ripening the cream before churning, but I will give a bit of experience I once had in this line, then L. M. can judge whether or not scalded cream will make butter.

One day there came to me through the mail, a nice cook book, and as it was nearing the dinner hour, I took a sudden fancy to try one of the recipes and so surprise the "Gude Mon" with something new for dinner. About the first thing that met my gaze was a recipe for making cream pie. As it was different from any recipe of the kind I had ever used, I thought I would give it a trial. It read: "Take a cup of sweet cream and beat it for ten minutes or until it froths," which I proceeded to do before reading further. I took the cream from the milk of

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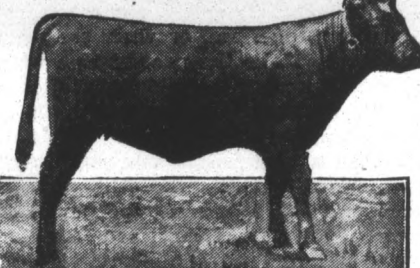
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Larro-feed

Absolutely free from adulterants and fillers, just like the feed you would mix for yourself, is a special combination of choice cottonseed meal, dried beet pulp, gluten feed, corn distillers' grains, wheat bran, wheat middlings and a little salt, that's all; each ingredient weighed by automatic scales and all thoroughly mixed in huge power driven mixers, so that it is always absolutely uniform, and always good. An extra quart or two of milk daily from each cow may turn a loss into a profit. Try LARRO-FEED for more profits. Sold on "money back if not satisfied" plan, the decision being entirely up to you. LARRO dealers almost everywhere; write if none near you.

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Her name is "Daisy" and her owner, W. A. Riddle, of Chapin, Iowa, raised her on Blatchford's Calf Meal, which costs less than half as much as milk.

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A useful preventive of scouring. Calves raised "The Blatchford's Way" are heavier, bigger-boned and healthier. Known as the complete milk substitute since the year 1875. Sold by your dealer or direct from the manufacturer.

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Keeps all your ensilage sweet, fresh and clean. Unavoidable loss reduced to about 1% due to no leakage or evaporation.

THE PERMANENT SILO can't blow down, buckle, twist or collapse. Stands rigid even when empty. Fireproof, storm-proof. Capacity increased any time by adding to height. Guaranteed against silage acids. We also make the Ross Wood Silo. Write for free catalog.

AGENTS WANTED.

THE E. W. ROSS CO.

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the night before which, as usual, I had scalded. Putting it into a large bowl, I procured a spoon and commenced to follow instructions; but I had not stirred half of the allotted time, before it looked suspiciously like "coming" and before the ten minutes were up I had a nice little ball of butter and the men folks lost their cream pie for dinner.

I have practiced scalding the milk in winter for many years and have always churned the cream sweet. I have never tried to ripen it, for I never have any trouble to get it to "come," and I think it makes the better butter. I heat the milk over a kettle of boiling water until it crinkles, then place it in a room away from the fire, where the temperature will be immediately reduced. At every skimming add a slight sprinkling of salt and stir until the new cream and the old are well mixed.

Oceana Co. MRS. J. M. WILLSON.

FEEDING THE MILK COW IN WINTER.

The best results with milk cows demands that the milk flow be kept up during the winter as well as during the remainder of the year. A herd that is allowed to drop in this particular when winter comes on not only lowers its profit at that time, but is hard to bring back when winter is over. Reports show that average cows in the best managed herds often produce two or three times as much butter during the year as does the average dairy cow. This difference results

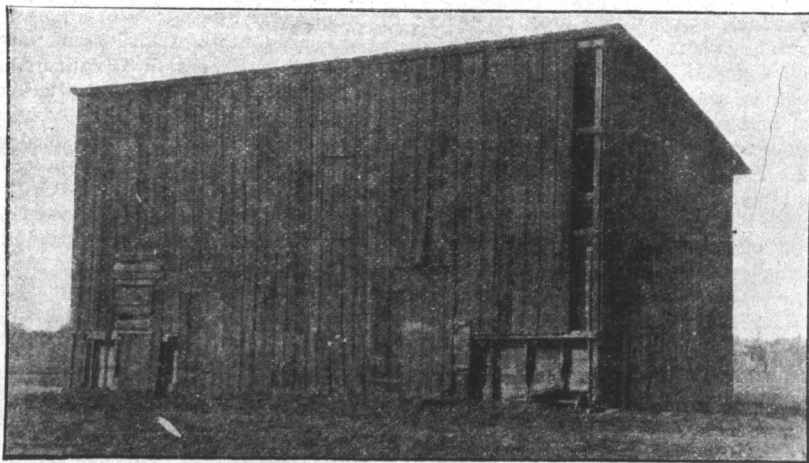
supply the food necessary to produce milk. In this class we have clover, cowpea and alfalfa hay, bran, oats, cottonseed and linseed meal. A good daily ration will include feeds from both these classes and it is impossible to make a suitable ration by feeding those in the first class only. A good ration for a cow producing from 24 to 28 pounds of milk per day, would be all she would eat of clover or cowpea hay and for grain from five to six pounds of corn, and from three to five pounds of bran or oats. Another fairly good ration for an ordinary cow is all she will eat of alfalfa or cowpea hay and eight to 12 pounds of corn. Still another would be clover hay, as before, corn six to nine pounds, and cottonseed meal two pounds per day. These rations will be improved in every case by feeding corn silage.

Mo. Ag. Col.

C. H. ECKLES.

RESULTS OF COW-TESTING ASSOCIATION WORK.

Eleven cows producing over 50 lbs. of butter-fat for the month of January and ten producing over 50 lbs. for December, with equally as good showing for the months of October and November, is the record that has been made by the Porter County (Indiana) Cow-testing Association. To have so many high producing cows is an unusual accomplishment for an association and it goes to show that the Porter county dairymen are making good in cow-testing association work. This association was organized by Purdue Agricultural Extension Department in August, 1914,



A Type of Dairy Barn which is Fortunately Becoming Obsolete.

largely from the fact that these herds continue high in their milk production during the winter.

A good milk flow results largely from careful feeding, although shelter and other phases of management are also important. The man who is getting poor results is usually feeding timothy hay, corn fodder, and corn, and perhaps not enough even of these. The man who is getting good results has learned that such a ration will not enable a cow to produce milk enough to make it profitable. It is not necessary to buy large quantities of expensive feed to make a good ration, as it can all be grown on the farm. If the proper ration is not at hand, however, it will usually pay to buy something suitable, or possibly trade some of the feeds on hand for others which will give better results.

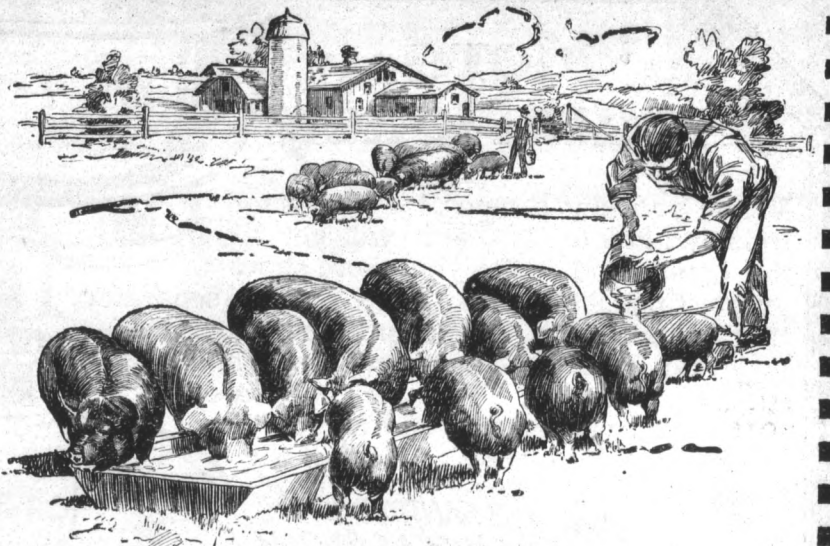
The man who gets good results with cows feeds clover, alfalfa, or cowpea hay for the roughness, takes care that the cows have plenty of it, and, if he has some corn fodder, feeds some of this in addition during the day. If hay of this class is fed, it is all right to feed a considerable quantity of corn for grain.

The feeds which are generally fed in this section may be divided into two classes. The first includes those lacking in protein. They are used mainly to produce fat and do not have protein enough for milk production. In this class we have corn, corn fodder, timothy hay, straw, millet, and sorghum. The second class of feeds include those which contain more protein to

and at the close of the first year's work they had 97 cows that produced over 300 pounds of butter-fat in one year. Since last August when the present year's work started they have made better records than ever before. This has been made possible by the information which they secured through last year's work. By knowing their high producing cows they can feed and care for them more intelligently and get larger production and more economical returns. They have also been guided by the last year's records in weeding out the poor cows and have come to realize the importance of purchasing only the good high producing cows for their dairy.

There are over 2,100 cows in the state being tested in cow-testing associations and a large number of herds where private records are being kept. This can not but result in a great improvement in the quality of Indiana dairying.

"Principles of Agronomy," by Franklin S. Harris, Ph. D., Professor of Agronomy, Utah Agricultural College, and George Stewart, B. S., Instructor in Agriculture at same institution. This volume is designed for study in schools that give an extended course in agriculture, and also for the practical farmer who will find treated in non-technical language the principles underlying the production of farm crops. The matter is thoroughly illustrated and divided in a manner to assist the reader in grasping the principles discussed. The book contains 450 pages, is bound in cloth, and can be secured through the Michigan Farmer office for \$1.40 per copy.



Cream Fed Pigs

Are you feeding cream to the pigs? You undoubtedly are.

In the morning you feel fresh and strong; you turn your separator at full speed. At night, you're tired and don't turn quite so fast. You also stop a moment to refill the supply can; the speed slackens and some cream escapes into the skim milk.

Your separator may skim clean at full speed, but, no matter how good the machine, it will lose cream, and a lot of it, when the speed slackens. Many dairymen are losing a hundred dollars or more every year through imperfect skimming. They are feeding cream to the pigs. A marvelous but simple invention now enables you to stop this loss—stop it absolutely. The saving is clear "velvet"—more profit without added expense. You get *all* the cream with

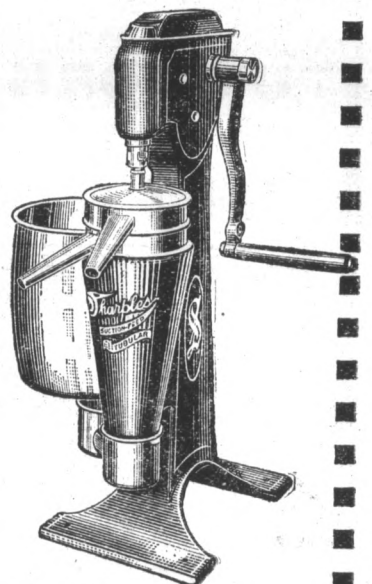
THE NEW SHARPLES SUCTION-FEED

Separator. Whether you turn faster or slower than the regulation speed, the bowl of the Suction-Feed *drinks in just the right quantity of milk* to insure the closest possible skimming. Does away with speed indicator, which is not a protection against cream loss.

The New Sharples Suction-Feed has many other important advantages. Turn fast or slow, you secure smooth cream of an even thickness. No more streaked butter from mixing different grades of cream—no more dissatisfied customers.

The capacity increases when you turn faster than the normal speed, so you can get through quicker when in a hurry. The large, seamless supply can is only knee-high. The entire machine is made simpler and better than ever.

Send for our new book, "Velvet for Dairymen," which fully explains how you can save the cream now going to the pigs. Also ask for our liberal *free trial* offer. Do it today, before you forget. Address Department 18.



The Sharples Separator Co.

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We are the originators of hollow block tile silos; and our first silos are still standing, in perfect condition and without repairs, after 11 years steady use.

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More Cream Money

When you buy a separator you want to know, first of all, that it will get all the cream and make your herd show greatest possible profits. You want a separator that will save time and labor—one that is sanitary and easy to clean—runs easily and gives least trouble. You want a durable outfit, that will last for years and that is always ready to work. Users of the

Milwaukee
SANITARY
CREAM SEPARATOR

find that it meets all these requirements. It has only half as many discs as other separators—fewer discs to clean and easier to clean because they are smooth and made of aluminum. No holes or pockets to catch and hold impurities. Discs are not numbered. They don't have to be kept in numbered rotation. The Sanitary Milwaukee with fewer discs skims closer, easier and quicker, because of the tapered discs and

proportional feed slides—exclusive patented features.

Because the Milwaukee is so easy to keep clean it insures cleaner, creamier cream—the kind that brings the highest market price. Every bowl is tested with whole milk at the factory. Buyer gets a sworn certificate of this test; also an iron clad guarantee. No other separator concern offers the buyer this double protection.

Before you purchase any separator find out all the reasons why it is more profitable to buy a Sanitary Milwaukee. Write today for illustrated catalog and name of dealer nearest you.

"It grows with the herd"

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243 Madison Street, Milwaukee, Wisconsin

70 lbs. Milk Cost 36 cts.

Elsie, Mich., H. F. Lewis, has a herd of 16 pure bred Holsteins that are doing fine on Unicorn. He has a 2 year old that is giving 56 lbs. per day with no other grain ration but Unicorn. Also a 5 year old that averaged 70 lbs. per day through January on 14 lbs. of Unicorn feed as a grain ration. These are facts I obtained of him this morning. A. R. LEVEY.

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quickest, most effective, remedy to keep your horses and cattle free from sores. Every farmer should have this old-time remedy. Guaranteed to cure Collar and Saddle Galls under the harness while the horse works—or money refunded. Take a box with you when doing heavy work. Rubbed spots quickly healed. Your time saved—the horse relieved. Standard remedy for cuts, bruises, burns, etc. Excellent for mange and sore teats. Ask for it at your dealers. Sample and Farm Account Book sent free if you write at once and mention this publication.



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Azoturia—Paralytic Hemoglobinemia

By DR. W. C. FAIR

THIS is a specific acute affection of horses, characterized by severe disturbances in locomotion in the loin and muscles of one or both hind quarters, as a result of a parenchymatous degeneration of certain muscles, and the presence of hemoglobin in the urine. The development of the disease is favored by the co-operation of certain predisposing causes. The most conspicuous influence is the method of keeping horses, as the disease usually follows one or more days' rest, during which time the animal has been fed plenty of rich food. However, exceptions are not by any means rare, as I have known idle horses to be attacked when standing in stable. Also, others which were worked every day. The influence of breed is sufficiently proved by general observations, as draft breeds become affected most frequently, the lighter breeds being almost exempt. Excessive exertions may produce the disease, even without a previous rest, and brood mares may have an attack closely following foaling and I have known it to sometimes follow painful surgical operations, where the horse has struggled much.

The Accepted Hypothesis.

Fleshy horses kept in warm, foul, damp, badly ventilated stables are often affected. Huttyra & Marek believe it best to hold to the hypothesis of an auto-intoxication. According to their belief they claim to be justified in assuming that during the function of previously rested muscles or in muscles which have worked to excessive exertion, some substance is formed which exerts a toxic action, and which produces a degeneration of the muscles, and an elimination of the blood-coloring matter from the blood corpuscles. This process occurs either while the blood passes through the affected muscles or at a later stage, when the blood circulates in the other organs. During rest and rich feeding the suspected toxic forming faculty of the muscles may increase. It must probably be attributed to the last named condition, that heavy, phlegmatic horses, which, as a matter of fact relax their muscles much more completely during rest, than horses of the livelier temperament and lighter breed. The disease seems to attack mostly horses that have been subjected for some time to hard pulling or heavy work, then suddenly rested, and fed plenty of highly nitrogenized food, then exerted. It has also been observed that the side of body which has to perform the greatest muscular exertion in the execution of work is most commonly affected. These are the muscles of the hind parts of body. The most striking changes are found in the muscles of the loin, rump and hind quarters and occasionally in fore quarters. The muscles of the heart sometimes show the same changes as the muscles of the rump, but to a much lesser degree.

Symptoms.

The disease sets in without premonitory signs, the animal invariably stiffens, shows disturbances in locomotion of hind quarters, perspires profusely, knuckles at the pasterns until he falls. The collapsed horse then lies flat on one side, mostly with the hind extremities stretched somewhat backward, at the same time making repeated attempts to rise; with the head raised it succeeds in standing on its front legs, but soon drops back again with painful groans. In some cases only one hind quarter seems to be badly affected. In this case the animal is usually able to stand. The muscles of the paralyzed part of body are at first hard and swollen, but in eight or ten hours soften. If the disturbances are only one-sided and not very extensive the horse usually does not collapse and remains perfectly quiet without perspiring. In mild cases as well as in the early stages of severe affections, the temperature is not much

elevated; neither is the heart's action much quickened. However, when the animal becomes restless, suffering much pain and exerting himself much, the temperature usually rises some and the heart action quickens. Frequently the passing of urine is retarded, excepting in very mild cases. In nearly all cases the urine is intensely dirty, a reddish brown, beer brown or ink black in color. The appetite remains good at the onset and in mild cases to the end of the disease. Consciousness appears at first undisturbed; the animals try to relieve themselves from the uncomfortable position and make repeated efforts to rise until completely exhausted, but later, however, they lie quiet, doubtless from exhaustion. Very often when consciousness is lost the animal is then suffering from a re-absorption of urine; besides, the animal very often shows convulsive spasms of the muscles. The disease seems to vary very much in its course as in some cases there is a light stiffness and in a few hours the animal is entirely well. However, in the great majority of cases there are pronounced symptoms of paralysis which last for two or three days, or even a week, then the animal gradually and slowly recovers. The disease can be diagnosed with certainty only by the presence of two cardinal symptoms, namely, the peculiar muscular affection and the hemoglobinuria. In rheumatism the muscles are not usually so much swollen and hard and the urine is never so dark colored; besides there is seldom as much loss of power.

Possible Errors in Diagnosis.

A traumatic injury of the spinal cord or spinal meningitis can easily be excluded by the history of the case and loss of sensitiveness of the posterior parts of the body. Fractures of the bone of the pelvis or hip is sometimes diagnosed as azoturia. A plugging of the arteries producing stiffness and loss of power is sometimes mistaken for azoturia. Colic affections can only be excluded by a somewhat careful examination. The prognosis appears unfavorable in proportion to the completeness of the paralysis, and if the animals cannot rise in spite of apparent health, or if they are not capable of standing up by themselves or in slings even for a short time, after being down two or three days, and if the kidneys are much affected and the animal has a high temperature, there is only a slight chance of recovery. There is always hope for an early recovery if the urine is only a pale red color, the pulse strong and the paralysis not complete; however, in giving an opinion as to the probable outcome of a case of azoturia, you should take into consideration that sequels to a disease may develop, which diminish the value of an animal a long time, or permanently. In most chronic cases, the paralysis of the muscles disappear in from three to six months, but I have known cases to last twelve months. In some cases the muscles of one or both hind quarters atrophy and seem to continue doing so, and the process of building up this wasted muscular tissue is invariably slow and tedious, and in some cases the animal never fully recovers.

Treatment.

First of all, as I have previously stated, it is almost entirely a preventable disease, and by removing the causes I have given, you will have little occasion to treat a case. However, when it does occur and the first symptom of stiffness of gait shows itself, the animal should be stopped and if possible stabled and kept perfectly quiet for two or three days, given all the tepid water that he cares to drink, a small quantity of roughage, but no grain. If the weather is cold he should be clothed warm but allowed to breathe fresh air. The muscles should be gently massaged, but no liniment

(Continued on page 320).

THE BEST LINIMENT

OR PAIN KILLER FOR THE HUMAN BODY

Gombault's

Caustic Balsam

IT HAS NO EQUAL

For — It is penetrating, soothing and healing, and for all Old Sores, Bruises, Wounds, Felons, Exterior Cancers, Boils, Corns and Bunions. CAUSTIC BALSAM has no equal as a Liniment.

We would say to all who buy it that it does not contain a particle of poisonous substance and therefore no harm can result from its external use. Persistent, thorough use will cure many old or chronic ailments and it can be used on any case that requires an outward application with perfect safety.

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REMOVES THE SORENESS—STRENGTHENS MUSCLES

Cornhill, Tex.—"One bottle Caustic Balsam did my rheumatism more good than \$120.00 paid in doctor's bills."
Price \$1.50 per bottle. Sold by druggists, or sent by express prepaid. Write for Booklet R.
The LAWRENCE-WILLIAMS COMPANY, Cleveland, O.

WATER FOR THE HOGS.

I have had a good many years of experience in raising hogs with pleasing results and have always been very careful in seeing that their water supply was the purest to be had on the farm. I believe it is just as important to furnish hogs plenty of good clean water as it is any other animal. I know by closely observing them they prefer it to any other kind. Some men are particular about the drinking water for their cows or other stock, and for themselves, but consider anything to be good enough for their hogs. This is a mistake. If furnished with plenty of good water the hog will more than repay for the trouble with a goodly gain in pounds and many grateful grunts of satisfaction.

The question of the amount of water is usually left to the hog to decide for himself and this is a pretty good way to settle the matter. One of our greatest authorities on swine, Prof. Wm. Dietrich, says that a hog will drink too much water during the hot weather and not enough during cold, and that better results can be obtained by forcing him to take a definite amount according to his size, by mixing the water with his feed so that he will be sure to get enough and not too much. This is reasonable, for the hog consumes a great amount of carbonaceous food. Such food, with the large amount of fat carried in his body, would cause a feverish condition during hot weather and the animal will drink much water in an effort to lower the temperature of his body.

Cold Water Not Relished.

Winter conditions, however, are different from those of summer. Hogs do not have a thick coat of hair to keep them warm and often the shelter is poor. Is it any wonder that they will quit drinking water, the temperature of which may be pretty close to 32 degrees, before they have consumed enough to supply all of the needs of their bodies. But it will require a good deal of work to determine just what the right amount is as we will have to consider the fact that feeds contain more or less water to begin with, and the needs of the pigs will keep changing all of the time as they increase in size. Also, there will be some work connected with getting the pig to imbibe just the proper amount each day. So I think those of us who are attempting to produce pork as economically as possible, do pretty well in supplying plenty and allowing Mr. Hog to use his hog sense as to how thirsty he is.

As to the proper time to supply the water, that can be left for the hog to decide if a supply is always accessible. But if the water is pumped to them or carried and poured into troughs, I consider it a good plan to water just before each meal. The stomach of the hog is comparatively small and if he does his drinking after eating a full meal, there is danger of part of the feed being washed from the stomach before the digestive juices have had sufficient time to act upon it as they should.

The Importance of Watering Hogs.

This subject of watering hogs may seem like a small matter and it may not be of as much importance as some others connected with the growing of swine, such as breeding and feeding, but most of us spend nearly all our time looking after those bigger things and do not give enough thought to some of the lesser details, while our time should be divided according to the importance of our different operations among all the subjects pertaining to our work. The watering isn't such a small matter either, for practically one-half the weight of the hog when he walks over the scales is made up of water, while many times this amount has to be used during his life to carry the food to the parts of the body where it is needed and in removing the waste matter from the tissues. Illinois.

W. M. HARDY.

Worms and Indigestion Cause 90% of Live Stock Losses

Do you know that 90% of all your live stock losses are caused by indigestion and worms, and that both are preventable? That's what the Department of Agriculture says in one of its bulletins. It is estimated that the live stock losses during the past year were \$100,000,000 and that \$90,000,000 of this was probably due to WORMS AND INDIGESTION. And both conditions are preventable. Right now the thieving, blood-sucking parasites are at work in your farm animals. They kill off your pigs and lambs. They stunt the growth of many animals. They lessen resistance to contagious diseases. They keep stock gaunt and thin. They steal hundreds of dollars in stock profits from you every year. Destroy these dangerous thieves. Clean them out of your herd. You can do it without risking a penny. I'll show you how. I'll prove it at my risk. I'll rid your stock of worms. I'll do it or no pay. Read my offer below. I don't ask a cent of money in advance—just the coupon.



The Great Worm Destroyer

SAL-VET

The Great Live Stock Conditioner

SAL-VET is the wonder-working medicated salt which destroys the deadly worms and aids digestion without bother or trouble to you. It is safe, containing no antimony, and is easy to feed. Just put it before your stock; they'll doctor themselves. It costs only 1-12c a day for each hog or sheep; 1/8c for each horse or head of cattle. Let me furnish you a 60 days' supply for all your stock.

SEND NO MONEY—Just the Coupon

Just fill out the coupon—tell me how many head of stock you have and I will supply you enough to last all your stock 60 days. You pay the freight charges when it arrives, and feed it according to directions. If SAL-VET does not do what I claim and you make a specific report in 60 days, I'll cancel the charge; YOU WON'T OWE ME A PENNY. Address

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LOOK FOR THIS LABEL on all SAL-VET packages. Don't be deceived by imitations. Don't buy "Sal" this or "Sal" that. Get the ORIGINAL Genuine SAL-VET.

Prices	Each 40 lb. package	Each 100 lb. package	Each 200 lb. package	Each 500 lb. package
	----- \$2.25	----- 5.00	----- 10.00	----- 21.12
Extra discount in larger quantities.				
No orders filled for less than 40 lbs. on this 60-day trial offer. Shipments for 60 days' trial are based on 1 lb. of SAL-VET for each sheep or hog and 4 lbs. for each horse or head of cattle. Thousands of dealers sell SAL-VET at above prices but, in the far West and South the prices are a little higher on account of the extra freight charges.				

"Sal-Vet has been of more benefit to my horses than any stock food or worm powder I ever used, in spite of the fact that it is the lowest in price."—August Delore, St. Clair, Mich.

"Sal-Vet straightened 12 sick shoats I had and put them in nice shape, and also drove a lot of pinworms from a gelding."—Vern Aldrich, R. F. D. No. 1, Quimby, Mich.

Fill Out Coupon MAIL TODAY (259)

THE FEIL MFG. CO. Dept. 80-3-4-16 Cleveland, Ohio Supply me enough SAL-VET to last my stock sixty days. I agree to pay the freight, feed it as directed, and will then pay for it if it does what you claim. If it fails and I so report specifically in 60 days, you are to cancel the charge and I will owe you nothing.

Enough for.....hogs.....sheep.....horses.....cattle

Name.....

P. O.....

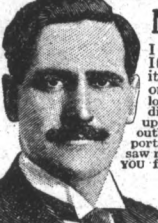
Ship. Sta.....State.....

10,000 GALLOWAY ENGINES IN 90 DAYS! MY NEW SPECIAL PROPOSITION

is ready for you today. I want you to get it because this offer, in connection with my new lower than ever 1916 prices on Galloway Masterpiece engines from 1 1/4 h. p. to 16 h. p., will save you money. You can't buy a better engine than the Galloway Masterpiece. Tens of thousands of Galloway Masterpiece engine users have said so themselves! I build this engine right here in Waterloo in my own factories and build it so good that when it goes out into the hands of a customer, one Masterpiece engine sells from one to a dozen more. Galloway Engines sweep the whole communities like wildfire. That's why I say

WAIT! DON'T DO A THING

until you have seen this wonderful new 1916, 250-page book that tells all about Galloway engines and I explain my special advertising distribution offer! If you answered all the engine advertisements ever published you would not find an offer fairer, squarer or more in your favor. You owe it to your pocket-book and the satisfaction that you demand in the operation of the engine you buy to answer this advertisement and learn the particulars of this new 90-day offer to distribute 10,000 more Galloway Masterpiece engines from 1 1/4 h. p. to 16 h. p. I know these 10,000 engines will speak for themselves and multiply my sales this year! The great Galloway chain of factories is running day and night. We are turning out more engines than ever and the reason is that we are building this engine so good, from such a highly perfected design, of such good materials and by such thoroughly skilled workmen that every Galloway Masterpiece sells one or more wherever introduced! Six liberal selling plans, cash or terms. Write today for proposition.

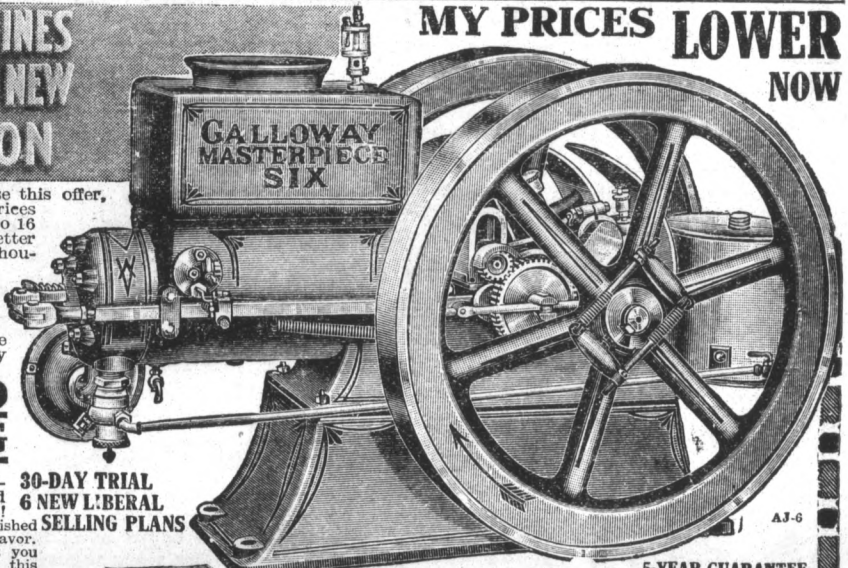


NEW BOOK FREE

I want you to have this new 250-page book. It tells how to pick out, size up and judge an engine; it also gives you engine secrets and facts; why to insist on heavy weight, large bore and low speed which mean long engine life and continuous users' satisfaction; why we sell direct at wholesale prices; how to install an engine and hook up machinery; how Galloway engines are built; how to lay out an inexpensive power house; why our prices on high-class portable engines from 1 1/4 h. p. to 16 h. p. are 6 to 8% below saw rigs are so low considering high quality. This book will save you from \$50 to \$250 in fitting up your farm power house.

WM. GALLOWAY, PRESIDENT, THE WM. GALLOWAY CO.

ENGINE MANUFACTURING SPECIALISTS

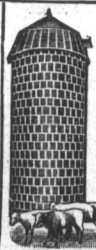


MY PRICES LOWER NOW

1916 ENGINE IMPROVEMENTS

Our 1916 model is a mechanical masterpiece—a master stroke in engine design—built by master engine builders. Materials superior in quality—skilled workmanship—standardized—develops away above rated power. Bearings adjustable—no lost motion. Special Economy carburetor (worth \$15 more on any engine, but costs nothing extra on a Galloway)—cuts down fuel bills—uses any fuel—perfect vaporizer—valves-in-head—two-ball governor—large fly wheel—perfect balance—big bore—long stroke—heavy weight. Lubricating system works winter or summer—magneto never misses fire—100% efficient—easy starter—no cranking—needs no batteries—-independent of weather, hot or cold, wet or dry. Get a genuine Galloway, then you won't be disappointed as thousands of its users have testified. Galloway is the pioneer manufacturer of gasoline engines in the United States who sells direct to the consumer—from factory to farm. There are many imitators at many prices! All I ask you to do is try our engine beside theirs on the same job, under the same conditions; just compare the engines point for point, size for size, bore, stroke, weight and low speed, which means easy running, satisfaction, economy. Just make these comparisons and you will get the facts which will prove to you that Galloway is still giving more power for less money. After you have made these comparisons be your own judge. Galloway engines are honestly built, accurately built and our descriptions are the truth. Engines shipped from Waterloo, Kansas City, Council Bluffs, St. Paul or Chicago, whichever is nearest.

185 GALLOWAY STATION WATERLOO, IOWA



Build Your Silo To Last!

The Silo that gives the best silage for the longest time is cheapest and best. Choose by this standard and build a

GUERNSEY SILO

Rock-face or smooth vitrified hollow tile. Interlocked and steel reinforced. Scientifically correct. Absolutely guaranteed. No expense for upkeep or repairs. Proof against time and trouble. Write for FREE BOOK.

Guernsey Clay Co. AGENTS

906 Fletcher Trust Bldg. WANTED Indianapolis, Indiana.



"Best" Hand Lantern

A powerful portable lamp, giving a 300 candle power pure white light. Just what the farmer, dairyman, stockman, etc. needs. Safe—Reliable—Economical—Absolutely Rain, Storm and Bug proof. Burns either gasoline or kerosene. Light in weight. Agents wanted. Big Profits. Write for Catalog. THE BEST LIGHT CO. 280 E. 5th St., Canton, O.

MOLASSES. RICHEST FEED. Lowest cost. F.O.B.D.O. MOLASSES CO., Dept. MF, 25 Huron St., Toledo, O.

COLEMAN GAS LANTERN



Makes and Burns its Own Gas Gives 800 candle power of good strong steady light. Can't blow out or jar out. Nickel-plated brass with mica globe. Stands all hard knocks. Use it in feed lots, barns, cow sheds, chicken houses, cellars, etc. Fill it only once a week—Clean it only once a year. No wicks. No chimneys. No danger even if rolled around in straw. Can't explode. Can't spill. Guaranteed 6 years. If not on sale in your town yet, write for catalog of 20 different kinds of Gasoline Lanterns, Table Lamps, etc. Dealers or agents wanted in every locality.

206 St. Francis St., Wichita, Kansas

281 East 6th Street, St. Paul, Minn.

1008 Summit Street, Toledo, Ohio

402 / 4th Street, Dallas, Texas

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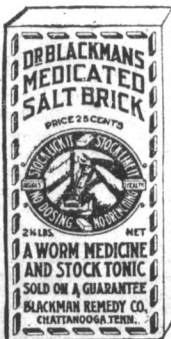
BOWSER SWEEP MILLS



Different from all others. 4 or 2 horses. Grind Corn with shucks and all small grains. (Also make 10 sizes of belt mills) FREE—Folder on "Feeds and Manures" D.N.P. Bowser Co., South Bend, Ind.

CULL BEANS FOR FEED. Write if you can use a car or less. YOUNG-RANDOLPH SEED CO., Owosso, Mich.

FOUNDED ON HORSE SENSE



It will pay to investigate Dr. Blackman's Medicated Salt Brick. It salts and supplies medicine at the same time. It saves time and trouble, also worry and anxiety as to whether your stock are getting too much or too little salt and medicine.

Dr. Blackman's Medicated Salt Brick represents a new epoch in stock medicines—a step of progress. Buy it, try it, and then you will praise it. It is founded on "horse sense." If your dealer hasn't it, we have. Write us.

Blackman Stock Remedy Co. Chattanooga, Tennessee.

LEARN AUCTIONEERING at World's Original and Greatest School and become independent with no capital invested. Every branch of the business taught in 5 weeks. Write today for free catalog. JONES' NAT'L SCHOOL OF AUCTIONEERING; 28 N. Sacramento Blvd., Chicago, Ill. Carey M. Jones, Pres.

THE MIGHTY SPLINE-DOWEL

A steel plate that locks and interlocks the silo staves, a Saginaw feature insuring a united, rigid silo wall and a perfect air-tight joint between the staves.

The Saginaw Spline-Dowel does more than unite the ends of the staves. Two dowels on each end of the spline project into the staves on either side—locks in 4 places—makes joints more solid than the wood itself.

This is one of the many steel-built features of the Saginaw Silo—features that brought to the Saginaw Silo the Gold Medal award at the Panama-Pacific Exposition.

The Super-Locked Silo

The Saginaw Super-Locked Silo contains from four to seven spline-dowels to each stave, according to the size of the silo. The use of a large number of spline-dowels throughout the silo means interlocking all the staves in a complete united wall.

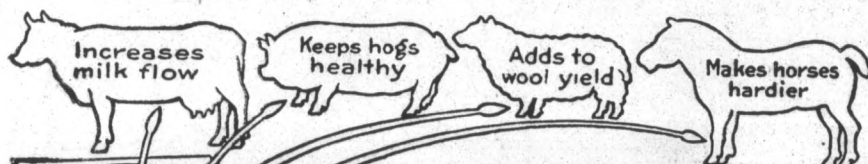
The interlocking of the bricks in a brick wall unites the entire structure into one complete unit. Flooring is cut into short lengths so that each piece when laid will be so interwoven and interlocked as to thoroughly unite the entire floor.

This important construction principle is now used to lock and interlock the entire structure of the Saginaw Super-Locked Silo. There would be no tall sky-scrapers today but for the wonderful strength of steel. That strength and the perfect silage keeping qualities of wood are combined in the Saginaw Steel-Built Stave Silo. Saginaw Silos are furnished in one, two and three piece staves as well as in the Super-Locked Silo.

We are SILO and SILAGE experts and we have some interesting facts for you. Simply send a postal and say you are interested. Address Dept. 117.

The McClure Company

Saginaw, Mich. Cairo, Ill. Des Moines, Iowa
St. Paul, Minn. Fort Worth, Texas. [21]



Less feed; more profit

Your animals are just machines—for producing milk, meat, work, wool, etc. How much you get from them depends, not on how much "fuel" (feed) you give them but on how much they get from that feed.

Dr. LeGear's Stock Powders

expel worms and put digestive organs in perfect condition to get every ounce of nourishment out of the feed. Used regularly, they'll cause cows to yield more milk, hogs to fatten faster, work animals to become sturdier, sheep to make more wool.

Because they actually do get these results, Dr. LeGear's Stock Powders are now used regularly by thousands of farmers everywhere.

50c stock book free!

If your dealer cannot sell you any of Dr. LeGear's Remedies, send us his name and we'll send you a fine 50c stock book free—116 pages and 64 illustrations. Write today.

Dr. L. D. LeGear Medicine Co.
712 Howard St., St. Louis, Mo.

Each of Dr. LeGear's 21 different Remedies is his own prescription, tested and proved in 23 years personal Veterinary practice. Ask your dealer for them.

For Stock and Poultry
Dr. LeGear's Remedies
One for every curable ailment

ATTENTION Silo Agents—Silo Users—Silo Buyers—CHALLENGE SILO Construction Wins Because It Is

Made of best material, has perfect door Lock and Ladder, heavy galvanized (not black) channel steel entire length of door, heavy galvanized channel bars across door, heavy matching, most perfect machined joint, no metal, inside top hoop, base anchors, cable anchors and every stave is convex on outside to give full bearing to hoops. Erection expense cut to the minimum. Prices Lowest Now—Investigate.

Write for our special Silo Catalog. Also makers of CHALLENGE winners—wind mills, gasoline engines, ensilage cutters, feed grinders, wood and steel tanks, pumps, pump jacks, and lawn swings.

CHALLENGE CO., 146 River St., Batavia, Ill.

SEED POTATOES

Northern Grown Early Ohios \$4.00 per 150 pound Sack. Cash with order. Spring delivery, order now.

E. C. BAKER & SONS, Jackson, Mich.

Ref. Jackson State Savings Bank, Produce Reporter Co., Chicago.

When Writing to advertisers please mention The Michigan Farmer.

AZOTURIA—PARALYTIC HEMOGLOBINEMIA.

(Continued from page 318).

of any kind applied, because I do not believe that any satisfactory results follow their use, and blisters are certain to do a great deal of harm. The bowels and kidneys should be both stimulated into action by giving seven drams of aloes, one-half dram of calomel, one dram of ground nux vomica and two drams of ground ginger in a bolus at one dose; or give one quart of raw linseed oil and if it does not produce the desired effect, give another pint twelve hours later. Good results follow enemas of soap and tepid buchu in one-half ounce doses, or one-half ounce doses of acetate of potash two or three times a day if necessary to stimulate the kidneys into action. After the hardness of the paralyzed muscles subsides, the animal should be walked for a few minutes and not far from his stable. In the treatment of all cases it is well to keep in mind that the animal should be kept on foot if possible, or in a propped up upright position, in preference to allowing him to lie flat on his side. The passing of urine by moderate pressure with the hand in the rectum is preferable to attempting to draw it off with a catheter, especially in geldings. If the heart action is weak, give alcohol, black coffee or nux vomica. In many cases I have obtained quite satisfactory results by giving either epsom or Glauber's salts, and in nearly all cases give them large doses of cooking soda in their drinking water, and in all cases allow them to have all the tepid water they care to drink.

Preventive Measures.

In conclusion let me say that the disease may be prevented with the greatest certainty by exercising the horses daily and greatly reducing the grain food. In consideration of this the horses should be exercised for a short time and fed less even on days of rest and in bad weather, and I might emphasize this statement by saying that no draft horse that has been used for doing hard work and heavy pulling should be fed even on Sunday, more than one-third or to exceed one-half of the grain ration they are accustomed to when doing full work. Feed them roots and roughage, instead of grain and you will prevent them having azoturia; besides, the stable should be well supplied with fresh air and sufficient ventilation.

FEEDERS' PROBLEMS.

Corn Silage for Horses.

Should a farmer feed his horses on corn silage? If so, how much to a feed with other roughage, such as oat straw, and hay? Is it harmful for them?

Ingham Co.

R. F.

While corn silage may be satisfactorily employed in feeding idle horses where it is made only a small factor in the ration, yet serious and often fatal results have followed the use of corn silage for horses where moldy silage has been fed. In view of this fact, silage should be fed to horses only where one is certain of the quality of the material and it is given in moderation to animals gradually accustomed to it. It is not a suitable feed for horses at hard work, even though a good quality of wholesome silage is available.

Summer Pasture for Hogs.

What is the most desirable pasture for brood sow with pigs, during spring and summer months? Must sow a pasture for use this season.

Allegan Co.

W. S. B.

There is no other one forage plant which makes better summer pasture for hogs than Dwarf Essex rape sown in the early spring at the rate of about five pounds per acre. This will make good hog pasture in about eight weeks from the time of sowing, and will furnish excellent feed throughout the summer under favorable conditions. If the spring should be exceptionally early, the hog lot might be divided and a

portion of it sown to peas, oats and rape, which may be sown together if desired, with good results.

BREEDING PROFITABLE PIGS.

There are two considerations that enter into the rearing of profitable pigs, one being the cost of production, the other the price obtained when marketed. It is almost an infallible rule that March and September are the two months out of the twelve when the highest price is reached for fatted hogs.

The weight of fatted hogs most generally desired by shippers is about 150 pounds. Pigs born in April can easily be made to reach this weight by September, being six months old. But, unfortunately, most farmers have no corn during August with which to finish the hogs. The green crop then growing can be used but the best results cannot be obtained without some old corn. In order to fatten hogs to market in September, it is necessary that arrangements be made that there is enough old corn on hand.

If the farmer attempts to raise winter pigs that he can market in February or March, he must go to the expense of providing warm houses for the herd, and must take almost constant care of the pigs to prevent loss in cold, severe weather. When warmer weather arrives they must be fed on grain which has been carried through the winter, and is at its highest value, making the cost of raising and fattening the very highest possible.

Illinois.

D. L.

LIVE STOCK NEWS.

The upward course of the hog market for many weeks has caused a good deal of surprise, as it was in progress during a period of extremely large marketing of hogs and pigs. Hogs are selling far higher than a year ago, with further advances generally expected, but at ruling figures the best policy is to let hogs go to market as fast as they can be got ready. While hogs are moving liberally toward western markets all the time, the receipts at eastern packing points are decreasing materially, and this compels the eastern packers to look to Chicago for extremely large supplies, close to 61,000 hogs having been shipped out of that market in a recent week. Obviously, this enlarged outside demand for hogs is an extremely important factor in strengthening prices, since it creates lively competition, but it is evident that much of the advance has been brought about by the big local packers for the purpose of encouraging the stockmen of the country to continue to breed hogs. Of late the eastern demand has run much more largely to light weight hogs and pigs than was the rule heretofore, and this has put prices for these offerings on a much higher plane, and whereas several weeks ago there was a large range in values between prime heavy barrows and prime light hogs, the difference now is only about a dime. Before last Christmas prime hogs sold down to \$6.50 per 100 lbs., prices for swine averaging the lowest recorded since 1912, but since then there has been an advance that landed the best hogs at \$8.40. The extremely large domestic consumption of fresh pork is a powerful bullish factor in the hog market, and so is the unprecedentedly large export trade in cured hog meats.

The Chicago hog market has continued to display remarkable absorbing power, with not only a liberal local packing demand, but at the same time an almost unprecedented eastern shipping demand, most of the eastern hogs having been marketed some time ago. In a recent week out of total receipts of 256,433 hogs, there were shipped east 67,978 hogs, comparing with 60,987 a week earlier and with only 25,313 for the corresponding week of 1915. A noteworthy feature of the Chicago market recently was the development of a good demand for choice, thin, light hogs to ship to Canada, lots weighing from 175 to 200 lbs. being wanted. The purchasers demanded a class by themselves, and they paid within 10 cents per 100 lbs. of prices paid for choice regular light hogs of the same weight. As not many such hogs were offered on the market, it became necessary for the buyers to make their selections from several car loads. The youngsters were dressed and shipped in that way to the Dominion.

Said the Critic,——

“Give us **TRACTION**,——
——without **Friction!**”



MAKING the “Silvertown” Cord Tire, taught us a few lessons in the manufacture of lighter, cooler, more flexible and enduring **FABRIC** Tires.

The “Silvertown” Tire, you know, gains its marvelous Speed (and the Coasting qualities that *demonstrate* its Speed) primarily through having *only TWO layers* of Cords, laid transversely.

Of course, these *TWO layers* bend more readily than Five, Six, or Seven Layers of Fabric do (or of Cord would).

But, we found it necessary, in order to conserve that *flexibility* (in the Two-cord construction), to put a Rubber Tread over it which was *equally flexible*,—*equally strong*,—and *elastic enough* to act as a sort of spring between the Earth and the Tire-casing, when Brakes were thrown on at stopping, or clutch thrown in at starting.

So, we had to devise practically a *new kind of Rubber*, for this purpose, **TWO YEARS AGO**.

And this new kind of Rubber Compound now does for **GOODRICH** Tires a work paralleling that done by the wonderful Alloys of Steel and Bronze in modern Motor Car construction.

It *multiplies Rubber Efficiency*, for Tire purposes, while *decreasing* its Weight, and without *increasing* its Bulk, or its *Cost to you*.

• • •

As we cannot yet supply half the demand for “Silvertown Cord Tires” (until enough manufacturing equipment can be constructed) we compromise with the Public by giving them, without additional charge, the highly efficient black Silvertown Rubber in all Goodrich **FABRIC** Tires for 1916.

This makes **GOODRICH** Fabric Tires the most Resilient and Responsive-to-Power,—the most Long-Lived and Lively, of all **FABRIC** Tires, at *ANY* price,—without increasing their relative price to you.

We call this new Silvertown Tread Compound by the name and brand of “Barefoot Rubber.”

Because, it **CLINGS** to the pavement for the same sort of reason that your bare foot clings to a slippery floor, while being flexible, stretchy, springy, and *light*.

TENACIOUS, resilient, enduring, this “Barefoot Rubber” you today get in all *black-tread* Goodrich *Fabric* Tires,—Goodrich Motor-Cycle Tires,—Goodrich Truck Tires,—Goodrich Bicycle Tires,—Goodrich Rubber Boots, Overshoes, Soles and Heels, and in none *but* **GOODRICH** products.

Test out a pair of these moderately priced *black-tread* **FABRIC** Tires and see what results from the mixing of **BRAINS** with Rubber.

No Tires are “*larger-sized*,”—taken Type for Type,—than **GOODRICH Black Treads**.

THE B. F. GOODRICH CO.
Akron, Ohio

GOODRICH

30 x 3	...Ford Sizes.....	\$10.40
30 x 3½		\$13.40
32 x 3½		\$15.45
33 x 4	Safety Tread.....	\$22.00
34 x 4	“Fair-List”.....	\$22.40
36 x 4½		\$31.60
37 x 5		\$37.35
38 x 5½		\$50.60

“**BAREFOOT**”

Tires

The New REO "Six"

The 7-Passenger Fashion Plate of '16

YOU NEED GO NO FURTHER—you need pay no more—to obtain all the mechanical excellence, all the beauty, style, finish and luxurious riding qualities in a seven-passenger touring car, that your heart can desire.

FOR WE MAINTAIN that, though you search the world over, you will find no car at any price, that is the superior of this new Reo Six in these essentials.

MECHANICALLY IT HAS NO SUPERIOR—it is not possible to put better materials in a chassis, simply because the science of metallurgy knows no better. Reo uses and always has used the best. The fame of Reo rests on that.

IT IS NOT POSSIBLE to machine parts more accurately—for the Reo factories are admittedly the "Models" among automobile factories and Reo standards are admittedly of the highest.

AND IT ISN'T POSSIBLE to obtain an automobile, in the designing and fabrication of which more experience has been applied—for the Reo organization is the oldest in the Automobile industry. And never since the first Reo was made has there been a single change in the executive organization of Reo.

ALL WE'VE LEARNED, WE'VE KEPT right here in the Reo factories—and this latest product of Reo brains and experience and facilities is the net result.

AS TO BEAUTY OF EXTERIOR we need only say that when this new Reo Six was announced and its graceful lines shown in the engravings it was instantly hailed by everyone in the trade—rival and friend alike—as the "Fashion Plate" for the coming year.

AND IF YOU HAVE WATCHED closely the various new bodies that have since come out—some of them only too palpably redesigned to emulate the lines of this Reo Six—you have observed that it had set the style for the season.

BUT REO BEAUTY ISN'T on the outside alone—it's in the unseen places as well. In fact none so thoroughly appreciates Reo engineering as he who has studied it most intimately.

THE SAME STURDINESS—the same wonderful reliability, dependability and economy of upkeep—that have made the four-cylinder Reo world famous, are in this Reo Six.

"50 PER CENT OVER-SIZE in all vital parts," that Reo factor of safety is the reason at the same time for Reo dependability and low maintenance cost.

EVERY PART THAT IS SUBJECTED—or may ever be subjected—to excessive strains is made fifty per cent heavier—or of better material and therefore fifty per cent stronger—than other makers consider necessary. Motor parts—as crank-shafts, connecting rods, bearings—transmission gears, driving shafts, axles, differentials—all vital parts are made to the Reo standard "fifty per cent over-size."

SEE THIS NEW REO SIX. Ride in it. Drive it yourself—you can if you have ever driven any automobile. You will say you have never tasted the real joys of motoring before.

JUST A WORD ABOUT DELIVERIES. Those who know are unanimous in stating that there will be a tremendous shortage of automobiles the next few months. Can't be otherwise. Shortage of all kinds of materials and of tools to manufacture them—demand greater than ever before. Those who order early will get Reos—those who delay cannot hope to.

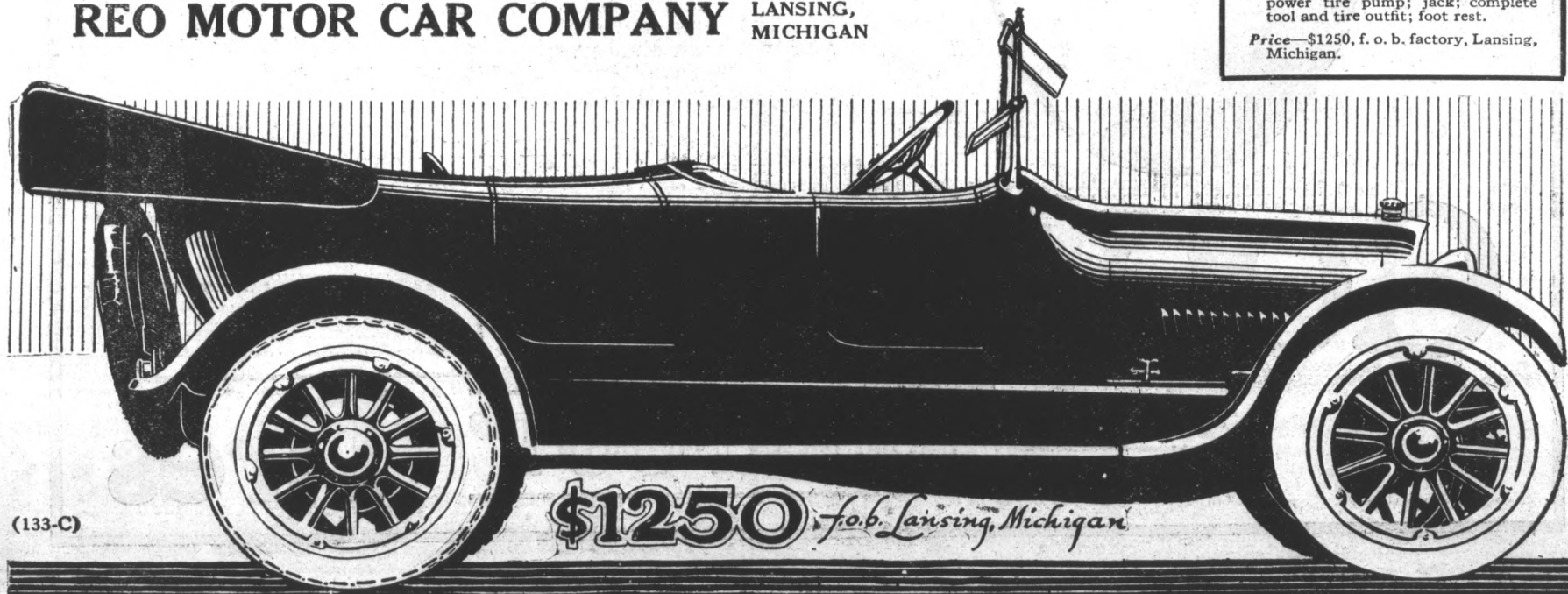
SO WE SUGGEST that you decide this matter at once and order your Reo immediately. Then you'll be one of "the lucky ones."

TODAY won't be a minute too soon.

For the Man Who Knows Cars

Wheel Base—126 inches.
Front Springs—Semi-elliptic.
Rear Springs—Cantilever.
Front Axle—I-beam.
Rear Axle—Full floating. Timken roller bearings throughout.
Tires—34" x 4 1/2". Non-skids on rear. Demountable rims.
Motor—Vertical, six-cylinder, cast in three. Valves protected.
Cylinder Dimensions—3 1/8" x 5 1/2".
Horsepower—45.
Lubrication—Automatic force feed.
Carburetor—Automatic-heated.
Ignition—Generator and magneto.
Starter—Electric (Remy).
Transmission—Selective swinging type.
Single rod, center control.
Clutch—Multiple dry disc.
Brakes—Two on each rear wheel.
Steering—Gear and sector. 18" steering wheel.
Control—Left-hand drive, center control.
Spark and throttle on steering wheel. Foot accelerator.
Fenders—Drawn sheet steel.
Aluminum bound, linoleum covered running boards.
Gasoline capacity—18 gallons. Gasoline tank in rear.
Stewart vacuum system supply.
Gasoline gauge beside filler.
Body—Seven-passenger "Sheer-line" touring.
Genuine hand-buffed bright enamel finish leather upholstery.
Deep cushions and backs. Divided front seats.
Finish—Body, Golden Olive. Running gear, Black. Equipment nickel trimmed.
Thief-proof—Locking device. This enables the driver to lock simultaneously the starting device, the transmission and the floor boards. Starting device is made inoperative, at the same time that the transmission gears are locked in neutral position. It would take a volume to describe it—but you will see and appreciate it at a glance.
Equipment—Fully electric lighted throughout; improved 5-bow, one man, mohair top, with full side curtains; mohair slip cover; clear-vision, rain-vision, ventilating windshield; speedometer; electric horn; extra rim with improved tire brackets; power tire pump; jack; complete tool and tire outfit; foot rest.
Price—\$1250, f. o. b. factory, Lansing, Michigan.

REO MOTOR CAR COMPANY LANSING, MICHIGAN



Magazine Section

LITERATURE
POETRY
HISTORY and
INFORMATION

MICHIGAN FARMER
AND *LIVE STOCK* JOURNAL
PUBLISHED WEEKLY. ESTABLISHED 1843.

The FARM BOY
and GIRL
SCIENTIFIC and
MECHANICAL

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

MEXICO has stood as a synonym for war and bloodshed for so many months that we have well-nigh forgotten, if we ever knew, that it was once a country where peace reigned and people went about orderly business pursuits, free to seek life, liberty and happiness. And yet in the days of President Diaz the dwellers in that tropic country had their work days and fete days. In fact they enjoyed the play days much better than we do ours, for they have the temperament which can throw off work and worry when holidays come and enter

Covadonga Day In Mexico City

By EDITH ADAMS McALLISTER

into the sports of the hour as joyously as though there were to be no dark tomorrows.

Among the fete days which the Spanish inhabitants celebrated most royally was Covadonga day. Covadonga day is to the Spaniard what the Battle of Lexington and Concord, or the celebration of the Fourth of July is to the American, for on the day picked for celebration the Spanish general, Don

Pelayo, in September, 718, won the first decisive victory over the Moors at the Cave of Covadonga in northern Spain. A handful of Spaniards under this Don Pelayo had taken refuge in the Cave of Covadonga. With it as a stronghold they routed the Moors, resulted in the withdrawal of the Arabs from Asturia. Don Pelayo was proclaimed first King of Asturia and the remaking of Spain began. The

Cave of Covadonga became the Mecca of Spaniards and at Don Pelayo's death he was buried there.

Spaniards the world over, especially Asturians, look to Covadonga day as a day to be remembered, and its celebration in the City of Mexico was once one of the great fete days of the year.

I have attended many "fiestas" in the beautiful Tivoli Gardens on the national holidays of the different countries, including our own Fourth of July, and they have all been more or less enjoyable. But this Covadonga day, I can never think of it without hearing

WORLD EVENTS IN PICTURES



Princess Marie, of Anhalt, to Marry Prince Joachim, the Kaiser's Youngest Son, in Rear Seat of Auto Sleigh.



Montenegrin Women who have Experienced the Hardships of War, in their Quaint National Costumes.



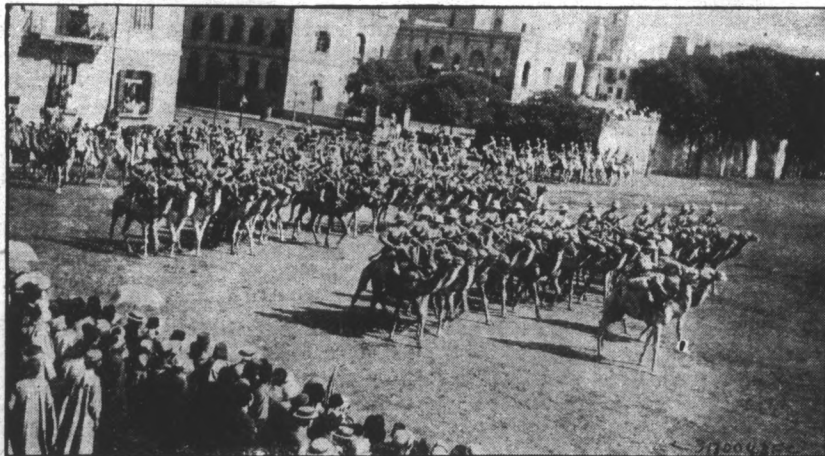
Soldier with Anti-Gas Mask Throwing Hand Grenades.



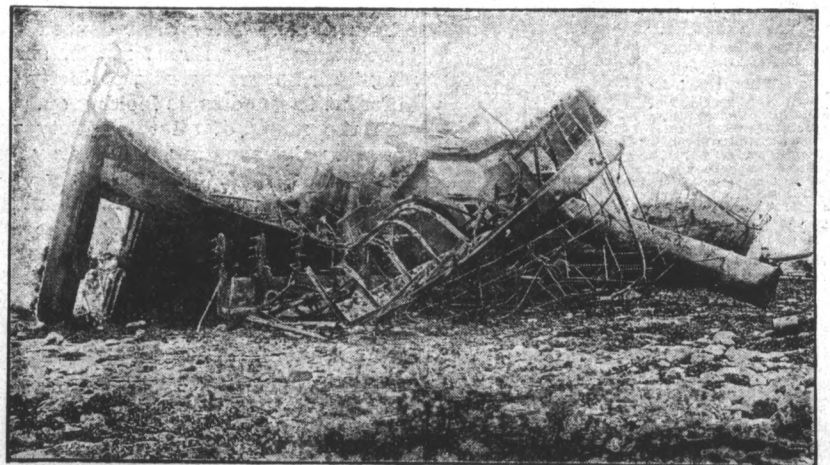
King Nicholas, of Montenegro, and his Family, Find Refuge Among French at Lyons.



American Woman who Fell from Zeppelin Recovers.



British Regiment Mounted on Camels leaving Cairo, Egypt, to Defend the Suez Canal.



Famous Antarctic Ship "Scotia," Burnt in Bristol Channel, and now Beached at Sully, England.

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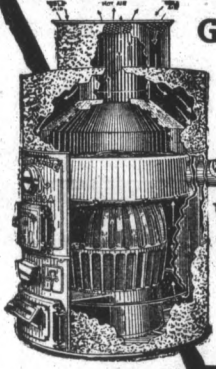
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the 'tun 'tun of the tambors, the clicking of the Castannueles and the shouts of "Ole, con ole con ole."

At all these "fiestas" there is the best of music, for the military bands are there in numbers and there are many orchestras of stringed instruments. Beautifully gowned women promenade with a setting of magnificent old trees, and there are the usual speeches, games of all kinds, dancing in the pavilion and confetti throwing.

Because of its importance to Spaniards, Covadonga day was the one day in the year when the grocery stores of Mexico were closed. These stores are owned by a Spaniard who came from Spain when he was a small boy and got a place to work in one of them. He saved his centavos and by the time he was a man he had enough to buy a store of his own. His employer always helped him to get started.

Covadonga day the Spanish grocer considered his. He had worked 364 and this one day of the year was for pleasure. He closed his store, attended high mass and then set out to meet his friends. Then it was off to the Tivoli, there to dance and frolic and forget there was such a thing in life as work.

It was a perfect revelation to see such spontaneous mirth in grown people. There was very little confetti throwing, but the bands were formed into circles and surrounded by dancers, the favorite dance being the Joto. When the bands stopped playing the musicians would shout "Viva Espania," the dancers replying "Viva ole, con ole," calling for another waltz. Then they danced more furiously than

more animated, the gayest grew more musicians and dancers seemed even gay, it was contagious. Couples were dancing beneath the trees in light and in shade; a merry group would whirl into the blaze of the electric light, breathless crowds would appear looking for new places. We followed one lad of about 16 years who rushed from one circle to another. He would spring into the center and perform a wild dance, which I have never seen equalled for skill and grace. In spite of the excitement all was orderly. Indeed, I venture to say there are few countries where such order would prevail in such a mixed crowd. The Mexicans took no part but they looked on and seemed to enjoy the sport of their Spanish cousins.

Land O' Nod Stories.

By HOWARD T. KNAPP

The Ants Prepare for War.

WHEN the young queens and their mates were well started on their wedding journey, Billy Be By Bo Bum and his friend Tinker Teedle Tee climbed back up the hill and re-entered the ants' underground city. The Queen, you remember, had been hustled off to her own apartments at the very bottom of the city when the marriage flight began, for her guards were afraid she would try to join her children.

Now that all the excitement was over, Billy wanted to see the Queen

There were cliques composed of the better classes. One that attracted us were entirely Andalusians. Here an elderly lady played the guitar while a handsome chap sang. Lovely Senoritas were dancing together. But one danced with a man. She was simply bewitching. Her partner was as handsome as she was beautiful. All of the dancers were more or less graceful, but these two should have been crowned King and Queen of them all.

The hour was late and this was a most fitting time to leave, but everywhere as far as the eye could see, the lights were burning just as brightly, the dancing was going on with as much "gusto," and the men were shouting, "Ole, con ole, con ole," as vigorously as in the early morning.

"Just what they say," replied Tinker Teedle Tee. "They are planning an expedition against a nearby colony of Negro ants for the purpose of capturing a lot of slaves."

"Do you mean to tell me that ants make slaves?"

"I most certainly do," retorted the merry little elf. "In fact, I don't know how the work of a big city like this could be carried on if it wasn't for the slaves to help with the work. Haven't you noticed many little black ants mixed in with the larger red citizens of the city?"

"Why, yes, I did notice some black ants engaged in digging a new store-room," replied Billy. "But at the time I was so busy with other things that I did not think anything about it."

"Those were slaves," said Tinker. "But slavery among ants is not the degrading, cruel practice it is among men. In fact, the slaves in this city are just as free and happy as though they had never been carried away captives from their original homes. They mingle with their captors and cheerfully help with the work, enlarging the city, foraging for food, serving as nursemaids for the baby ants and doing the thousand and one things constantly demanding attention in a city like this. They are treated as equals by their captors and altogether lead as happy a life as any ant in the city."

"I should think the ants would be afraid to let their slaves go out into the forest foraging for food."

"Why?" demanded Tinker. "Well, if they get out of the city aren't they liable to try to escape and return to their own homes?"

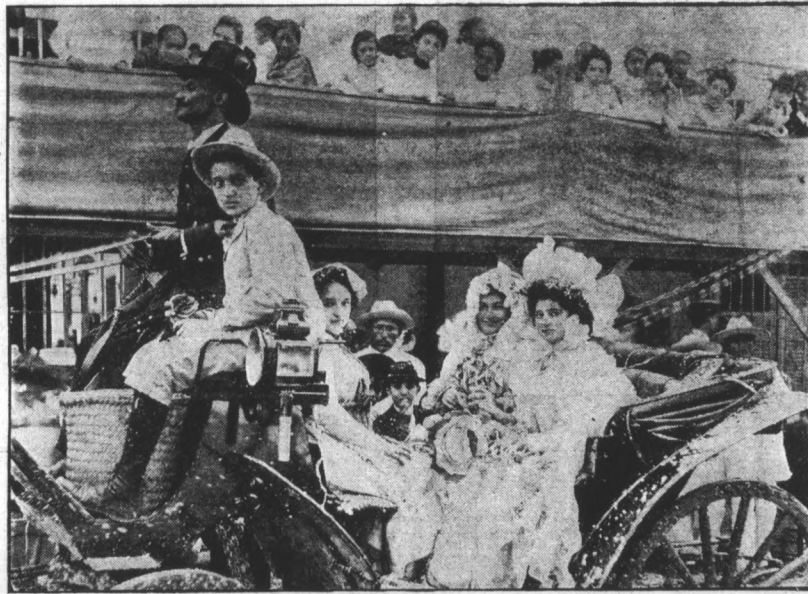
"There's no chance of that," replied the elf. "You see, the slaves were brought here when they were so young that they do not remember any other home than this. If they ran away they would not know where to go and would soon get tired of wandering about in the grass forest. In no time they would be only too glad to return to their masters, who really are more like friends or brothers than masters."

"What is the matter?" demanded the Queen, who just at this minute came rushing up from the apartments far under ground where she had been held a prisoner during the marriage flight.

"Your soldiers are planning to invade the next city and carry off some new slaves," replied Tinker Teedle Tee.

"Oh, how I would lead my army to war," said the Queen. "But whenever anything really exciting is going on, my bodyguard always hustles me off to the bottom of the city and holds me prisoner until the fun is over. Here they come now to take me back to my own rooms," and the Queen pouted for all the world like a little girl whose mother won't let her go out to play.

"Tinker, you and Billy Be By Bo Bum had better come with me," she



Well-gowned Women Followed in the Parade, Headed by the President.

ever. Everybody danced, Gallegarios, Basques, Andalusians, Aragonese, all.

In one place you would see a group dancing to the music of the pipes; others would be in full fling around an orchestra. Young men played tamborines to which they danced with great skill, striking the tambourines with heads, elbows and heels. Others played the guitar most beautifully. The dancers never tired! They would rush from one circle to another, the leader shouting, "Here we will dance," and they were at it again with all their might. Some danced in couples and others alone. They even danced between numbers without music, snapping their fingers merrily, perfectly indifferent to the crowds looking on.

In the midst of all this gaiety we heard a voice shouting, "Make way for Senor President." Immediately all lined up at either side and shouted, "Viva el Senor Presidente." The artillery band, which has won fame in many countries, struck up the Mexican National hymn, which is one of the most stirring and beautiful anthems written. All did honor to the president, but as soon as he had passed they returned to their dancing.

As night drew near, strings of colored lanterns were festooned from tree to tree, the electric lights fell in patches throughout the garden; the

again, so he started down the passage, but before he had gone very far he realized that something unusual was going on. An air of suppressed excitement agitated every ant he met and groups of workers were gathered in every corner, excitedly waving and crossing their long, hair-like feelers which, you know, was the ants' way of talking.

At first Billy thought the ants were discussing the marriage flight, but soon a troop of soldiers came up and the few words he caught as they hurried past made him gasp with astonishment.

"Now that the young queens and their bothersome mates are out of the way I think it is time that we went to war and captured a new lot of slaves," said one of the soldiers. "A good many of the last lot have died recently, and the city has grown so fast that now the work is too heavy for our own workers and the few remaining slaves."

"I agree with you," replied another soldier. "For several weeks I have had my eye on a big colony of Negro Ants not far from here, and I suggest that we gather our army and attack them without wasting any more time."

"What do they mean by talking of going to war and capturing slaves?" demanded Billy Be By Bo Bum.

continued. "These slavemaking raids are not always successful, and although I have a big and powerful army, it has been defeated before now. If the enemy should win this battle, they would invade my kingdom and maybe even capture the city and then you might not be able to escape."

And next week I'll tell you how the ants went to war.

BIRD FLIES 12,000 MILES.

BY L. K. HIRSHBERG.

A swallow of the chimney-sweep variety, wearing the number 9,444 of the American Bird Banding Association, was captured recently on Staten Island after it had traveled more than 12,000 miles, according to the date when it was liberated to continue its journeys from continent to continent. And what is more remarkable, the bird was taken within half a mile of the place where it was numbered two years ago.

Everatt Burkman, of Manor Road, West Brighton, caught eight chimney-sweeps in a chimney of the house on the Benedict estate in July, 1913, and promptly numbered the birds and turned them loose.

Robert E. Saunders, in the Barrett house in New Brighton was awakened by a fluttering noise and found No. 9,444 caught in a window curtain. He liberated the bird and reported its number to Howard H. Cleaves, secretary of the American Banding Association, who looked up its record. Mr. Cleaves said the chimney-sweeps winter somewhere in South America and spend their summers here. No. 9,444 has made two round trips, covering more than 12,000 miles, and he said that the bird's return to Staten Island showed that it is only migratory when changing climates and returns year after year to the localities with which it is familiar.

THE OLD COUNTRY ROAD.

BY ALONZO RICE.

With crook and turn, the country road
Winds up the hill and down the dale;

Here first the tide of travel flowed
Along the blazed-out trail.

Ere long the small, rude cabin stood
Beside the scarce frequented way;
And echoed through the lonely wood,
The tireless axe all day.

The forest felled, the waving grain
In beauty clothed the virgin soil;
The grateful sunshine, cheering rain
Made fruitful days of toil.

The white-topped wagons came in view
On the horizon's darkened rim;
And passed, in search of regions new,
Beyond the mountains dim.

The timid deer would pause and scan
Unceasing turmoil wrought around;
And then to haunts unknown to man,
It sped at slightest sound.

The grist across old Dobbin's back,
The pioneer would mill
Along the lone, half-hidden track,
Each trip made plainer still.

Here change has never set its seal;
And squirrels as in days of yore,
Along the worm-fence panels steal
To find their winter store.

And here and there is seen a stream
That pauses oft in shallow mood;
Where undisturbed, as in a dream,
The wood-duck leads her brood.

In vagrant train, the gypsies mark
The lofty elms, the waters clear;
Beside the ford, when falls the dark,
Their gleaming lights appear.

From thickets close beside the way,
The whistle of the red bird comes;
And farther still, in shadows gray,
The partridge loudly drums.

The white and sentient dust retains
The print of little sun-burnt feet;
And here is where the loaded wains
Passed with their sheaves of wheat.

Unlike the ways that lead to Rome,
Where kings were robed in regal state,
Here gleams the white roof of the home
Where true hearts congregate.

No splendid coach with prancing steeds
Whirls by with equipage so grand;

But here the farm boy gently leads
The colt he raised by hand!



The After-Cost

WHEN you buy an automobile, you expect to use it not only this year and next year, but for four or five, or six years, or even longer. So, while the first cost is always important, it is not nearly as important as the after-cost.

You want a car that can be operated economically. You want a car that will give you the greatest mileage per gallon of gasoline and oil. You want a car that is properly balanced and light in weight so that you will get high tire mileage.

This question of operating expense is one that some people overlook but it is the operating expense that makes a car either a good investment, a health and pleasure giving investment—or a burdensome annoyance and financial drag.

The World's Motor Non-Stop Mileage Record, established last January by a Maxwell stock touring car, offers some interesting facts. Not claims or beliefs or opinions, but *facts*—facts that are supported and vouched for by The American Automobile Association, the supreme court of the automobile industry.

In the first place, the record breaking Maxwell car ran over town and country roads for 44 consecutive days and nights, averaging more than 500 miles per day. During this time—1,056 hours—the engine never stopped and

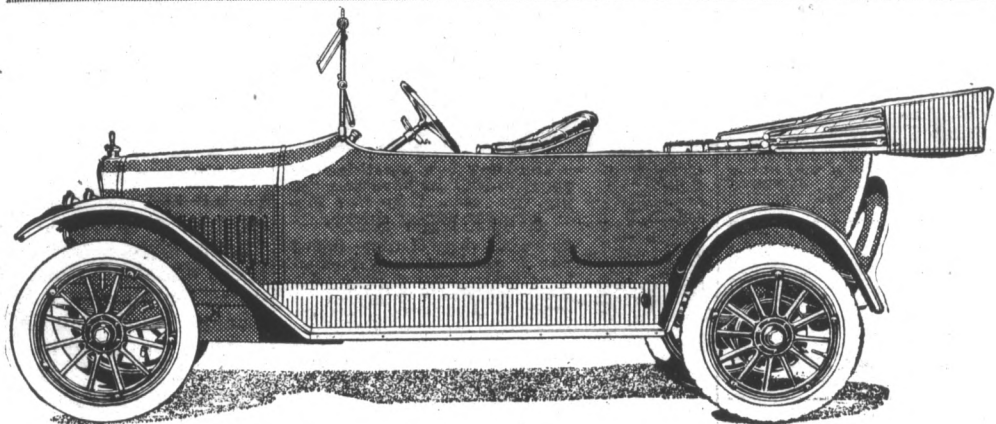
the car stopped only long enough to take on gasoline, oil, water and a fresh driver. The ability of any car to run 22,000 miles in 44 days without stopping the engine is conclusive proof of its genuine merit and quality throughout.

But this is not all. Not only did the Maxwell prove its sturdiness, its wonderful endurance powers, but it established an average gasoline consumption of nearly 22 miles to the gallon. This is truly remarkable in view of the fact that this was primarily a Motor Non-Stop Endurance test and that no effort could be made to save fuel at the risk of stopping the engine.

In addition, the champion Maxwell stock car used only one gallon of oil to every 400 miles of its journey, and it went the whole distance of 22,000 miles on two and one-half sets of tires. We have never heard of anything that could compare, in the smallest degree, with these figures, the accuracy of which is officially and indisputably established.

Every Maxwell touring car turned out of our big Detroit factories is an exact duplicate of this car. The price of \$655.00 is made possible by intensive manufacturing methods and the great number of cars we build during the year. If value, service and economy are of any importance to you, do not fail to inspect and test the Maxwell before making your selection.

Brief Specifications—Four cylinder motor; cone clutch; unit transmission 3 (speeds) bolted to engine, $\frac{3}{4}$ floating rear axle; left-side steering, center control; 56" tread, 103" wheelbase; 30x3 $\frac{1}{2}$ " tires; weight 1,960 pounds. **Equipment**—Electric starter; Electric headlights (with dimmer) and tail-light; storage battery; electric horn; one-man mohair top with envelope and quick-adjustable storm curtains; clear vision, double-ventilating windshield; speedometer; spare tire carrier; demountable rims; pump, jack, wrenches and tools. **Service**—16 complete service stations, 54 district branches, over 2,500 dealers and agents—so arranged and organized that service can be secured anywhere within 12 hours. **Prices**—2-Passenger Roadster, \$635; 5-Passenger Touring Car, \$655, F.O.B. Detroit. Three other body styles.



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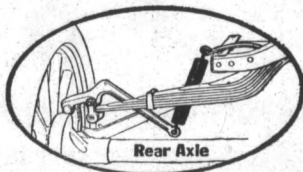
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Aitchandee Shock Absorbers are easily attached. Then begins complete satisfaction. Our cantilever principle removes those side slaps and thrusts when steering over rough roads or at high speed.

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Light of Western Stars

By ZANE GREY

The night happened to be partly cloudy, with broken rifts showing the moon, and the wind blew unusually strong. The brightness of the fire seemed subdued. It was like a huge bonfire smothered by some great covering penetrated by different, widely separated points of flame. These corners of flame flew up, curling in the wind, and then died down. Thus the scene was constantly changing from dull light to dark.

There came a moment when a blacker shade overspread the wide area of flickering gleams and then obliterated them. Night enfolded the scene. The moon peeped, a curved yellow rim, from under broken clouds.

To all appearances the fire had burned itself out; but suddenly a pin-point of light showed where all had been dense black. It grew and became long and sharp. It moved. It had life. It leaped up. Its color warmed from white to red. Then from all about it burst flame on flame, to leap into a great changing pillar of fire that climbed high and higher. Huge funnels of smoke, yellow, black, white, all tinged with the color of fire, slanted skyward, drifting away on the wind.

"Wal, I reckon we won't hev the good of them two thousand tons of alfalfa we was figgerin' on," remarked Stillwell.

"Ah! Then that last outbreak of fire was burning hay," said Madeline. "I don't regret the rancho, but it's too bad to lose such a quantity of good feed for the stock."

"It's lost, an' no mistake. The fire's dyin' as quick as she flared up. We I hope none of the boys got too risky to save a saddle or blanket. Monty's a terror fer runnin' the gantlet of fire. He's like a hoss that's just been dragged out of a burnin' stable an' runs back sure locoed. There! She's smolderin' down now. Reckon we might jest as well turn in again. It's only three o'clock."

"I wonder how the fire started," remarked Alfred. "Some careless cowboy's cigarette, I'll bet!"

Stillwell rolled out his laugh. "Al, you sure are a free-hearted, trustin' feller! I'm some doubtin' the cigarette idee, but you can gamble, if it was a cigarette, it belonged to a cunnin' vaquero, an' wasn't dropped accident like."

"Bill, you don't mean Don Carlos burned the rancho?" ejaculated Alfred in mingle amaze and anger.

Again the old cattleman laughed. "Powerful strange to say, my friend, ole Bill means jest that."

"Of course Don Carlos set that fire," put in Florence, with spirit. "Al, if you live out heah a hundred years, you'll never learn that greasers are treacherous. I know Gene Stewart suspected something underhand. That's why he wanted us to hurry away. That's why he put me on this black horse of Don Carlos's. He wants that horse for himself, and feared the don would steal or shoot him."

"Well," said Stillwell, "let's all turn in again. Somebody'll ride over early an' tell us what's what."

Madeline awakened early, but not so early as the others, who were up and had breakfast ready when she went into the dining-room. Stillwell was not in an amiable frame of mind. He continually glanced at his watch, and growled because the cowboys were so late in riding over with the news. He gulped his breakfast; and while Madeline and the others ate theirs he tramped up and down the porch.

Madeline noted that Alfred grew nervous and restless. Presently he left the table to join Stillwell outside.

"They'll slope off to Don Carlos's rancho and leave us to ride home alone," observed Florence.

"Do you mind?"

"No, I don't exactly mind. We've got the fastest horses in this country. No, I don't mind, but I've no hankering for a situation which Gene Stewart thinks—"

Florence began disconnectedly and ended evasively. Madeline did not press the point, although she had some sense of misgiving. Stillwell tramped in, shaking the floor with his huge boots; Alfred followed him, carrying a field-glass.

"Not a hoss in sight," complained Stillwell. "Somethin' wrong over Don Carlos's way. Miss Majesty, it'll be jest as well fer you an Flo to hit the home trail. We can telephone over an' see that the boys know you're comin'."

Alfred, standing in the door, swept the gray valley with his field-glass.

"Bill, I see running stock-horses or cattle, I can't make out which. I guess we'd better rustle over there."

Both men hurried out. While the horses were being brought up and saddled, Madeline and Florence put away the breakfast dishes, then speedily donned spurs, sombreros, and gauntlets.

"Here are the horses, ready," called Alfred. "Flo, that black Mexican is a prince!"

The girls went out in time to hear Stillwell's good-by as he mounted and spurred away. Alfred went through the motions of assisting Madeline and Florence to mount—which assistance they always flouted—and then he, too, swung up astride.

"I guess it's all right," he said rather dubiously. "You must not go toward Don Carlos's. It's only a few miles home."

"Sure, it's all right. We can ride, can't we?" retorted Florence. "Better have a care for yourself, going off over there to mix in goodness knows what." Alfred said good-by, spurred his horse, and rode away.

"If Bill didn't forget to telephone!" exclaimed Florence. "I declare he and Alfred were sure rattled!"

Florence dismounted and went into the house. She left the door open. Madeline had some difficulty in holding Majesty.

It struck Madeline that Florence stayed rather long indoors. Presently she came out with sober face and rather tight lips.

"I couldn't get anybody on the telephone. No answer. I tried a dozen times."

"Why, Florence!" Madeline was more concerned by the girl's looks than by the information she imparted. "The wire's been cut," said Florence.

Her gray glance swept swiftly after Alfred, who was not far out of earshot. "I don't like this a little bit. Here's where I've got to 'figger,' as Bill says."

She pondered a moment, then hurried into the house, to return presently with the field-glass that Alfred had used. With this she took a survey of the valley, particularly in the direction of Madeline's ranch-house, which was hidden from view by low, rolling ridges.

"Anyway, nobody in that direction can see us leave here," she mused. "There's mesquit on the ridges. We've got cover—long enough to save us till we can see what's ahead."

"Florence, what—what do you expect?" asked Madeline nervously.

"I don't know. There's never any telling about greasers. I wish Bill and Alfred hadn't left us. Still, come to think of that, they couldn't help us much in case of a chase. We'd run right away from them. Besides, they would shoot. I guess I'm as well satisfied that we've got the job of getting home on our own hands. We don't dare follow Al toward Don Carlos's ranch. We know there's trouble over there; so all that's left is to hit the

trail for home. Come, let's ride! You stick to me like a Spanish needle."

A heavy growth of mesquit covered the top of the first ridge, and the trail went through it. Florence took the lead, proceeding cautiously. As soon as she could see over the summit she used the field-glass; then she went on.

Madeline, following closely, saw down the slope of the ridge to a bare, wide, grassy hollow, and onward to more rolling land, thick with cactus and mesquit. Florence appeared cautious, deliberate, yet she lost no time. She was ominously silent. Madeline's misgivings took definite shape in the fear of vaqueros in ambush.

Upon the ascent of the third ridge, which Madeline remembered was the last uneven ground between the point she had reached and her home, Florence exercised even greater care. Before she reached the top of this ridge she dismounted and looped her bridle around a dead snag. Motioning Madeline to wait, she slipped ahead through the mesquit out of sight.

Madeline waited anxiously, listening and watching. She could not see or hear anything alarming. The sun began to have a touch of heat; the morning breeze rustled the thin mesquit foliage; the deep magenta of a cactus flower caught her eye; a long-tailed, cruel-beaked bird sailed so close to her that she could have touched it with her whip. But she was only vaguely aware of these things. She was watching for Florence, listening for some sound fraught with untoward meaning.

All of a sudden she saw that Majesty's ears were held straight up. Then Florence's face, now strangely white, showed round the turn of the trail.

"S-sh!" whispered Florence, holding up a warning finger. She reached the black horse and petted him, evidently to still the slight uneasiness he manifested. "We're in for it," she went on. "A whole bunch of vaqueros hiding among the mesquit over the ridge. They've not seen or heard us yet. We'd better risk riding ahead, cut off the trail, and beat them to the ranch. Madeline, you're as white as death! Don't faint now!"

"I shall not faint. But—you frighten me. Is there danger? What shall we do?"

"There's danger. Madeline, I would not deceive you," went on Florence in an earnest whisper. "Things have turned out just as Gene Stewart hinted. Oh, we should—Al should have listened to Gene! I believe—I'm afraid Gene knew!"

"Knew what?" asked Madeline.

"Never mind now. Listen. We dare not take the back trail. We'll go on. I've a scheme to fool that grinning Don Carlos. Get down, Madeline—hurry!" Madeline dismounted. "Give me your white sweater. Take it off—and that hat. Hurry, Madeline!"

"Florence, what on earth do you mean?" cried Madeline.

"No so loud," whispered the other. Her gray eyes snapped. She had divested herself of sombrero and jacket, which she held out to Madeline.

"Hear, take these. Give me yours. Then get up on the roan. I'll ride Majesty. Rustle now, Madeline. This is no time to talk."

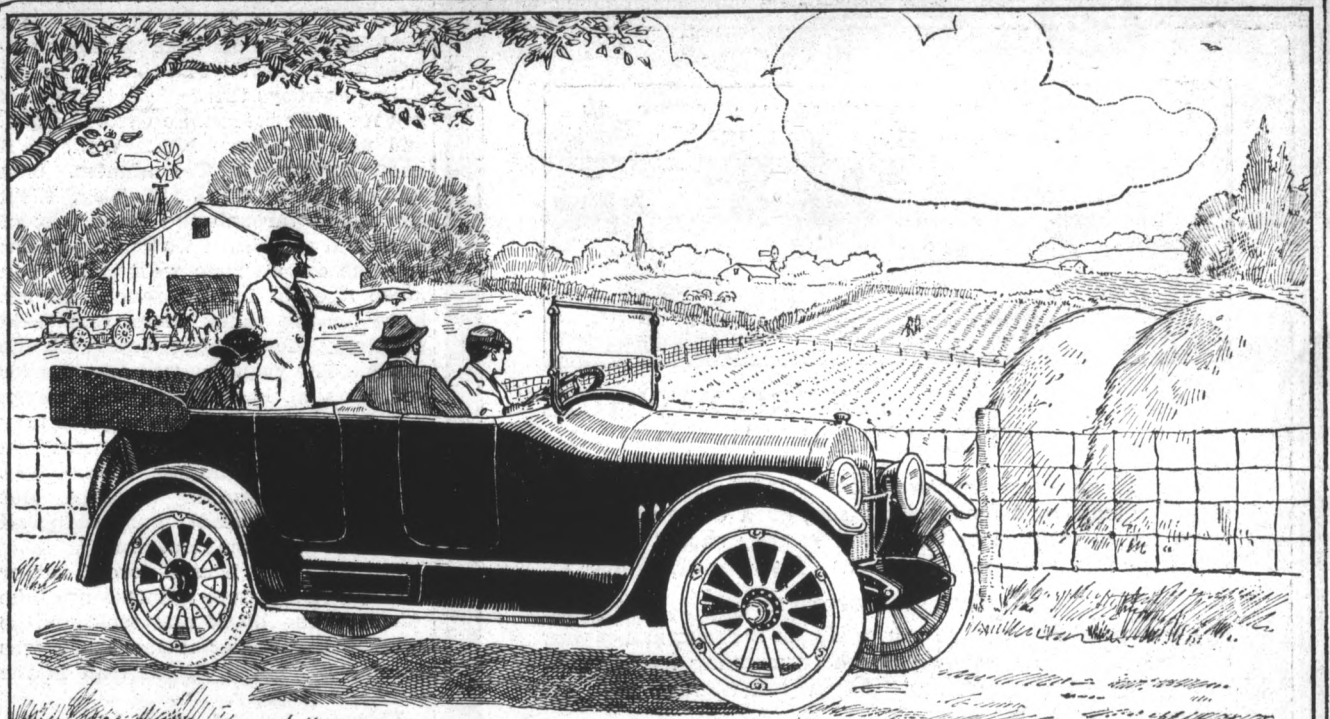
"But, dear—why, why do you—ah, you're going to make the vaqueros take you for me!"

"You guessed it! Will you—"

"I shall not allow you to do anything of the kind," returned Madeline.

It was then that Florence's face, changing, took on the hard, stern sharpness so typical of a cowboy's. Madeline had caught glimpses of that expression in Alfred's face, and on Stewart's when he was silent, and on Stillwell's always. It was a look of iron and fire—unchangeable, unquenchable will. There was even violence in the swift action whereby Florence compelled Madeline to the change of apparel.

"It was my idea, anyhow, if Stewart hadn't told me to do it," said Flor-



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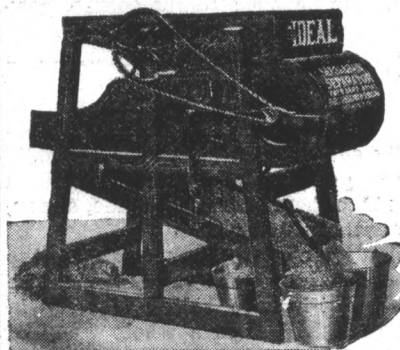
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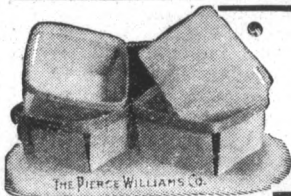
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ence, her words swift as her hands. "Don Carlos is after you, you—Miss Madeline Hammond! He wouldn't ambush a trail for anyone else. He's not killing cowboys these days. He wants you for some reason. So Gene thought, and now I believe him. Well, we'll know for sure in five minutes. You ride the black; I'll ride Majesty. We'll slip round through the brush, out of sight and sound, till we can break out into the open. Then we'll split. You make straight for the ranch; I'll cut loose for the valley where Gene said positively the cowboys were with the cattle. The vaqueros will take me for you. They all know those white things you wear. They'll chase me, but they will never get anywhere near me. You will be on a fast horse. He can take you home ahead of any vaqueros. But you won't be chased! I'm staking all on that. Trust me, Madeline!"

Madeline felt herself forced rather than persuaded into acquiescence. She mounted the black and took up the bridle. In another moment she was guiding her horse off the trail in the tracks of Majesty.

Florence led off at right angles, threading a slow passage through the mesquit. She favored sandy patches and open aisles between the trees, and was careful not to break a branch. Often she stopped to listen.

This detour of perhaps half a mile brought Madeline to where she could see open ground, the ranch-house only a few miles off, and the cattle dotting the valley. She had not lost her courage, but it was certain that these familiar sights somewhat lightened the pressure upon her breast. Excitement gripped her.

The shrill whistle of a horse made both the black and Majesty jump. Florence quickened the gait down the slope. Soon Madeline saw the edge of the brush, the gray, bleached grass, and level ground.

Florence waited at an opening between the low trees. She gave Madeline a quick, bright glance.

"All over but the ride! That'll sure be easy. Bolt now, and keep your nerve."

When Florence wheeled the fiery roan and screamed in his ear, the big horse leaped into thundering action. Florence's hair streamed on the wind and shone gold in the sunlight; and at the sight, Madeline felt the same thrill with which she had seen Bonita's flying dark hair on the wild night ride.

Madeline spurred the black into the open, loosened the reins, and laid them upon his neck. His action was strange to her. He was hard to ride; but he was fast, and she cared for nothing else. Madeline knew horses well enough to realize that he had found he was free and carrying a light weight. A few times she took up the bridle and pulled to right or left, trying to guide him. He kept a straight course, however, crashing through small patches of mesquit and jumping the cracks and washes.

Madeline listened for the pound of pursuing hoofs in her rear. Involuntarily she glanced back. On the mile or more of gray level between her and the ridge there was not a horse, a man, or anything living.

She wheeled to look back on the other side, down the valley slope. The sight of Florence riding Majesty in zigzag flight before a whole troop of vaqueros blanched her cheek and made her grip the pommel of her saddle in a reeling terror.

That strange gait of her roan was not his wonderful stride! Could Majesty be running wild? Madeline saw one vaquero draw near, whirling his lasso round his head, but he did not get near enough to throw. Another vaquero swept across in front of the first one. Then, when Madeline gasped in breathless expectancy, the roan swerved to elude the attack.

It flashed over Madeline that Florence was putting the horse to some such awkward flight as might have been expected of an eastern girl fright-

ened out of her wits. She made sure of this when she saw that Florence, in spite of the horse's breaking gait and the irregular course, was drawing slowly and surely down the valley.

Presently, when she turned again to watch Florence, uncertainty ceased. Majesty was in his beautiful stride, low down along the ground, stretching, with his nose level and straight for the valley. Between him and the lean horses in pursuit lay an ever-increasing space. He was running away from the vaqueros. Florence was indeed "riding the wind," as Stewart had aptly expressed his idea of flight upon the fleet roan.

A dimness came over Madeline's eyes, and it was not all owing to the sting of the wind. She rubbed it away, seeing Florence as a flying dot in a strange blur. What a daring, intrepid girl! This kind of strength—aye, and splendid thought for a weaker sister—was what the west inculcated in a woman.

The next time Madeline looked back Florence was far ahead of her pursuers, and going out of sight behind a low knoll. Assured of her safety, Madeline put her mind to her own ride and the possibilities awaiting at the ranch. She remembered the failure to get any of her servants or cowboys on the telephone. She rode on, pulling the black as she neared the ranch. Her approach was from the south and off the usual trail, so that she went up the long slope of the knoll toward the back of the house. Under these circumstances she could not consider it out of the ordinary that she did not see anyone about the grounds.

It was perhaps fortunate for her, she thought, that the climb up the slope cut the black's speed so that she could manage him. He was not very hard to stop. The moment she dismounted, however, he jumped and trotted off. At the edge of the slope, facing the corals, he halted to life his head and shoot up his ears. Then he let out a piercing whistle and dashed down the lane.

Madeline, prepared by the warning whistle, tried to fortify herself for some new and unexpected situation, but, as she espied an unfamiliar company of horsemen rapidly riding down a hollow leading from the foot-hills, she felt fear gripping at her like cold hands, and fled precipitately into the house.

Madeline bolted the door and, flying into the kitchen, told the frightened servants to shut themselves in. Then she ran to her own rooms. It took her only a few moments to close and bar the heavy shutters; yet even as she was fastening the last one in the room she used as an office, a clattering of hoofs seemed to swell up to the front of the house.

She caught a glimpse of wild, shaggy horses and ragged, dusty men. She had never seen any vaqueros that resembled these horsemen. Vaqueros had grace and style; they were fond of lace and glitter and fringe; they dressed their horses in silvered trappings. But the riders now tramping into the driveway were uncouth, lean, savage. They were guerillas, a band of the raiders who had been harassing the border since the beginning of the revolution. A second glimpse assured Madeline that they were not all Mexicans.

The presence of outlaws in the band brought home to Madeline her real danger. She remembered what Stillwell had told her about the troubles along the Rio Grande. These flying bands, operating under the excitement of the revolution, appeared here and there in remote places, and were gone as quickly as they came. Generally they wanted money and arms, but they would steal anything, and unprotected women had suffered at their hands.

Madeline, hurriedly collecting some money and securities that she had in her desk, ran out, closed and locked the door, and crossed the patio to the opposite side of the house. She went

down a long corridor, trying to decide which of the many unused rooms would be best to hide in. Before she made up her mind she came to the last room.

Just then a battering on door or window in the direction of the kitchen, and shrill screams from the servant women, increased her alarm. She entered the last room. There was no lock or bar upon the door; but the room was large and dark, and it was half full of bales of alfalfa hay. Probably it was the safest place in the house; at least, time would be necessary to find anyone hidden there.

She dropped her valuables in a dark corner and covered them with loose hay. That done, she felt her way down a narrow aisle between the piled-up bales, and presently crouched in a niche.

With the necessity of action over for the immediate present, she listened waiting, hoping, yet dreading to hear the clattering approach of her cowboys. There would be fighting—blood—men injured, perhaps killed.

Hours seemed to pass while she crouched there. Had Florence been overtaken? Could any of those lean horses outrun Majesty? She doubted it; she knew it could not be true. Nevertheless the strain of uncertainty was torturing.

Suddenly the bang of the corridor door pierced her through and through with a new alarm. Some of the guerillas had entered the east wing of the house. She heard a babel of jabbering voices, the shuffling feet of boots and clinking of spurs, the slamming of doors and ransacking of rooms.

Madeline lost faith in her hiding-place. The idea of being caught in that dark room by those ruffians filled her with horror. She must get out into the light!

Swiftly she rose and went to the window. It was more of a door than a window, being a large aperture closed by two wooden doors on hinges. The iron hook yielded readily to her grasp; one door stuck fast, while the other opened a few inches. She looked out upon a green slope covered with flowers and bunches of sage and bushes. Neither man nor horse showed in the narrow field of her vision.

She believed she would be safer hidden out there in the shrubbery than in the house. The jump from the window would be easy for her; and with her quick decision came a rush and stir of spirit that warded off her weakness.

The tramping of heavy feet on the floor of the adjoining room lent her the last strength of fear. Pushing it with her hands and shoulders, she moved the door far enough to permit the passage of her body. Then she stepped up on the sill and slipped through the aperture.

She saw no one. Lightly she jumped down and ran in among the bushes; but these did not afford her the cover she needed. She stole from one clump to another, finding too late that she had chosen with poor judgment. The position of the bushes had drawn her closer to the front of the house rather than away from it. Just before her were horses, and beyond a group of excited men. She crouched down, with her heart in her throat.

A shrill yell, followed by the sight of guerillas running and mounting, roused her hope. They had sighted the cowboys and were in flight. Rapid thumping of boots on the porch told of men hurrying from the house. Several horses dashed past her, not ten feet distant. One rider saw her, for he turned to shout back.

This drove Madeline into a panic. Hardly knowing what she did, she began to run away from the house. Her feet seemed leaden. She felt the same horrible powerlessness that sometimes came over her when she dreamed of being pursued. Horses with shouting riders streaked past her in the shrubbery. There was a thunder of hoofs behind her. She turned aside, but the thundering grew nearer. She was being run down.

As Madeline shut her eyes and, staggering, was about to fall under pounding hoofs, a powerful hand grasped her and swung her aloft. She felt a heavy blow when the shoulder of the horse struck her, and then a wrenching of her arm as she was dragged up. The pain of it made sight and feeling fade from her; but she was still sufficiently conscious to know that she was being rapidly borne away.

When her faculties began to return, the motion of the horse was no longer violent. For a few moments she could not determine her position. Apparently she was upside down. Then she saw that she was facing the ground, and must be lying across a saddle with her head hanging down.

She could not move a hand; she could not tell where her hands were. Then she felt the touch of soft leather. She saw a high-topped Mexican boot, a huge silver spur, the reeking flank and legs of a horse, and a dusty, narrow trail. Soon a kind of red darkness veiled her eyes; her head swam; and she felt pain only dully.

After what seemed a thousand weary hours someone lifted her from the horse and laid her upon the ground, where gradually, as the blood left her head, and she could see, she began to get the right relation of things.

She lay in a sparse grove of firs, where the shadows told of late afternoon. She smelled wood smoke, and she heard the sharp crunch of horses' teeth nipping grass. Voices caused her to turn her face. A group of men stood and sat around a campfire, eating like wolves. The looks of her captors made Madeline close her eyes; but the fascination, the fear they roused in her, made her open them again.

Most of the men were thin-bodied, thin-bearded Mexicans, black and haggard and starved. Whatever they might be, they surely were hunger-stricken and squalid. Not one had a coat. A few had scarfs. Some wore belts in which were scattered cartridges. Only a few had guns, and these were of diverse patterns.

Madeline could see no packs, no blankets, and only a few cooking utensils, all battered and blackened. Her eyes fastened upon men whom she believed to be white men, but it was from their features and not their color that she judged. Once she had seen a band of nomad robbers in the Sahara, and somehow she was reminded of them by this motley outlaw troop.

They divided their attention between the satisfying of ravenous appetites and a vigilant watching down the forest aisles. They expected someone, Madeline thought, but she could not tell whether it was an allied band or a pursuing posse. She could not understand more than a word here and there that they uttered. Presently, however, the name of Don Carlos revived a realization of her situation, and once more dread possessed her breast.

A low exclamation and a sweep of arm from one of the guerillas caused the whole band to wheel and concentrate their attention in the opposite direction. They heard something. They saw some one. Grimy hands sought weapons. Madeline closed her eyes, sick with what she saw, fearful of the moment when the guns would leap out.

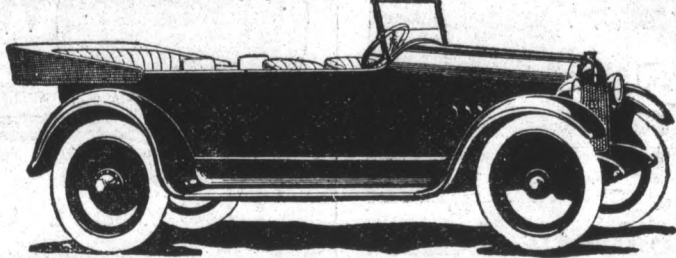
There were muttered curses, a period of silence, followed by whisperings, and then a clear voice rang out: "El Capitan!"

A strong shock vibrated through Madeline, and her eyelids swept open. She associated the name "El Capitan" with Stewart, and she experienced a sensation of strange regret. It was not pursuit or rescue she thought of then, but death. These men would kill Stewart.

(Continued next week.)

To have what we want is riches, but to be able to do without is power.—MacDonald.

The New Case 40—\$1090



"—the motor that makes extra cylinders unnecessary"

So said an automobile expert after he had examined the Case 40, both in the shop and out on the highway.

You will say the same thing when you drive it on a heavy country road or up a steep hill, or on the car's 100,000th mile. We have built this car to earn the title of the 100,000 Mile Car.

CASE

The new Case 40, advanced in design and comforts, still retains all the basic engineering features which gave the earlier Case 40 such a splendid reputation.

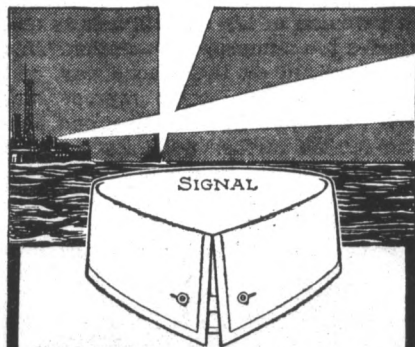
What other car has such a pedigree as this new Case 40? Where can you duplicate this certainty of satisfaction? Made by Case-trained workmen in the Case plants (you know what this means to you), the Case 40 has behind it a reputation of nearly four-score years. One genera-

tion after another has found in Case products genuine satisfaction. The new Case 40 is bound to add to Case fame everywhere. You will admire its beauty. As you ride in it you will admire its comfort and performance.

Once you own a Case, you will be satisfied. There is no time like the present to learn about this new car, with 120-inch wheelbase, cantilever springs, room for seven and many other features, all for \$1090. Better write for catalog today.

J. I. Case T. M. Company, Inc.

536 Liberty Street
Racine, Wisconsin



SIGNAL—the new collar that young men prefer. Ask for

SLIDEWELL
COLLARS

The brand with the patented Tie-Protecting Shield and Graduated Tie-Space. Ask your dealer.

HALL, HARTWELL & CO., Troy, N.Y.

Maple Syrup Makers

You get best Results with our **Champion Evaporator**

Quick work, fuel saving, durability and **BEST QUALITY OF SYRUP.** Write us for CATALOGUE.

Champion Evaporator Company, Makers, Hudson, Ohio



Tell number of trees you tap

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"I'll Pay Cash for Your Hog Hides. Start Hog Skinning and make big money. You can make \$5 to \$15 a day or more. Skinning is the only modern, up-to-date method of dressing pork. I want all the hog skins I can get and will pay you cash for them. It costs you nothing to start. Costs your neighbors nothing to have their hogs skinned—you simply take the hide as your pay. Write at once for information. I'll show you how to start a profitable business of your own without any capital. The ones that start first are protected in their territory. Dept. M."

MERRILL A. BEACH
PENN. YAN. N.Y.

HOUNDS FOR HUNTING—Fox, Coon and Rabbits, all ages. Send 2 cent stamp. **W. E. LECKY.** Holmesville, Ohio



—the highest price for my butter

DO I let anything stand between me and good prices? No, sir!

I chill my cream carefully and churn it right. Then I work in the Worcester Salt.

Why do I use Worcester Salt and not ordinary dairy salt? Because I'm not making ordinary butter. I found out that it's worth while to spend a few cents more for clean, clear-grained Worcester Salt, because it brings out the flavor every time.

Worcester Salt doesn't leave any grit or mottles in my butter, either. And the way it works in!—well, I never saw anything to beat it. Try Worcester Salt in your butter—you'll get better butter and better prices, just as I do.

WORCESTER SALT

"The Salt with the Savor"

Packed in strong 28 and 56-lb. sacks. Smaller sizes in muslin. At your grocer's.

Send for our interesting booklet, "Butter Making on the Farm." Full of expert butter-making helps.

WORCESTER SALT COMPANY
Largest Producers of High-grade Salt in the World
NEW YORK

Stays a Perfect Baker and Saves 1/3 Your Fuel



Most any range bakes well for a while, but to stay a perfect baker, year after year, this is what you want. To stay a perfect baker it can't have its joints stuffed with stove putty to crumble out and let in false drafts.

Arcadian Malleable Charcoal Iron Range

This range is riveted metal to metal, airtight without the use of stove putty, and stays airtight year after year. This is why it stays a perfect baker and saves 1-3 your fuel bills, wood or coal.

Write for booklet that tells inside facts about ranges—learn how to judge range values—FREE.
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Dept. 16 Milwaukee, Wis.



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The Part of Family Arbitrator

MANY letters find their way to this department from readers, both women and men, some criticizing, some praising, some asking advice. Of them all the hardest to answer are from wives who think they are not treated fairly by their husbands and who want advice as to what to do. Some even ask, either directly or indirectly, that they be advised to seek a separation.

The part of a third party in a family disagreement is never a sinecure. But when that third party happens to be a writer person living in a city miles away, who never saw either husband or wife, and never heard of either until the letter arrives, just how is the adviser to give competent advice? You see there is always two sides to every story and both sides are never given in the same letter. So how is an uninformed judge to decide impartially whether a wife is justified in leaving home or whether her husband would be justified in locking her up in her room and keeping her on bread and water until she was good?

In my early days of official adviser to my readers I did not think of that. It was perfectly easy to tell what to do. All I had to do was read the letter and decide right away, this woman's husband was a brute and hanging was too good for him; that man's wife was a vampire and did not deserve such a fine husband as my correspondent. I never stopped to think that perhaps the one who wrote the letter left out several important arguments for the other side.

One day a letter came which was a gem. It was from a clergyman in our own city. He was struggling for the upbuilding of the kingdom and his wife was doing all in her power to harass him and hinder his work. According to the letter this noble man had borne even more than human flesh could stand. Being a minister, of course, the letter could contain nothing but the truth. If ever a man was justified in leaving a wife, this one was, and I told him so in several impassioned paragraphs.

Unfortunately, or perhaps, fortunately, the wife recognized friend husband's literary style and replied with a letter which must have scorched the mail bag. Husband had forgotten to mention several minor matters in his letter, like neglecting to furnish money for grocery bills, compelling her to ask her parents for clothing, flirtations with women of his church, insults and injuries too numerous to mention. This letter arrived on the second day, and on the third a lawyer representing each party was in our office, one begging for no further publicity and the other, the wife's, imploring us to print a column or two more of evidence for the wife.

Since then I have hesitated to give advice in family tangles. I've had many letters from wives which I felt gave as fair a picture as one could give of her own life, letters which I longed to answer and tell her to take a rolling pin and lay out the brute who was abusing her. But when I stopped to think of the clergyman's letter, which just as unmistakably bore the stamp of truth, I've never dared do it for fear some perfectly good man might get hit.

Seriously, who would dare advise another person to break up her home, especially where there are children? Not but that many children would be benefited if father and mother should part, but what third party living miles

away and totally unacquainted with the circumstances is competent to say that this couple should part and that couple should remain together?

I do not believe in injustice. I do believe that husband and wife are partners and should have equal say in the management of affairs affecting both. I do not believe that either side should have a monopoly of the good times and the other should do all the giving up. But it seems to me that if these things are thoroughly understood and adjusted at the beginning things ought to run along without resorting to courts. If the wife, through timidity or ignorance of results, begins a policy of sacrificing, in most cases she has to keep it up to the end of the chapter or get out. Which she shall do is for her to decide. No third party can do it for her.

Some of my correspondents, I fear, have thought me unsympathetic because I did not advise them to take some active means to right their wrongs. But how can I when I do not know all that led up to present conditions nor what is their own part in the unhappy state of affairs? Personally, I should not submit to injustice, but if my own bad temper or extravagance or laziness had helped to bring about disagreements, I think I should accept part of the blame and keep still.

DEBORAH.

WHEN PARENTS GO TO SCHOOL.

BY J. L. JUSTICE.

Parents are often disposed to criticize the teachers in our public schools and the new methods that are introduced to facilitate school work without first becoming acquainted with the teachers and the methods employed for teaching. Honest criticism is seldom harmful if directed in the right channel, but if based on hearsay and unsubstantial reports it cannot be productive of good results.

A notable effort toward co-operation among parents and teachers was shown in one of our country schools recently. The school children were dismissed on Friday at the noon hour. The parents of the children attending school had previously been invited to spend the afternoon in a social way, and to show how much interest was taken in the affair there were more than one hundred guests present. Light refreshments were served and informal talks were made on subjects of interest to the work being accomplished in the schools by several of those present, including one of the school officials.

Well-meaning folks who had indulged in criticism of a nature to discourage the good work conducted in the schools went away with new ideas; they had not realized the amount of constructive effort toward educational work that was being done. The purpose of the whole affair was not merely to tell the parents what was being done, but to tell them in such a way that they might offer suggestions for improvement if they had any. In other words, it was not a teacher-dominated social, but a meeting where teachers and parents could become acquainted and exchange ideas.

People who had not been inside of a school house since they had completed their educations were pleasantly surprised at the actual transformation and extension in school affairs. Teachers were glad to meet the people of the community and were eager to ex-

plain every phase of their work and report on the progress of the scholars.

The first attempt at social meetings in the school has opened the way for more of a similar nature, as it should, and it is obvious that other communities could profit by following the example. School teaching is an art with which more people should become acquainted. In some communities the attitude toward the school has been one of more or less indifference. If teachers or school officials do not make any advances to acquaint themselves with the community the agitation of a single parent toward that end may result in breaking down the barrier that often exists between the school and the home. One such meeting will convince the most skeptical of its value to the home, the children and the community, resulting in other meetings and more efficient work in the schools.

TEACHING THAT MAY SAVE A HEART-ACHE.

BY MAUDE L. WESTCOTT.

"Borrowing trouble" is perhaps worse than any other form of borrowing, and if not in that category, is equally a vice to be shunned. But there is a wisdom that looks ahead in order to prevent, which might be cultivated to advantage by all of us.

Teaching children to avoid dangers, and how to deal with a situation requiring prompt action should be a part of every child's education. Such valuable lessons may be learned in the home, with mother as teacher. Not negatively in the old "don't-do-that" fashion, nor all at once in a manner calculated to unnerve and frighten the tender child-mind and cause him to imagine a host of dangers lurking in wait for him around every corner, but in a cheery, positive "do-this-way" manner, which will interest as well as impress him.

Some evening when he is going to bed, show him how to carry the lamp upstairs, just how to grasp it, steadying the chimney, if necessary. Teach him, here, the dangers of fire, and when it is best to use water as an extinguisher, when to smother with the handiest article—dirt, salt, flour, rugs, etc.

Another time the danger of electric wires may be put to him, cautioning him not to touch hanging wires of any kind, and pointing out the fact that in tree-climbing care should be taken not to touch wires passing near. The branches may have rubbed off the insulation in spots and a severe shock or worse will result.

On the occasion of a visit to the city, points on the entering and leaving of trolley cars should be given him. A word as to the proper way of crossing a street where traffic is dense is in order also.

How many children know there are only three kinds of snakes in America they need fear—the rattler, the water-moccasin and the copperhead? The black, the green, the garter snake, and others commonly seen, may be loathsome but are harmless. Teach them also what to do if bitten, until help can be obtained.

Warn against balancing the body on window-sills or bannisters, and teach the baby as early as possible how to get down the steps by crawling backwards. Not that you allow him yet to go down alone, but should he attempt it some time when you are absent he would be more apt to descend safely.

Every mother can add to this list possible dangers peculiar to the home environment. Where possible perfect



Now Everybody Serves Them.

Thousands of Michigan Farmer readers sent last month for the new Jell-O Book and are now enjoying the choice desserts described in it.

For 10 cents a big Jell-O dessert may be made in any one of seven different flavors, and these Jell-O dishes are the most delicious, the daintiest and the most beautiful that can be made at any price. They are the favorites in city homes generally, and now that the stores everywhere sell

JELL-O

are becoming even more popular in the smaller towns.

You do not have to cook to make a Jell-O dessert. All you have to do is to dissolve the powder in boiling water and let it cool.

The seven different flavors in which Jell-O is made are: Strawberry, Raspberry, Orange, Lemon, Cherry, Peach, Chocolate. Each 10 cents at any grocery or any general store.

A beautiful new Jell-O Book telling of a young bride's housekeeping experiences has just been issued. It has splendid pictures in colors and will interest every woman. It will be sent to you free if you will send us your name and address.

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Direct from Fisheries to You

Nothing finer than Benson fish shipped direct to you, fresh fish cleaned and frozen, salt fish put up in kegs of clean brine. All our fish are freshly caught in the clear waters of Lake Huron.

Benson's fish reach you in fine condition, put up in clean, sanitary packages all ready for cooking. Send for a trial order. Have fresh fish on your table.

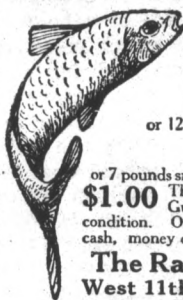
These prices are made possible because you buy direct from the fisheries. All packages shipped prepaid.

9 Lbs. Fresh Lake Herring	- \$1.75
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Send us cash or money order. We ship same day. Write today. You will be delighted with Benson's fish.

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FRESH FROZEN Winter Caught Herring



We will deliver at your door by parcel post 8 pounds of dressed and scaled herring, ready for the frying pan for

\$1.00

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or 7 pounds smoked herring ready to eat for \$1.00 Three boxes for \$2.75. Fish Guaranteed to arrive in good condition. Offer good to April 1st. Send cash, money order or check. Do It Now!

The Ranney Fish Co., West 11th St., Cleveland, O.

Only \$2 Down One Year to Pay!

\$24

Buys the New Butterfly Jr. No. 2. Light running, easy cleaning, close skimming, durable. Guaranteed a lifetime. Skims 95 quarts per hour. Made also in four larger sizes up to 51-2 shown here.

30 Days' Free Trial. Earns its own cost and more by what it saves in cream. Postal brings Free catalog, folder and "direct-from-factory" offer. Buy from the manufacturer and save money.

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Acid Phosphate

Car lots or less. Let us quote you. NITRATE AGENCIES COMPANY 454 Central Bank Bldg. Columbus, Ohio.

When writing to advertiser please mention The Michigan Farmer.

the child in the various forms of bodily activity. Let him learn to swim, ride horseback, drive, sail a boat, if water is near, act on a bar, balance himself on an upright board, made stationary for the purpose, etc.

All this on the principle that knowledge protects, and the children that know where dangers lies and how to meet it when necessary, are the ones who may safely be allowed the larger freedom of action that makes for self-confidence and independence in after life.

LETTER BOX.

Household Editor:—I have just read the article in a recent issue of the Michigan Farmer on "Peace Purchased by Sacrifice," and as I have sat and thought of the years gone by I feel that I would like to speak a word, too.

I think Deborah has perhaps not fully understood the meaning of the dear old lady. It seems to me that nothing worth while comes without sacrifice. Nearly 28 years ago I came as a young bride to this home. It was not an easy position, as my husband's parents were elderly people, his mother blind and needing care. The little ones came rather fast and I was none too even-tempered. I was also blessed, or afflicted, with a very nervous temperament that dreaded a quarrel. Even a heated argument, all good-natured, was torture.

I early learned in the care of my rather mixed family that tact went far ahead of bluster and bravado. I read somewhere today that diplomacy is getting what you want without fighting for it. It seems as though that nearly described my life work.

My husband and I have had high ideals for our children and life has been full of sacrifice. The dear parents have gone to their reward and we are feeling that we are on the verge of old age. But as I look back I can see many a sacrifice in the cause of peace, yet by no means losing one's personality. Keep a grip on the reins and use all the tact we can muster and things will come our way. I would not have anyone think I was advocating dishonesty or deceitfulness. Perhaps the homely old saying, "It's the still hog that drinks the swill," would help to describe it.—*Lover of Peace.*

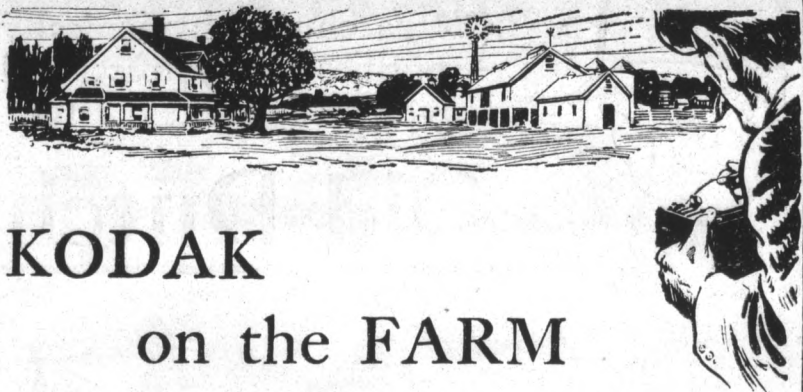
THREE EGGLESS CAKE RECIPES.

White Cake.—One cup of granulated sugar, butter the size of an egg, one cup of sweet milk, teaspoon of vanilla, two cups of flour, two teaspoons of baking powder. Bake in loaf or layers. I use it as devil's food by adding last of all, one square of bitter chocolate, melted. Or as marble cake by adding a little molasses and a pinch of cloves and cinnamon to just a small portion of it after most of the white part is put into the tin.

Spice Cake.—One cup of granulated sugar, one tablespoon of lard, one cup of buttermilk, a pinch of salt, two and a half cups of flour, one teaspoonful of soda, cloves and cinnamon, and one cup of raisins.

Molasses Cake.—One cup of granulated sugar, one large tablespoon of shortening, I use lard, one cup each of molasses and cold coffee, vanilla, three cups of flour, one teaspoonful of soda. Cloves and cinnamon can be used instead of vanilla if liked. Fruit can be added also.

Peanut Carmel Frosting.—One large cup of medium brown sugar, sweet cream enough to moisten, or if you do not have sweet cream use sweetened milk, and butter the size of a walnut. When it gets thick remove from the stove but be careful and do not burn as brown sugar burns so easily. Stir in one cup of ground peanut meats, which you have previously rolled fine with the rolling pin. Beat until cold and then flavor with vanilla. This is my favorite frosting and I have got many compliments on it.



KODAK on the FARM

Before you begin the improvements, during the progress of the work and after the improvements have been completed—Keep a Kodak record.

In every phase of farm work and farm life there are pictures that are interesting and valuable. And you can make them.

Ask your dealer or write us for illustrated booklet, "Kodak on the Farm."

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The Wonder of the World
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weeks from the time the seed was
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we guarantee it to be so. They will
BLOOM EVERY TEN WEEKS
Winter or Summer, and when 3 years
old will have 5 or 6 hundred roses on
each bush. Will grow in the house
in the winter as well as in the ground in summer.
Roses All The Year Around. Package of seed
with our guarantee by mail, only Ten Cents.
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FITS YOUR OLD LAMP.
100 Candle Power Incandescent
pure white light from (kerosene) coal
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COSTS ONLY 1 CENT FOR 6 HOURS
We want one person in each locality to
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Non-Poisonous. Guaranteed to destroy the
rat and mouse pest from corners, bins, poultry
houses, stables, etc. No results, no pay.
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That secures highest
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Write for 1916 catalog
showing our complete line
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The Berlin Fruit Box Co.
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varieties including Everbearers, also Grapes, Raspberries
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STRAWBERRIES All Varieties

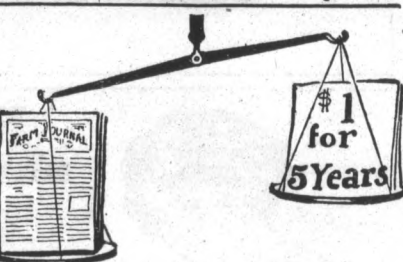
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rooted stock. All varieties—Strawberry Raspberry,
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sands in daily use. Perfect bakers, efficient heaters, made
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sign, guaranteed for years by
our Two Million Dollar Bond.



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you Hoosier Stoves. Write
for our big free book show-
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large assortment of sizes
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To the planter of Strawberry and Raspberry plants.
Other kinds at low prices. Catalogue free.
A. A. WESTON & CO., BRIDGMAN, MICH.

DRIED FRUITS AND HOW TO COOK THEM.

MRS. E. O. SWOPE.

During the winter months a great
many housewives do not have fresh
fruits, such as apples, etc., and it is
at this time that we give special atten-
tion to dried fruits. Dried fruits are
wholesome and delicious when prop-
erly prepared. They can be made into
pies or used in many other ways in
cooking, or they can be eaten plain
like any other dessert. There is one
thing we must observe closely in pre-
paring dried fruits and that is to re-
store them as nearly as possible to
their natural condition, preserving all
that fresh juicy condition and flavor
as found in the fruit when fresh and
new. This must be done before expos-
ing the fruit to the action of intense
heat. I use special care in looking the
fruit over, and all bruised parts are
cut off before drying. Before using
the fruit I go over it again picking out
all mouldy or worm-eaten fruit. The
fruit is then ready for immediate use
and put into a large vessel of cold wa-
ter where it is washed thoroughly,
often being put through two waters
and inspected afterward, thus insuring
clean fruit. The fruit is put into a
vessel or colander after washing, in
order to drain thoroughly and in a
short length of time.

In drying fruit is deprived of mois-
ture and in order to restore some of
this it is necessary to soak the fruit.
I usually soak 12 to 14 hours, and even
longer than this when time permits.
The fruit after being washed is placed
in a large stone jar or some other ves-
sel, and covered over nicely with fresh,
clean water. The top of the vessel is
covered with a clean cloth and lid in
order to keep out all dust and dirt
while fruit is soaking.

Boiling most dried fruits for an hour
will generally be sufficient. The fruit
should boil over a moderate fire. I
place the fruit on the back part of the
stove where it cooks to perfection
and does not burn. Dried fruits
such as apples, pears, peaches, etc.,
need very little sugar and this is not
added until the fruit is just cooked
and ready to remove from the fire.
When the sugar is put in, it is a good
plan to stir so the sugar is added ev-
enly, being very careful not to tear or
smash the fruit, leaving it in as per-
fect form as possible. After sugar is
added, allow the fruit to boil for a few
seconds longer, then remove from the
stove.

In preparing apples, and even pears,
there is sometimes a great difference
in the quality of the fruit. Some fruit
will be just right while others are al-
most tasteless and some will be found
quite sour. In drying fruits, especially
apples, I always dry such fruit of the
same quality and flavor together, nev-
er mixing, as it cannot be picked out
once the fruit is dried. If we dry ap-
ples that are sour, they and other
varieties of the same flavor and acidity
are dried together. In this way they
cook more evenly when we use them.
Where the fruit is tasteless I some-
times add an orange or a lemon. The
pulp and all can be added, if desired,
or the juice. Some prefer the lemon
sliced up, but I always remove the rind
as it has a tendency to make the fruit
somewhat bitter. The lemon or or-
ange is added to the fruit after it has
cooked thoroughly and after sugar has
been added and thoroughly dissolved.

Dried cherries, and all other fruits,
such as berries, etc., are excellent
when treated and cooked as I have de-
scribed. Almost every housewife knows
what excellent puddings and pies these
small fruits make, especially the cur-
rants and cherries. The berries also
make fine butter by cooking as I have
directed and removing all seeds, re-
turning only the pulp and juice to the
kettle. This should be stirred con-
stantly. A few apples or some other
fruit can be added and when of the
right consistency add enough sugar to

keep from working unless it is to be
used at once.

Dried fruits are not only wholesome
but they are economical. Many times
have I seen hundreds of bushels of ap-
ples and pears go to waste when a lit-
tle forethought and care would have
saved at least a small percentage of
them by drying either for home use or
to sell.

In almost every small town there is
a demand for dried fruits, to say noth-
ing of the large cities where thousands
of pounds are used yearly. It will pay
anyone to dry all fallen and surplus
fruit, as it can be turned into profit.

CHILDREN'S DISEASES.

Mumps.

Mumps is a contagious disease, with
mild symptoms, and in extremely rare
cases, a fatal ending. Children are
most likely to take it between the ages
of four and fourteen years, though no
age is immune, and even adults may
have the disease. It is a swelling of
the parotid salivary gland, spreading
over the cheek as well as down into
the neck. In mild cases the swelling
is the first indication of the disease,
but in more severe cases the swelling
is preceded by loss of appetite, vomit-
ing, headache, backache and fever.

The disease is spread by contagion.
It is not readily communicated, how-
ever, and many children who are ex-
posed never have the disease. It is
communicable for some time after the
swelling disappears and the patient
should be kept from other children for
at least three weeks. There is a great
deal of pain, swallowing is difficult,
and for that reason a liquid or semi-
liquid diet should be given. Acids in-
crease the pain. Usually the mouth is
very dry, causing great discomfort.

Usually both sides of the face are
affected, but sometimes only one is
swollen, and this is more often the left
side. The swelling is usually at its
worst on the third day, and generally
lasts about a week.

There are very seldom any compli-
cations with mumps, though some-
times inflammation of the kidneys,
neuritis, and occasionally deafness fol-
low mumps. In a very small per cent
of the cases an abscess forms on the
gland affected.

Mumps is sometimes confounded
with a swelling of a lymphatic gland.
In the latter cases, however, the swell-
ing is usually entirely behind the ear
and below the jaw, and does not spread
out over the face as in the case of
mumps.

HOUSEHOLD HELPS.

BY OLIVE RICHEY.

When the figures and outer coating
of paint on the linoleum are badly
worn, the linoleum can often be reno-
vated, and made to do much more ser-
vice. First wash with a strong solu-
tion of sal soda. This will remove the
original color. Apply a coating of any
light-colored paint. When the paint
has thoroughly dried, spread over the
surface a coating of varnish of the
shade desired. The varnish should, if
possible, match the wood-work of the
room. Do not walk on the floor until
the varnish has dried thoroughly.

A simple way to clean fine kid gloves
is to draw them on the hands and wash
in corn meal. Corn meal can also be
used in cleaning furs. Dampen the
meal and work into the fur. When the
meal has dried, remove by shaking,
brushing and combing.

A good way to clean lace curtains,
is to stretch them over a cloth and
pin in place. Then go over the cur-
tains with soft, slightly-moistened
bread.

Household Editor:—The following
recipe will keep cucumbers: One gal-
lon of vinegar, one cup of sugar, one
cup of mustard. The lady who com-
plained of her pickles getting soft
should have added sugar.—A Friend.

Pigeons On the Farm

THE Homer is the pigeon for profit in the squab business. All other fancy breeds of pigeons may occasionally be raised and profitably sold to other breeders but the Jumbo Homers are the birds which produce ready selling squabs and these birds should be used by the farmer who expects to make any money out of pigeons. The common "barn doves" are not good squabbers as the squabs are small and the birds do not multiply as fast as the Jumbo Homers. Scrub pigeons are scarcely worth looking after.

Jumbo Homers may be purchased for from \$1.00 per pair and up, and it is best to start with a few pair. This means a small profit at the start but it also means a small loss if the birds do not do well and you rapidly lose interest in caring for them. The birds do the best when confined. A small shed which rats and cats cannot enter can be made into a pigeon house by constructing a wire fly on the outside. The dimensions of the fly will depend on the number of birds. A breeding house, 8x12, will keep 45 pairs of Jumbo Homers. The fly should be about as high as the house and can be constructed of two by three pieces of fine mesh poultry wire. Wire fine enough to keep out the sparrows is best, as the pests will soon learn to stay around the pigeon yard and steal a lot of grain, especially if the birds are fed from hoppers and you are not present at feeding time.

Do Best when Confined.

Some breeders prefer to allow their young birds to fly as this seems to increase their vigor. However, the mature breeders are always confined, as experiments prove that they breed faster. A few Homers may be housed in a barn with small holes for exist and these birds may be permitted to fly all of the time. In this way they forage for their food and the expense of keeping them is very small. However, as the flock enlarges it is not good business to allow the birds to fly all the time, as they may congregate on neighbors' houses and barns and cause considerable ill feeling. They do not breed so well when allowed to fly and the increased number of squabs while confined should pay well for the feed and care which confined birds demand.

A pair of Homers should require less than a dollar's worth of grain feed per year. Commercial squab breeders claim that a pair of Homers should produce twelve pairs of squabs per year, but I think this is a little high for the amateur's flock. Squabs bring from \$3.00 to \$6.00 per pair on the market and there certainly is a profit in the business when you have a market for the squabs and the birds are cared for in the manner which makes them raise good squabs and plenty of them. When preparing squabs for the eastern market they should be dry picked and the animal heat must be "cooled out" at the time of killing. In cold weather they can be packed dry and in warm weather in chopped ice. A clean second-hand box which is not valuable enough to return will prove a satisfactory package for shipping the squabs. As the birds bring more in the winter and it is easier to ship them, especial attention should be given to the pigeon flock at this season. A freezing cold house may mean frozen squabs and no profit.

The Profitable Kinds.

The only bird that seems at all superior to the Jumbo Homer for squab breeding, is what is called the Giant Cross. They are a cross of the Runt-Carneaux-Maltese-Homer and are said to have all of the good qualities of these different breeds. They receive their size from the Runt, the graceful appearance from the Carneaux, the double breasts from the Carneaux and the vigor and fast breeding quality

from the Homer. I have recently paid \$3.00 per pair for two pair of the Giant White Crosses and while this is three times what I would have paid for a pair of Jumbo Homers, the increased size of the stock and the increased value of the breeders I can raise should much more than make up the cost of the Crosses. However, the average farmer who is starting in the squab business as a side line can doubtless do fairly well and learn a lot about the business by purchasing a few pairs of the ordinary Jumbo Homers from a reliable breeder.

It must not be assumed that the squab business is a get-rich-quick scheme or everyone would raise squabs. It is possible to make it a profitable side line on the farm as there will usually be an old building that can be made into a squab house and grain will not be so expensive as in the city. The birds can be allowed to do some foraging and this reduces the expenses for feed.

The Care of Pigeons Simple.

The care of pigeons is very much the same as demanded by a flock of poultry, only it is less work. They require plenty of pure water, a variety of grains and plenty of grit. Gravel in the flying pen will furnish the grit, the grain can be given in hoppers which may only need filling once each week, and the water supply should be replenished once or twice each day, depending on the weather. A sanitary fountain for the pigeon house is an excellent investment.

Squabs for home use are a great luxury within the reach of the farmer raising pigeons and they should be on the farm table. As the business increases they may be shipped to the large cities or a local trade may be developed among private customers or hotels. A quick profit cannot be made on a few pair, as the squabs will probably be raised to increase the size of the flock. There are comparatively few large squab farms and there is a steady demand for squabs. As a principal vocation it would doubtlessly be risky for the average man but as a side line on the farm it can be made profitable. Good birds are the largest part of the investment. They can be housed much cheaper than poultry and some breeders are making them return greater profits.

Ingham Co.

R. G. KIRBY.

KILLING THE GERM IN EGGS.

Poultrymen who make a practice of selling eggs for hatching sometimes find themselves with a supply of eggs on hand for which they have no sale, and which they do not wish to incubate. Various methods of killing the germs are resorted to, all of which are unfair to the buyer. The eggs are sometimes dipped for a few seconds in boiling water. This partially cooks the eggs, hardening the albumen, and giving them a stale taste. Others close the pores of the shell, by coating it with grease, thus causing the germ to die. Eggs containing dead germs will spoil in a short time. Still others punch small holes in the egg with a pin or needle, breaking the yolk, which gives the egg the appearance of being old when broken.

During the breeding season, if I have more eggs than I can dispose of for incubation, I preserve them in water-glass, and use them during the summer months. Such eggs taste almost as good as fresh ones, and if desired, they could be held over and used the following fall and winter.

After the breeding season is over, the males are removed from the pens and in two weeks most of the eggs are infertile, though occasionally fertile eggs will be laid when the male bird has been away from the hens three weeks.

Indiana.

T. Z. RICHEY.

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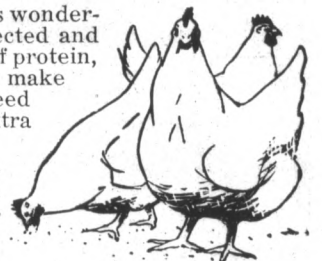
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is built on exactly the right lines. The heating plant is squarely underneath where it ought to be—*heat ascends*. The ascending heat from the X-Ray central heating plant takes on the exact amount of moisture from the X-Ray Vapor Generator and is evenly distributed to every corner by the X-Ray Duplex Heating plant.

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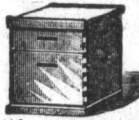
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Progressive Incubator Co., Box 164, Racine, Wis.

155 Egg

155 Chick

\$9.85 BUYS BOTH

FREIGHT PAID EAST OF ROCKIES

FERTILITY OF EARLY HATCHING.

Last season in the early months I heard a good many complaints of the infertility of the eggs set. If the eggs were kept any time that might be the reason they did not hatch in many instances, for it takes strict attention to keep eggs from chilling in the months of January and February, or even in March. We are not apt to be careful enough about gathering the eggs for it only takes a few minutes in zero weather to chill the eggs if they are exposed to the cold.

If the hens and cockerels are both healthy and vigorous the percentage of eggs that are strongly fertile should be heavy at this season. The rations must be balanced, though, and there must be plenty of green food. I like to give a change of grain, using wheat, corn, kafir, and oats. Sprouting oats or any kind of grain increases its feeding value, and the longer it is allowed to grow the more feed there will be of it. Growing crops gather a large part of their bulk from the air, all the carbon coming from this source, so it is a fact that growing this green greatly increases its feeding value in spite of many assertions to the contrary by persons who argued that water and a grain of oats could not produce any more actual feeding value than the oat contained. A thin layer of oats

zards could shake them, either. Boxes set on the ground has been my preference for very early, and nests built right on the ground for the summer months.

In incubators the early hatches are often allowed to suffer for the want of fresh air, especially if they are set in a living-room. The air in a house gets pretty close sometimes, and the incubator needs a good supply of fresh air at all times. I like to leave a small opening into the room all the time, especially if I am using a hot air machine as it needs more air.

Kansas.

L. H. COBB.

SCALY LEGS.

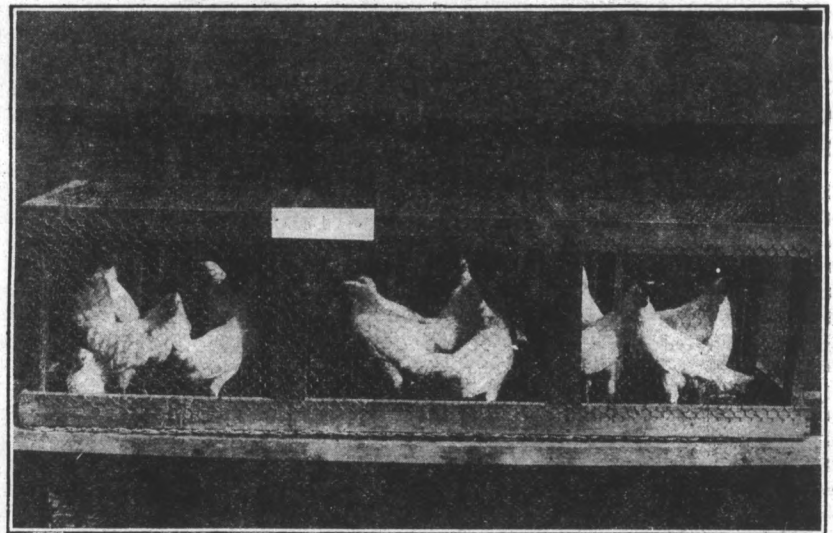
Our chickens have been bothered with scales on the legs for sometime. Whan can I do for them?

St. Joseph Co.

Mrs. W. S.

Your chickens are troubled with what is called scaly leg. This trouble is caused by a small mite which bores under the scales of the leg and causes the scaly encrustations. It is only slightly contagious, and unless it becomes serious does not affect the health of the fowl, but occasionally the trouble gets so bad that the bird becomes lame and joints become diseased, and even whole toes drop off.

The trouble is more commonly found among chickens running in dry, barren runs, especially those having alka-



Show Birds Are Valuable if Good Producers.

will grow to four inches in height under favorable conditions and be strong and thrifty. In addition to the green the hens and cockerels should both have meat scraps in abundance, and plenty of oyster shells to form the shell of the eggs.

Sprouted oats has been found to have a special influence on the fertility of eggs, it has been claimed by good authorities. Alfalfa meal, also, is good for them. Root crops and anything that will help to keep the digestive system in condition helps to make eggs fertile, as it helps to keep the fowls in health.

Handling the eggs after they have been gathered when the temperature is low offers ample opportunities to destroy the fertility. Too hot a room or too cold a room are equally dangerous. The eggs should be gathered every hour during the day and then either wrapped or packed away in a room at about fifty to sixty degrees. The room can go up to eighty degrees for short periods, but if it stays higher than that all the time the eggs will not keep long. I would never set eggs kept for any length of time in a room colder than forty degrees above. Eggs kept should be turned every day, also.

Where hens are set at this season the nests should be made very warm, and it is better if they are set in a room where it is not allowed to get so very cold. I like to line the nests with paper and put a layer of moist soil in the bottom, then the nest material and the eggs. I have always had better luck setting hens on earth, for it seems that the moisture from the bottom is good for the eggs. I have never had as good success setting in nests attached to the buildings so that bliz-

li soils or which are filled with ashes or cinders. Foul roosting places are also causes of this trouble.

A method of treatment consists in removing the scales by brushing the legs with a stiff tooth brush, then rubbing them with an ointment made of one part of oil of caraway to five parts of vaseline. This ointment should be rubbed well into the legs every few days until the disease disappears.

CLOVER FOR WINTER EGG LAYING.

When on a free range poultry go around picking up tender grass, a blade here and a blade there. Especially do they enjoy and appreciate a field of alfalfa or clover. There is no way of accurately estimating the quantity of this green stuff a flock will consume during the day, but it must be considerable. When confined we get an accurate conception of the quantity of such stuff required to meet their needs. A flock of fifty hens in fit laying trim will consume more than a half bushel of clover leaves, and a dozen or more large mangels each day. These things are eaten as greedily as if grain, once the fowls are accustomed to them; at least ours go at the stuff greedily enough. The clover box and beet board are nearly always fully occupied. And when I get in with a fresh supply they don't wait till the beets are hung, and the clover in the box, but just pitch in and help themselves before there has been time to fix things properly. To be sure, cured clover is not quite so palatable as the green article plucked fresh from the plant, but it makes a mighty good substitute. Anyhow, with sugar mangels as a relish, our flocks

get away with considerable quantities.

The mangels and carrots fed are grown expressly for the purpose. The clover chaff is secured by shaking the clover hay when feeding the stock. Possibly alfalfa or clover meal is superior to leaves, but I fail to see why. It seems to me that nature provided every individual of the flock with a mill expressly for the purpose of grinding such stuff. She is abundantly able to do this if provided with plenty of gravel or crushed stone. I fail to see why nature's way will not meet every requirement making for vigor and health in the fowls and prolificacy in egg production.

Being so easily grown, there is no reason why the farm should not be well supplied with clover and alfalfa leaves and mangels, other than a lack of appreciation of their merits as a part of the poultry ration, or neglect to provide them.

Emmett Co. M. N. EDGERTON.

MAKING UP BREEDING PENS.

A mistake quite generally made by farmers is in selecting eggs for hatching from the general flock. Selection is usually made in relation to the shape and size of the eggs. While it is desirable to incubate none but eggs that are of a good shape and size, it should be borne in mind that many poor layers, or many hens that lack constitutional vigor, lay eggs that possess the ideal shape and size. The farmer would achieve much better results if he made up several pens of his best hens and mated these to good, strong male birds.

In making up breeding pens a point above all else to be considered, is constitutional vigor. Vigor in the breeding stock is the bed-rock of successful poultry work. No matter how many points a hen would score in the show-room, it certainly is a mistake to use her as a breeder unless she possesses a strong, rugged constitution.

The breeding pen should be made up four or five weeks before eggs are wanted for incubation. This will give the birds time to become accustomed to one another, and will also give the farmer an opportunity to correct any mistakes of judgment that he may have made in choosing the breeders. Thus, a test of the male bird could be made by placing a few of the eggs under a hen and testing them at the end of a week. If the eggs run low in fertility or are wholly infertile, one could safely conclude that the male is at fault, and another could be substituted. Or, it may be necessary to take certain hens out of the pen because they lay abnormally small eggs, or eggs that are not of a desirable shape. If substitution of males or hens must be made in the pens during the breeding season, it means the loss of much valuable time.

Indiana. T. Z. RICHEY.

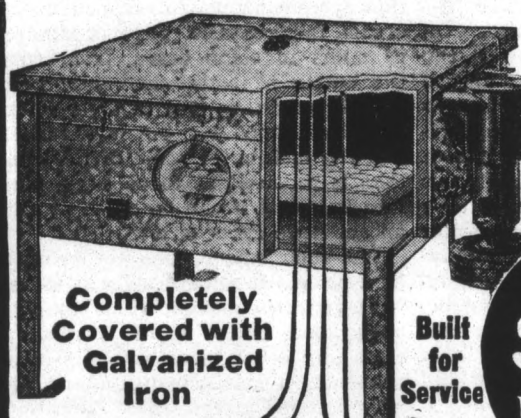
EXPERIMENTS IN EGG INCUBATION.

Under natural conditions eggs not promptly incubated are warmed daily by contact with the body of the hen. In order to determine whether or not this preliminary warming has any effect on the vigor of the embryo, two tests were made recently by the Pennsylvania station with incubator hatched chicks. In the first test the percentage of chicks hatched from all the eggs was as follows: Not warmed, 52 per cent; warmed one hour daily, 63.4 per cent; warmed two hours daily, 47.2 per cent. In the second test the results were as follows: Not warmed, 20 per cent; warmed 30 minutes daily, 20.4 per cent; warmed 60 minutes daily, 29.6 per cent. From these results it is thought that there is some advantage to be gained from warming the eggs which are to be held for periods longer than 10 or 12 days before the regular period of incubation begins.

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Farm Commerce.

The Distribution of Cream

THE public generally is getting interested in the marketing problem. We have talked distribution very little in the past. On the contrary, we have allowed the great question of production to absorb our minds to the exclusion of nearly every other consideration in agriculture. Nor is this strange, for as yet we are a new nation. Our lands are new also, but in many instances they are emphasizing the need of better methods of handling by greatly diminished yields. Our cities are multiplying at a rapid pace, thus making demands upon us for food and other necessities that are keeping us ever alert for better methods of cropping and soil handling.

But along with this general movement for better farming, must ever go a movement that is new, but quite as necessary. I refer to the effort for more economical methods of distribution.

Cream Easily Handled.

I know of no other product of the farm that can be marketed so easily as the cream. In every large city are commission merchants that will handle the butter and make quick returns for it. Anybody can ship the butter after it has been manufactured. The price at which the butter sells in the market depends upon the quality of the article, and quality is governed by the condition of the cream at the time of delivery and the skill employed in its manufacture.

Whatever may be the quality of the butter when it reaches the market, or however much it may affect the price at which it is sold, the producer of the cream should not lose his interest in it, for if from any cause, the quality is poor and the price low in consequence, he is the one to suffer, unless someone has paid him more than his cream was worth. In other words, the buyer is interested in profits, and unless he makes mistakes in buying, all loss on account of the inferior quality of the butter, must be borne by the one who sells the cream.

The producer then is living beneath his privilege if he does not study market conditions and do his best to simplify methods.

Selling to Large Consumers.

The practice of shipping cream to some centralized plant is very common. At first thought, this method seems a simple one. It is very convenient where there is no local creamery, and where the labor of churning is too heavy for those in the home. Sometimes the cream is gathered in wagons that stop at each house twice a week, and in this case it should reach the station in fair condition, providing it is good cream. But often the producer delivers it when he happens to go to town. It may be twice a week, it may be once, and perhaps it is not as often as that. The producer is not to blame because he does not deliver the cream oftener. Perhaps there is only a little of it, it may be six or eight miles to town, or even more, and so he can afford to take the cream only when he goes for other things. But suppose it does reach the town in good condition. It may be a hundred miles to the plant where it is manufactured into butter, and it may stand on the platform of the depot for hours in the hot sun waiting for a train that is pretty sure to come along sometime, but is late enough to allow a sun bath to that cream, which will not help it any.

On Ordinary Grade of Butter.

Of course, the cream reaches its destination by and by, and then the wonder is not that poor butter is made

from it, but rather that the butter is as good as it is. It is a wonder that this system brings to the producer of cream, far from the railroad, hundreds of miles in some cases, from where the butter is made, such good prices for his product. But modern science has done much for the butter-maker, and the making of some of the cream that is received at these large plants into butter that can be eaten at all, is an act little short of a miracle.

But such butter does not bring the best price. It always sells at a disadvantage in the market when competing with good butter from Denmark or from any other place where cream is received in good condition and properly handled afterwards. Such butter can not compete with the product of any good local creamery where the cream is delivered in good condition into the hands of a skilled butter maker.

Producer Bears the Burden.

And because it can not compete, it must be sold at a lower price, and since it brings a lower price the difference must be borne by the producer. Otherwise it would have to come out of the profits, in which case the business could not endure.

It is only fair to say that in many places the great centralized cream plants are doing excellent service. Until the time shall come when the people can support local creameries, it will be fortunate for them to be able to ship their cream to these large manufacturers.

But the advantages of a local creamery are so evident that the matter should receive attention at once in very many communities. I want to say a word in honor of the business man whose faith and courage leads him to build a local creamery in a neighborhood where the people have not confidence enough to build their own. His neighbors should appreciate him and patronize him until they determine to do business together. But you say, "He does not pay as much for our cream as we can get by shipping it." No, but he would if you would all patronize him.

Last month our creamery made but ten thousand pounds of butter, the smallest amount made in any month of the year. It cost almost as much to make that butter as it would to have produced twice the amount.

Local Patronage Needed.

Of course, we are not worried at all about this matter, because it is a temporary condition. But a large number of local creameries are failing to serve the communities for want of patronage. Could the public generally un-

derstand the advantages of making butter close to where the cream is produced, these little creameries would receive the patronage they merit, and no centralized plant could compete with them.

The Ideal Way.

But the ideal way to market cream is through "The Co-operative Creamery." You see, I have not qualified this statement. But, you say, "We know of any amount of co-operative creameries that have failed." Well, the writer knows of a few such creameries that were bought by certain communities which did not run long. But they closed up for the lack of co-operation and not because of it. It takes something more than a promoter and a lot of people caught like fish in a net, to make any sort of business go. A good co-operative creamery is almost as necessary in a dairy community where butter is to be made, as are the cows themselves.

There is no other way in which cream can be made into butter and sold to so great advantage to the producer, and yet, certain conditions are always essential. First, the cream must be sent to the creamery in quantities sufficient to permit of economical production. It is usually easier to raise the money to build a creamery than to get a sufficient amount of cream after it is completed. Next, the quality of the cream must be kept up to a point that will leave no guess work about the grade of butter produced providing the butter maker does his part.

Congenial Butter Makers.

And now just a word about the butter maker. He should feel his responsibility for the success of the creamery, and should be ever on the watch for numberless little things that may affect it in one way or another. Lastly, the patrons and the butter maker should keep very close together. Their interests are identical, and there should never be any unpleasant differences between them.

If a patron is dissatisfied with his test, the butter maker should talk the matter over with him pleasantly and invite him to be at the creamery when his samples are tested again, and see for himself.

If the butter maker and his patrons understand each other, much can be done to keep the quality of the cream up to a high point. The patron will take suggestions very willingly from the butter maker if he is only tactful in making them and if the quality of the cream can be kept right, and the quantity can be gotten, the success of the creamery will be beyond question.

If the people in every neighborhood where enough cream is produced to justify the investment, would get together and build a co-operative creamery and then stand together, the quality of butter in Michigan would be much improved and the price paid the farmer would be enough greater to return a fine profit on the investment.

Oceana Co.

W. F. TAYLOR.

The Difficult Marketing Problem

Why do our institute speakers mention the marketing problem as being the most complicated problem before the farmers today? It seems to me that it is simple enough—here are producers with farm products to sell and in the cities are consumers who want and must have these products. The only problem I can see is to bring these two classes together.

Branch Co.

Our enquirer has sensed the real problem of marketing. It consists in simply getting products from the producers to the consumers—nothing more. But the defining of the situation in this simple manner does not make the facts more easy to bear nor the conditions more readily modified to meet the requirements of an ideal marketing system.

The problem would perhaps be less complicated if it were not necessary to

make the marketing scheme so comprehensive as to include the products of every grower and satisfy the wants of every consumer. But one must recognize at the outset that our marketing system needs to embrace such a program.

The growth of large cities, the development of great transportation systems and because of these the fostering of specialized agriculture, have greatly complicated the methods of getting products to consumers. With these new and constantly adjusting conditions to meet, it becomes necessary to assemble the surplus offerings of each individual farmer, sort, grade and store and then to dole them out gradually and in small quantities to suit the needs of each and every individual consumer.

To suggest the multitude of problems connected with the improvement of our present marketing system it may be well to list a few of them: Starting with the getting of products to our primary market, the high cost of transportation from the farm to the local market is a matter of no small import. Then we must look to the production of a better quality of products, to more careful grading and packing, to the providing of uniform packages and the securing of reliable information on crop and marketing conditions. Then there are the questions of supporting a large number of local buyers where a few could as well do the business, and on the other hand, the possibility of monopoly, or price agreements when one or two are doing the local buying.

Then in connection with the common carriers who transport the goods from the primary to the terminal markets in the large cities there are the questions of prompt delivery, better refrigerating facilities for the handling of perishable goods, a more reasonable classification of rates, improvement in the handling of goods, a larger number of available cars so that products can be gotten to their destination with the least amount of deterioration, greater promptness and less red tape in the adjustment of legitimate claims for damage to products, etc.

Wholesaler's and Commissioner's Part.

As regards the commission man or wholesaler there ought to be greater protection afforded the shipper, not only to facilitate the settlement of accounts but also to safeguard and give proper attention to trade names, trademarks, etc. The question of an impartial inspection service is also one of the big problems connected with the exchange of products where either the seller or buyer is absent at the time the goods are passed upon. Improved terminal equipment, better refrigeration, the standardization of packages as to size, shape and form, the establishment of uniform business methods and the organizing and proper safeguarding of auction markets where such institutions may prove more efficient in handling perishable products, are all matters that require careful and profound study by practical men as well as students of economy.

Better Retailing.

Finally, there are those numerous problems connected with the retailing end of the system. It is common knowledge that the tax upon consumers, due to the existence of a large number of retail stores, is enormous, amounting to more than the total charges of all the other factors combined, particularly in the distribution of perishable products. Then there should be promoted a higher sense of honor in representation of the quality of goods, and in the giving of better weights, and greater concern in improving of sanitary conditions in the stores. It is necessary also that a steady supply of the more staple products be insured the retailer and yet not kept around in such large quantities as to cause deterioration in quality. Better systems of financing the retail man, of making collections from him by the wholesaler or jobber, and also from his customers, thus eliminating so far as possible, losses from poor collections, all of which are finally charged against the consumer or taken out of the producer.

This review, which is by no means complete, suggests at least something of the problems involved in the improvement of our system for handling farm products. In it we have said nothing of co-operation, which is a promising means looking toward the solution of a few of the questions respecting the primary end of marketing, but concerning which some things have not as yet been reduced to a thoroughly practical basis. We are confident that a careful study of conditions existing will convince anyone

of not only the importance of a careful survey of our whole marketing program, but also of the complicated elements and interests that must be dealt with in any effort to better conditions.

Crop and Market Notes

Michigan.

Berrien Co., Feb. 23.—Ground is bare but winter grains and meadows looking well. Rough feed growing scarce and not enough corn for home use. Hogs are about the only live stock being fed. There is a big production of eggs. A small amount of maple syrup has been made. Farmers are getting up ice. Cream 32c; butter 25c; eggs 25c; wheat \$1.27; corn 70c; beans \$3.50@3.75; potatoes 80c; loose hay \$12@14; cattle \$5@6; hogs \$7.50@7.80.

Cass Co., Feb. 23.—Clear weather and no snow except in spots. Wheat looks good where it got a good start last fall. Both hay and grain are very scarce, and the corn on hand is of poor quality. Wheat \$1.25; rye 90c; oats 45c; corn 65c; potatoes 70c; hay \$14; hogs \$7.75; dressed \$9@10; veal \$10; beef \$8; butter-fat 30½c; eggs 20c.

Cheboygan Co., Feb. 22.—Ground is covered with ice over which are a few inches of snow, which is not very favorable for grain fields. Not enough feed in farmers' hands for own use, but very little feeding stock on hand. Eggs scarce. It is too early for making maple syrup. Cream 30c; wheat \$1.20; corn \$1; potatoes 80c@1; hay \$14@16; apples \$1 per bu; eggs 30c.

Lapeer Co., Feb. 26.—About five inches of snow. Some wheat fields seem to be in good condition while others are not. Most farmers have plenty of feed to carry them through. There is not as much feeding stock as usual. Egg production fair. Cream 34@36c; butter 26c; wheat \$1.22; oats 43c; corn 75c; beans \$3.20; hay \$10@12; cattle \$4.50@5; hogs \$6@6.50.

Sanilac Co., Feb. 23.—Ground is covered with snow and sleighing is fine. Winter grains and meadows look good. Farmers have ample feed for home use and some hay remains to be marketed with the price around \$11 per ton. The usual amount of stock is being fed. Cold weather has checked the egg production, and prices fluctuate. Butter-fat 30c; eggs 19c; wheat \$1.22; beans \$3.40; potatoes \$1.50; fat cattle \$6.50; hogs \$7.50.

New York.

Genesee Co., Feb. 21.—Winter grains in good condition. Farmers have ample supplies of home-grown feeds, and the usual amount of stock feeding is being done. Egg production is increasing. Butter-fat 32c; milk \$1.80; beans \$3.40; red kidneys \$4.50; hay \$15; potatoes 95c@1; wheat \$1.20; corn 80c; steers \$7.25@8.25; hogs \$7.50; lambs \$7.50@8; calves \$9.50@10.

New Jersey.

Monmouth Co., Feb. 21.—Notwithstanding we have had little snow, winter grains are looking well. Farmers have sufficient feed for home use and very little stock is being fed for market. Egg production small. February milk 4½c per quart net; potatoes \$1@1.10; wheat \$1.25; corn 85@90c; hay \$15@20 per ton; hogs \$8@10.50.

Pennsylvania.

Lancaster Co., Feb. 21.—The winter grains are in a very good condition despite a light amount of snow. Farmers have but a small amount of feed; however, they are not feeding stock in this section. Hens are laying well. Butter-fat 32c; potatoes \$1@1.10 per bushel; wheat \$1.15; corn 80c; cattle \$8; hogs \$10.

Ohio.

Hancock Co., Feb. 24.—The winter grains and grass are in poor condition due to heavy freezing and thawing with very little snow. Few farmers are buying corn and fodder for home use. Usual amount of feeding stock on hand. Hens are not laying well at present. A little maple syrup has been made. Butter-fat 30½c; potatoes \$1; wheat \$1.25; corn 60c; hay \$12; cattle 6@7c; hogs 8c; eggs 18c.

Indiana.

Wayne Co., Feb. 24.—Weather has been very changeable here and winter grains, young clover and alfalfa are considerably damaged. Farmers have about the usual amount of feeding stock on hand with plenty of feed. Hens are laying fairly well. A few sugar camps have been opened. Cream 33c; wheat \$1.25; corn 70c; hay \$10@12; hogs \$8.

Missouri.

Warren Co., Feb. 25.—Winter grain certainly looks sick, rain and two weeks of ice having about finished it. Not a great deal of snow has fallen this winter, but lots of rain. Plenty of feed on hand for home use and hay to sell, which is worth \$12. Not many cattle or hogs on hand to feed. Stock sheep look fine. Hens laying fairly well. Eggs 19c; cream 33c; milk 24c; potatoes \$1.35; wheat \$1.16; corn 82c.



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Markets.

GRAINS AND SEEDS.

February 29, 1916.

Wheat.—Over 15 cents has been clipped from wheat values during the past week. On Monday prices declined 4c. The reason for this unusual decline is credited almost entirely to international conditions. In the first place, the shortage of ships is preventing exportation from American shores to which must be added the extra hazard due to the determination on the part of the German government to carry out its plan to attack armed merchant ships of the Allies without warning. This reduces the foreign movement of wheat to a very small volume, and thus takes from the American market its dominating bullish factor. Farmers have also been delivering the grain to elevators in liberal quantities throughout the winter, and last week primary receipts were more than twice as large as they were for the corresponding week a year ago. Statistics indicate, however, that farmers are holding far less of the cereal at this time than in 1915, which with the unfavorable condition of the growing crop and the limited area sown last fall due to wet weather, augers for a revival of higher prices later in the year. Much, of course, will be conditional upon the outcome of political affairs in Europe, and especially the efficiency of the submarine campaign. The visible supply, including wheat in bond, decreased 2,263,000 bushels the past week. One year ago No. 2 red wheat was quoted locally at \$1.46½ per bushel. Last week's Detroit quotations were:

	No. 2	No. 1	May
Wednesday	1.25	1.20	1.27
Thursday	1.20	1.15	1.22½
Friday	1.20	1.15	1.22½
Saturday	1.15½	1.10½	1.17½
Monday	1.11½	1.06½	1.13½
Tuesday	1.13	1.08	1.15

Chicago.—May wheat \$1.12½; July \$1.09½.

Corn.—Although not suffering to the extent that wheat declined, corn is lower than a week ago and trading is dull, due largely to the influence of wheat. Receipts, however, have been small, and but for the light demand values may have held steady. The visible supply increased 2,275,000 bushels. One year ago No. 2 corn was quoted at 70½c per bushel. Local quotations last week were:

	No. 3	No. 3
	Mixed	Yellow
Wednesday	72	74
Thursday	71	73
Friday	72	74
Saturday	72	74
Monday	70½	72½
Tuesday	70½	72½

Chicago.—May corn 75½c per bu; July 75½c.

Oats.—Values declined with wheat and corn, although on Monday the market was sustained by a general demand, especially in the central western marketing cities. The visible supply shows a decrease of 229,000 bushels. One year ago standard oats were quoted at 56½c per bushel. Last week's local quotations were:

	Standard	No. 3
		White
Wednesday	48	47
Thursday	46	45
Friday	46	45
Saturday	46	45
Monday	44½	43½
Tuesday	44½	43½

Chicago.—May oats 43½c per bushel; July 41½c.

Rye.—Market is down 6 to 9c per bushel for Cash No. 2.

Barley.—Prices lower, with malting grades at Milwaukee quoted at 63½c per bushel, and at Chicago 62½c.

Peas.—No change in Chicago prices, where field peas are quoted at \$2.40@2.50 per bushel, sacks included.

Beans.—Trade is firm with prices unchanged and offerings small. Immediate and prompt shipment \$3.65; March \$3.67; April \$3.70. At Chicago trading is light with pea beans, hand-picked Michigan stock at \$3.70@3.80; do. common to good \$3.55@3.70; red kidneys \$5@5.30.

Clover Seed.—Prime spot \$13; March \$12.25; prime alsike \$9.90. At Toledo prime cash and February \$13.65; March \$12.40; prime alsike cash \$9.75.

Timothy Seed.—Prime timothy \$3.75 per bushel.

FLOUR AND FEEDS.

Flour.—Jobbing lots in one-eighth paper sacks are selling on the Detroit market per 196 lbs., as follows: Best patent \$6.60; seconds \$6.30; straight \$5.90; spring patent \$7; rye flour \$6.

Feed.—In 100-lb. sacks, jobbing lots are: Bran \$26; standard middlings \$25; fine middlings \$30; cracked corn \$33; corn and oat chop \$29 per ton. Hay.—No. 1 timothy, \$18.50@19; standard timothy \$17.50@18; light mixed \$17.50@18; No. 2 timothy \$15@16; No. 1 mixed \$14@15; No. 1 clover \$10@13.

Chicago.—Choice timothy \$18@18.50; No. 1 do \$15@16; No. 2 \$13@14.

Straw.—Wheat and oat straw \$6.50@7; rye \$7.50@8 per ton.

DAIRY AND POULTRY PRODUCTS.

Butter.—Market is firm in all grades and prices are about 2c higher. Extra creamery 34c; firsts 33c; dairy 21c; packing stock 18c.

Eggs.—The scarcity of fine fresh stock has put the market on a higher plane. No offerings were made and 34c failed to draw out any. Under the circumstances, 34c is thought a fair basis for the market.

Chicago.—The demand is good for all grades of fresh stock. The offerings are light and are readily disposed of if holders are satisfied with price. Prices are about 1c higher. Extra creamery 33½c; extra firsts 32@32½c; firsts 28@31c; extra dairies 31½c; packing stock 19@20c.

Eggs.—Receipts of eggs increased but were taken care of by a good demand at prices ½c lower than last week. Current receipts are quoted at 21½c; candled firsts 22c.

Chicago.—Large offerings have lowered prices somewhat. The trade is good in both local and outside markets. Firsts 20½@21c; ordinary firsts 19½@20c; miscellaneous lots cases included 19½@21c; refrigerator stock 12½@15c, depending on quality.

Poultry.—The market is firm and quiet. The receipts are light and demand took care of all of the offerings. Turkeys 16@17c per pound; spring turkeys 21@22c; fowls 14@18c, according to quality; spring chickens 16½@18c; ducks 18@19c; geese 17@18c per pound.

Chicago.—The trade is good and the market steady. Prices are slightly higher for springs. Others remain unchanged. Turkeys, young and old 12@19c; fowls 15@15½c; springs 14½@17½c; ducks 15@17c; geese 10@14c.

Cheese.—The market is firm with Michigan flats selling at 18@18½c; New York flats 18½c; twins 18½c; Michigan dairies 18½@18¾c; brick cream 17½@18c.

Chicago.—The market is weak with little demand for American shapes. Special makes have limited sale. Brick cheese continues scarce and firm. Cheddars and Twins are quoted at 17½c; Daisies, double 17½@18c; single 17½@18½c; young Americas 18@18½c; brick 17@17½c.

FRUITS AND VEGETABLES.

Apples.—Apples are moving freely and offerings are ample. Greenings \$2.50@3.50; Spys \$3.50@4; Baldwins \$3@3.50; Steel Red \$4@4.50. At Chicago the trade in cheaper goods is fairly good. Fancy stock is not offered freely. No. 1 Greenings are \$2.75@3 per bu; Jonathans, No. 1, \$3.50@4; Baldwins \$3@3.25; Spys \$3@3.75.

Potatoes.—Market is quiet and easy. Prices remain unchanged. Carlots on track, white and red \$1@1.05 per bu. At Chicago the market is gaining tone and the holders are firm in their demands. The trading was mainly in bulk stock. Michigan whites are selling at 85@90c per bushel. Other kinds sell from 80@95c. At Greenville the buyers are paying 70c per bushel.

WOOL AND HIDES.

Wool.—All kinds of wools are strong with prospects good for still higher prices. A feature of the past week is the developing activity in the west for wools still on the sheep's back. Fleeces are held firm and sales are being made at advanced figures. At Boston Michigan unwashed delaines are now quoted at 28@30c; do. combing 32@37c; do. clothing 26@31c.

Hides.—No. 1 cured 16½c; do. green 14c; No. 1 cured bulls 13c; do. green 10c; No. 1 cured calf 21c; do. green 20c; No. 1 horsehides \$4.50; No. 2 \$3.50; No. 2 hides 1c lower than the above; sheepskins, as to amount of wool, 50c@2.

GRAND RAPIDS.

The egg market shows firmness on account of cold weather and dealers are paying 20@22c. Creamery butter is up one cent, with dairy still at 23c. Wheat has made sensational drops of late and local mills are paying \$1.08 for No. 2 red and \$1.03 for No. 1 white. Rye is 90c; corn 78c; oats 50c. Hay receipts at the market have been heavy and prices are \$13@16. Dressed hogs 9½@10½c; live fowls 14@16c.

DETROIT EASTERN MARKET.

Only a moderate amount of business was done Tuesday morning. Apples constitute a large part of the offerings, and are moving out at from 75c for Ben Davis to \$1.50 for Spies and Steele Reds. Bulk of potatoes 90c@1.25; cabbage 65c; carrots \$1@1.25. No pork nor eggs in sight. A dozen loads of hay were under shed with demand slow and prices ruling between \$18@22 per ton.

LIVE STOCK MARKETS.

Buffalo.

February 28, 1916.

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

Receipts here today: Cattle 115 cars; hogs 75 d. d.; sheep and lambs 42 d. d.; calves 1200 head.

With 115 cars of cattle on our market here today, including about 15 cars of shipping cattle, the market was very slow at the opening, but when they got going the bulk of the cattle sold 10@25c per cwt. higher than last Monday. Good cows were very scarce and sold fully a quarter higher. Bulk of the medium female stuff and canners sold 10@25c higher. Everything was sold in the yards today and we look for about a steady market next Monday.

Our receipts of hogs were somewhat lighter than generally expected and market higher on all kinds. The best grades 10@15c higher and pigs anywhere from 40@75c per cwt. higher than the closing two days of last week. All good grades sold at \$9.25; strictly pigs generally \$8.75; light hogs up to \$9.10; roughs \$8@8.25; stags \$5.50@6.50. About everything sold at the close. Prices look high compared with other markets and outlook a little bit easier balance of the week, especially on pig stuff.

Market was active on choice sheep and lambs but slow on medium and coarse, with prices 15c higher than the close of last week. About six loads unsold and we look for lower prices the balance of the week.

We quote: Lambs \$11.85@12; cull to fair \$8@11.75; yearlings \$8.50@10.50; bucks \$4.50@7; handy ewes \$8.25@8.50; heavy ewes \$8@8.25; wethers \$8.75@9.25; cull sheep \$4.50@7; veals, good to choice \$12.25@12.50; common to fair \$8@11.50; heavy \$6@9.

Chicago.

February 28, 1916.

Cattle. Hogs. Sheep. Receipts today..18,000 56,000 16,000 Same day 1915..17,890 45,396 13,148 Last week.....47,536 193,598 75,501 Same wk 1915..30,877 158,539 56,880

Shipments from here last week aggregated 10,391 cattle, 45,904 hogs and 17,645 sheep, comparing with 5,920 cattle, 28,730 hogs and 9,441 sheep for the same time last year. Hogs marketed last week averaged 208 pounds.

This week starts off with a small supply of cattle, and early steadiness later developed into strength and finally into an average advance of at least a dime, with a good general demand. Hogs were about 5c higher early, with a new high record at \$8.80, but packers held back and refused to follow up the advance. Sheep and lambs showed firmness from the start.

Cattle prices have been materially helped, so far as the cheaper kinds are concerned, by the recent reopening of the stocker and feeder outlet, and this increased strength has been imparted to the medium class of cattle, as the sales of feeders caused the packers to turn to the choicer cattle more generally. Receipts were not regarded as excessive last week, and there was animated general trading most of the time, with the bulk of the beef steers selling at \$7.50@8.90, the extreme range being \$6.25@7.70 for the commoner to fair class of thin steers of light weight up to \$9@9.65 for choice to extra beeves of heavy weight. No strictly prime little yearling steers came to market, and the best lots offered brought \$9@9.25. A medium class of steers found buyers at \$7.75@8.45, while steers that graded as good sold at \$8.50@8.95. Prices for cattle averaged 15@25c higher for the week and there was a good traffic in butchering stuff, with cows taken at \$5@7.75 and heifers at \$5@8.50, only a limited number of choice yearling heifers going as high as \$8. Cutters sold at \$4.40@5, canners at \$3.25@4.35 and bulls at \$5@7.25. Calves were in active demand, the heavier lots of good quality going largely to shippers and the better class of light weight vealers to local killers. The extreme range of prices for calves was \$5@11.25. There has been a fair demand for stockers and feeders, with five states open to receive thin steers for this purpose. These cattle have had a large advance from recent low prices ruling before an outlet was allowed,

and recent sales were made of steers anywhere from \$6.25@7.70, prices depending on quality and weight. A limited demand was reported for inferior light steers down to \$5.50@6, with some choice 1,126-lb. feeders taken at \$7.60 and fair 1,000-lb. feeders going as low as \$7.35.

Hogs never fail these times to make their usual fresh high weekly records for the present winter packing season, top last week being \$8.75. While receipts were on a liberal scale, they ran much short of a week earlier, and there was marked competition between local packers and shippers to eastern packing points for the choicest heavy and light hogs. A large share of the hogs sold within a range of 20c, with prime light shipping barrows selling close to prices paid for the best heavy weights. Recent receipts of hogs have averaged 206 lbs., which compares with 199 lbs. a fortnight earlier, 226 lbs. a year ago and 224 lbs. two years ago. The fresh pork requirements continue remarkably large, and the provision trade is far larger than in former years, with a good southern outlet for hog meats, as well as an unprecedentedly large export trade. During a recent week foreign buyers took twelve million lbs. of fat backs, and five million lbs. of lard were purchased to ship to Belgium. Closing prices for the week marked the highest level yet attained, with hogs selling at \$8.10@8.75 and pigs at \$6.50@8.10, according to weight and quality. Prime light shipping hogs brought within a dime of top prices.

Lambs, yearlings, wethers and ewes of superior quality and right weight sold extremely well last week, even on breaks in prices, with some new high records. Some fancy little yearlings made a fresh high mark by selling for \$10.40 per 100 lbs., and fat Colorado wethers at \$8.75 made a new high mark for the year. Feeding yearlings brought \$8.50 and feeding lambs \$9.50@10, with nowhere near enough feeders offered to go around. Aggregate receipts were very small, and a good share of the offerings were taken by shippers. Washington furnished some good bunches of the best class of feeding lambs, most of them being taken to ship to Michigan, with some going to Illinois feed lots. Recent sales were made of lambs at \$8@11.40, yearlings at \$8.50@10.40, wethers at \$7.50@8.75, ewes at \$5@8.25 and bucks at \$6@7.25.

Horses were in increased supply last week and in good demand at unchanged prices, purchases for the French army including a big share of the offerings. Light weight southern horses were salable at \$50@80, ordinary to fair farm horses at \$70@125, drivers at \$75@175, commercial chunks at \$170@215 and drafters at \$200@285, few going as high as \$250.

LIVE STOCK NEWS.

R. A. Sand, a careful young stock feeder of Illinois, was on the Chicago market recently with a carload of prime lambs averaging 75 lbs. that found a buyer at \$11.45 per 100 lbs. The lambs cost as feeders in Montana the middle of last October, when their average weight was about 57 lbs., \$6.50 per 100 lbs. They were well shrunk out, so that the gain made in weight was considered as remarkable. About a month ago Mr. Sand sorted out a carload of the lambs that averaged 86 lbs. and marketed them. He fed his lambs ear corn, which was not very good, but plenty was furnished in order to make up for the deficiency in quality. They also were furnished silage and oat straw.

BEE-KEEPERS' WEEK.

The Michigan Agricultural College, East Lansing, Mich., wishes to announce a bee-keepers' short course, known as "Bee-keepers' Week," March 13-18, inclusive.

The principles of management, symptoms and control of diseases in bees, and successful practice will be thoroughly discussed.

The course is designed to benefit all bee-keepers, young and old, who wish to care for their bees with the maximum of profit.

Outside speakers will be introduced, and a good program has been prepared. There will be no fees, and rooms and board can be obtained in East Lansing at reasonable rates.

Full particulars may be obtained from the Department of Entomology, East Lansing, although bee-keepers are invited to attend even if the program is not obtained previously. Spend a profitable week discussing bees.

The Kope-Kon Farm, Kinderhook, Mich., Mr. S. L. Wing, Proprietor, in remitting for his advertisement February 25, 1916, says: "I had a good sale and am satisfied. I wish to express my appreciation of your methods in dealing with me."

THIS IS THE LAST EDITION.

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

DETROIT LIVE STOCK MARKET.

Thursday's Market.
March 2, 1916.

Cattle.

Receipts 2336. The market opened at the local stock yards Wednesday with a good fair supply of cattle and hogs on sale, and fairly good service was handed out by all roads but the Pere Marquette, who were away behind, both on Wednesday and Thursday. Shippers off this road claim their stock is held too long after arriving at Delray before being sent to the yards, and if this is true it should be remedied.

In the cattle division the trade was the most active seen here in some time, and on everything but canners and bulls the trade was 15@20c higher than last week. Bulls and canners were strong. Buyers were here from Chicago, Boston and Baltimore and a large number were bought for shipment; the local beef trade is not very brisk and Detroit dealers were none too anxious to meet the advance. Common milch cows are not wanted and were very hard to dispose of; good grades dull. The close was steady at the advance as follows: Best heavy steers \$7.75@8; best handy weight butcher steers \$7@7.50; mixed steers and heifers \$6.50@7; handy light butchers \$6.25@6.50; light butchers \$6@6.25; best cows \$6@6.25; butcher cows \$5.25@5.75; common cows \$4.50@5; canners \$3.50@4; best heavy bulls \$6@6.25; bologna bulls \$5.50@5.75; stock bulls \$5@5.25; feeders \$6.50@7; stockers \$5.50@6; milkers and springers \$30@70.

Haley & M. sold Newton B. Co. 7 butchers av 824 at \$6.35, 5 do av 620 at \$6, 9 do av 900 at \$7, 1 cow wgh 780 at \$3, 2 do av 1165 at \$6, 2 do av 1020 at \$5.10; to Nagle P. Co. 5 steers av 794 at \$6.90, 5 do av 880 at \$6.75, 2 do av 675 at \$6, 2 bulls av 1700 at \$5.40, 4 cows av 922 at \$4.40, 2 do av 1200 at \$5, 4 steers av 1030 at \$6.50; to Mich. B. Co. 8 do av 1045 at \$7; to Newton B. Co. 22 do av 880 at \$6.70, 2 cows av 1070 at \$5.50, 6 do av 1055 at \$5, 20 do av 1167 at \$7.45, 12 do av 1111 at \$7.45. Reason & S. sold Thompson Bros. 1 bull wgh 1750 at \$6, 1 do wgh 1260 at \$5.75, 1 do wgh 900 at \$5.50, 2 cows av 900 at \$5.50, 1 do wgh 1370 at \$5.75, 1 bull wgh 1690 at \$6.50, 1 do wgh 1260 at \$5.50, 2 do av 1215 at \$6; to Newton B. Co. 16 butchers av 982 at \$5.50; to Sullivan P. Co. 17 do av 990 at \$6.50, 4 cows av 1005 at \$4.50.

Roe Com. Co. sold Newton B. Co. 2 steers av 1050 at \$7, 2 cows av 790 at \$5, 7 steers av 716 at \$6, 1 cow wgh 1450 at \$6.25, 2 do av 1045 at \$5, 2 do av 950 at \$4, 1 do wgh 990 at \$4.25, 1 do wgh 1090 at \$5.25, 1 steer wgh 1220 at \$7.40, 5 cows av 844 at \$4.15; to Bray 11 cows av 1187 at \$5.25; to Newton B. Co. 4 do av 1075 at \$5.60, 1 do wgh 930 at \$4; to Breitenbeck 2 do av 930 at \$5.

Veal Calves.

Receipts 968. The veal calf trade was about steady with last week on good grades, a few choice bringing \$12 but the bulk of sales for good was at \$11@11.50. Common and heavy grades were dull and 25c lower, selling at from \$7@10.

Sandel, S., B. & G. sold Thompson Bros. 8 av 125 at \$10.25, 8 av 145 at \$10.25, 1 wgh 160 at \$11.50; to Sullivan P. Co. 7 av 150 at \$11.50, 2 av 140 at \$11.50, 7 av 125 at \$10.50, 3 av 120 at \$8.50, 8 av 150 at \$11.50, 5 av 130 at \$9.50; to Burnstine 4 av 145 at \$11.50; to Mich. B. Co. 14 av 150 at \$11.50.

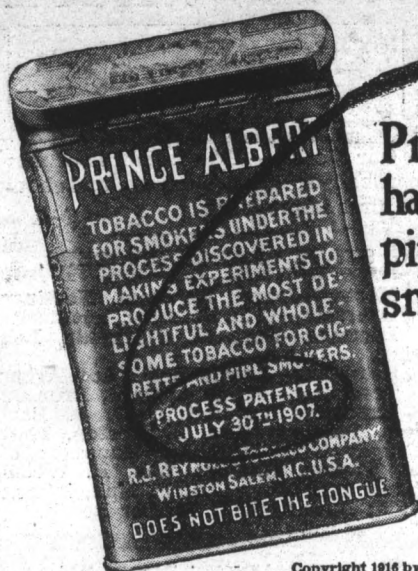
Sheep and Lambs.

Receipts 3458. The sheep and lamb trade for choice lambs was about steady but common grades were dull and a trifle lower than last week; on Wednesday two bunches brought \$11.10 but they were extra fancy. The bulk of the sales were as follows: Best lambs \$11; fair lambs \$10@10.75; light to common lambs \$8.75@9.50; yearlings \$9.50@10; fair to good sheep \$6@7.25; culls and common \$5@5.50.

Bishop, B. & H. sold Swift & Co. 228 lambs av 78 at \$11, 203 do av 79 at \$11, 22 do av 103 at \$10.50; to Nagle P. Co. 16 do av 65 at \$10.60, 22 do av 70 at \$10.60, 4 sheep av 120 at \$6; to Sullivan P. Co. 10 lambs av 95 at \$10.60, 110 do av 65 at \$10; to Nagle P. Co. 82 do av 75 at \$10.60, 105 do av 80 at \$10.75, 105 do av 85 at \$11.10; to Mich. B. Co. 104 do av 85 at \$11.10, 110 do av 75 at \$10.75.

Hogs.

Receipts 10,238. The hog trade was active and 35@50c higher than it was a week ago and on Thursday was five cents higher than on Wednesday; the prospects look good for higher prices. Heavy grades \$8.95; yorkers and mixed \$8.75@8.90; pigs \$8.25@8.50.



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Prince Albert tobacco has made three men smoke pipes where one smoked before!

Your supply of Prince Albert awaits your cheery nod at the nearest store that sells tobacco. Topsy red bags, 5c; tidy red tins, 10c; pound and half-pound tin humidors and that fine crystal-glass pound humidor with sponge-moistener top that keeps the tobacco in such excellent condition.

PUT fire to that friendly old jimmy pipe of yours chock-full of Prince Albert—if you want to know why the national joy smoke has revolutionized pipe pleasure; why Prince Albert has trebled the number of pipe smokers in six years!

Test out P. A. to the last ditch! Puff your way into that enticing flavor, fragrance and long-burning coolness. Your confidence will never be abused. The patented process fixes that—and cuts out bite and parch!

PRINCE ALBERT
the national joy smoke

will set free any pipe-shy tongue! It will give any man all the pipe happiness he ever yearned for!

Prince Albert has won its way on merit; won-over men of all tastes—it's so universal in its popularity; so good, so kindly, so satisfying. It will win you quick as a flash!

R. J. REYNOLDS TOBACCO COMPANY, Winston-Salem, N. C.

HORSES



60 HEAD OF STALLIONS FOR SALE

PERCHERONS, CLYDESDALES and HACKNEYS

Also 20 head of Choice Hackney mares with foal.

Gentlemen I got on my selling clothes.

Write for prices.

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Colby Ranch, Stanton, Mich.

Percherons, Holsteins, Angus, Shropshires, Durocs
DORR D. BUELL, Elmira, Michigan.

DUNHAMS
Percherons

For Fifty Years The Best

Send for fine Photographic Catalogue.

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Wayne, Dupage County, Illinois
Percheron Stallions



Sixteen Head For Sale

No salesman need apply we deal direct and give terms to responsible parties.

A. A. Palmer, Estate, (R.R.) Orleans, (P.O.) Belding, Mich.

20 Head of Percheron 20

Stallions and Mares

of high quality. Royally bred, some of them by the Great \$40,000 Champion Carnot (66,666). All recorded in P. S. A. Studbook. If you are in need of a good Stallion or mare, come and see us. We can suit you in both quality and price.
H. A. ROHRS & SONS, R. D. No. 4, Napoleon, Ohio.

Registered Percherons

2 rising two year old Percheron Stallions weight 1550 and 1600 lbs. Priced to sell. Inspection invited.
L. C. HUNT, Eaton Rapids, Michigan.

"FOR SALE OR EXCHANGE"

Registered Percheron Stallion. He is a grey, sound and in the Ton class, works well on the farm. He is a Grand Son of the Great Bisque and a great mover. He is gentle and sure, this horse must go on account of illness. Whitney Bros., Unondaga, Mich.

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FOR SALE—Registered Percheron Stallion Mare and Fillies at reasonable prices. Inspection invited. F. L. KING & SON, Charlotte, Mich.

FOR SALE, Three Registered Percheron Stallions. One coming 2 yrs., one coming 4 yrs., one coming 6 yrs. this one Imported. Farney Giesken, St. Louis, Mich., R. 3.

LOESER BROS.

We have 100 head of Belgian and Percheron Stallions and mares. Imported and home bred. We have sold pure bred horses in Michigan for the last 25 years, and have the right kind, and at the right price. We can supply any number of work horses, both geldings and mares. Get in touch with us.

LIGONIER, INDIANA.

FOR SALE

Imported Belgian Stallion.

Five years old. High class individual and extra good sire. Will sell very reasonable. Might take some other stock toward him. For further particulars address

H. E. SLOAN, Burt, Mich.

JACKS AND MULES

Raise mules and get rich. 200 head fine large Jacks, Jennys and mules, 14 to 17 hands high. Large registered Jacks and draft stallions cheap now. Will trade for sheep, cattle or horses. Write for prices today. Stock guaranteed. Address KREKLER'S JACK FARM



West Elkton, Ohio

OVER STOCKED, MUST SELL.

FOR SALE: Six colts coming three year old, four colts coming two year old, and three yearlings, six Jersey cows; three being registered; four heifers, three two year old, one yearling registered bull; one extra nice pair of bay colts. This stock may be seen at the Terres Farm, Chase Road, one mile north of Michigan Avenue, A. P. TERRES, FARM, 1730 Michigan Avenue, Detroit, Michigan, Walnut 2991.

QUETLAND PONIES. Team of matched brown thoroughbred mares. Kind, safe for children. Double and single harness, buggy, cutter, two saddles. Especially desirable outfit which cost \$400.00. For quick sale will sacrifice for \$200.00 cash. Dr. T. S. Mann, St. Johns, Mich.

RUFUS B. HOLMES CO.

High and Riopelle Sts. Detroit, Mich.

Commission Merchants

Poultry, Live or Dressed. Dressed Hogs, Calves, Sheep and Eggs. Reference, Peninsular Savings Bank, Sullivan Packing Co. Shipments Solicited. Satisfaction Guaranteed.

HAY Ship your good quality to us. Highest Market Prices. E. L. Richmond Co., Detroit.

HAY OUR NEW LOCATION— 623-625 Wabash Bldg., Pittsburgh, Pa. Daniel McCaffrey's Sons Co.

THE HARPSTER COMMISSION CO., Union Stock Yards, Toledo, O. Sell live stock on commission, get highest prices and best fills. Try them. Daily market, force of six looks after your interest. Financially backed by over \$1,000,000.

WE WILL PAY THE HIGHEST OFFICIAL DETROIT Market Quotation day of arrival delivered here, and will pay premiums whenever possible. American Butter & Cheese Co., Detroit, Mich.

WANTED: Responsible agents for established and necessary products. Unless you have an established territory or successful selling experience to the farmer, your application will not be given consideration. State fully your conditions, with references in first letter to Albion Chemical Works, Albion, Mich.

FIRE! FIRE! FIRE!

We shudder at even the thoughts of fire. Sometimes we think what would we do if our house caught fire, or our barn, or any of our other buildings, or our automobile; try to put them out, of course, but how?

We had an opportunity of buying, at much less cost than any of our readers could, a lot of fire extinguishers, and of the best sort—the "Fire Chief" Dry Chemical Powder kind—supposed to be the best for quick work. As a rule, the time to put a fire out is as near the start as possible. Farmers have little fire protection; we figured on that when we bought a lot of the "Fire Chief" Extinguishers at a low wholesale price. We bought these with our subscribers in mind and will give them to our readers at cost. Full directions go with each one. They are instantaneous, sure. The \$2 size we will offer to our subscribers at \$1, or six for \$5, while they last.

The Michigan Farmer,
Detroit, Michigan

GRANDFATHER

Never Dreamed
of a

He got along with a set of "Bars" hewed from poles cut in the woods. Neither the "Bars" nor the board gates that followed them were really effective, as any vicious or determined animal could get through. Nothing gets by the

Peerless Self-Raising Gate

as it is of heavier than ordinary construction. The big, heavy 1½-inch tubing frames filled with a close woven fabric of all No. 9 wire makes a combination that stands the hardest kind of usage. Cross bars are 6 inches apart with 3-inch spaces between line wires at the bottom. Every wire of the filling is carefully tied to the frame.

The Self-Raising feature makes it extra handy, as it springs up when unlatched and swings over snow, ice, grass and rubbish. No shoveling or digging ice

and snow in the winter time.

Every part of the Peerless Gate is heavily galvanized by the electro process, making it rust proof. No paint to wash or wear off in a year or two. Galvanizing looks better and lasts ten times as long as paint.

You should have our complete catalogue describing this gate, as well as Peerless Hog, Field, Poultry and Lawn Fencing, showing a hundred styles of fences and gates. Before you put up a rod of fence or a single gate you should know about the Peerless line. Learn about the efficiency of the Peerless one-piece cross-bar, the Peerless patented non-slip knot and our special Galvanized Open Hearth Steel Wire. Peerless Fence is easy to buy, easy to erect, looks good and gives long service. Send for that Free Catalogue.

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WIRE FENCE
COMPANY

210 Michigan Street

ADRIAN
MICHIGAN

Grange.

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

STATE GRANGE OFFICERS.

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Overseer—C. H. Bramble, Tecumseh.
Lecturer—Dora H. Stockman, Lansing.
Secretary—Jennie Buell, Ann Arbor.
Treasurer—Frank Coward, Bronson.
Executive Committee—C. S. Bartlett, Pontiac; Geo. B. Horton, Fruit Ridge; J. W. Hutchins, Hanover; W. F. Taylor, Shelby; Wm. H. Welsh, Sault Ste. Marie; N. P. Hull, Dimondale; Burr Lincoln, Harbor Beach.

THE MARKET PROBLEM.

At the first meeting of the executive committee of the Michigan State Grange, a sub-committee on marketing was appointed consisting of Burr B. Lincoln, W. F. Taylor, Jennie Buell, and William Welsh. It is the purpose of this committee to co-operate with the present Director of Markets in Michigan, Hon. James N. McBride, and to do some other things along the line of solving the problem of distribution. It is to some of these other things that I desire to call the attention of the readers of the Michigan Farmer just at this time.

A few days ago I received a letter from a large Grange in the upper peninsula asking for information regarding seed potatoes. The upper peninsula is not the only place where seed potatoes are going to be needed this spring. There are sections in almost every county where farmers will have to buy their seed. There are some entire counties where practically everyone must purchase seed, and yet, in most cases, this seed could be gotten quite near by if people only knew where to look for it. Seed corn will be needed quite as widely as seed potatoes and the problem of getting it will be equally hard to solve. Seed potatoes can be shipped anywhere in the state and planted with confidence and the future crop will justify the venture, but seed corn is apt to behave in ways of its own when it is shipped very far from where it is grown. The desirable thing is to get it just as near home as possible in order that the time of ripening may not be postponed.

It is the purpose of this committee on marketing to issue a circular to all the grangers in the state asking for prompt information from those who desire to buy seed corn or seed potatoes and also from those who have either to sell. It is probable that before this article reaches the reader the circular will have been received. The Grange has entered a comparatively new field in the appointment and the proposed work of this committee. Our success will depend entirely upon the extent to which subordinate Granges co-operate with us. It is to be hoped that every Grange receiving the communication referred to will act promptly, listing up the needs of its members and the amount of seed corn or potatoes for sale, together with names of parties so that those desiring to sell and those who must buy can be gotten together to their mutual advantage. It is to be hoped that the northern counties of the lower peninsula will be able to furnish seed potatoes in the territory above the Straits and it is also hoped that those having a surplus of potatoes in the upper peninsula will be able to discover their neighbors who are in need, as such an arrangement will save considerable freight. We trust that every reader of this will enter heartily into the spirit that inspires your committee and that through the co-operation of members of the order throughout the state much good may result.

Oceana Co.

W. F. TAYLOR.

ANNUAL REPORT OF STATE HOME ECONOMICS COMMITTEE.

The American home is coming into a new place in our thought. While losing some of the poetry of other days its practical side is coming more into our thinking. Our Grange ritual sounds the key note in its teaching that "A well-ordered household is essential to a happy home and without a happy home no farm is fully a success. "Well-ordered" is the key to a happy home. Hence the birth and rapid growth of the science of Home Economics. It has had to struggle against ignorance, inertia and long-established customs and traditions but the high cost of living and the high pressure of our American life has forced us to give it a place in our program of progress. The question of income is studied today more closely than ever before and rightly so because a recent writer has said that at the age of 65, ninety-seven out of every hundred people are partly or wholly dependent upon their relatives or upon the public. We have in days past concerned ourselves also almost wholly with producing enough and have looked little to the ways our incomes have been expended. Girls have looked forward to a marriage with the thought that they are provided for so far as life's necessities are concerned with the sealing of the marriage vows. Combining this false idea with the change that has taken place in household affairs in the preparation of articles of food, clothing and household decoration and with the centering the interest outside the home rather than within it has proved disastrous to many a promising matrimonial venture. To grow up a new system of household practice that fits into the changed conditions and to restore to the modern housewife the pride and joy that she found of old in her manifestation of skill in her household duties is the problem of the modern science of Home Economics. To acknowledge frankly the change that is upon us and to see the necessity of preparing adequately to meet it seems to your committee to be the big step at the present time. To launch wildly out in any direction before we have seen to the end of our desires, may not only require us to retrace our steps in humility but may do a worthy cause untold injury by arousing useless prejudice.

To your committee it seems necessary to establish clearly in the minds of all that economics does not convey the idea of going without or the purchase of cheap things. But that it does teach the art of buying and using the needful things and in such purchase and use to get the most for your money. In order to make our work helpful and specific we have deemed it best to submit a few definite recommendations.

First. We urge that in the revision of our next Grange contract catalogue that our contract agent be instructed to include up-to-date washing machines, water pressure systems and other household equipment. Efficiency is the watchword of the home as well as the field. Amended to add gasoline engines.

Second. Inasmuch as home economics is a theme that should interest both men and women of the farm, we recommend that the Grange request that one period of the general sessions of Farmers' Institutes be given over to such a topic.

Third. We also recommend that Pomona Granges at least once a year have one topic pertaining to the subject of home economics and that such a subject appear in the program of the Subordinate Grange at least once a month.

Fourth. We further recommend that the Granges co-operate and encourage the work of Mr. E. C. Lindeman, supervisor of club work among the boys and girls of Michigan, and Miss Pauline Raven, the woman's home economic agent of the extension work of the Michigan Agricultural College.

Fifth. We recommend the federal and state governments for the publications of the excellent bulletins on home economics and recommend that Grange members use them freely and we also feel that the following books will be found helpful: "Shelter and Clothing," and "Foods and Household Management," written by Helen Kiney and Anna Cooley, and published by Macmillan Co., of New York; also the home economic circulating library of 28 volumes, sent out by the state librarian, which may be obtained by any Grange for a period of six months.

LET 'ER RAIN
If you've a man's work to do —
wear TOWER'S FISH BRAND
REFLEX SLICKER \$3

A.J. TOWER CO.
BOSTON
TOWER'S
FISH BRAND

1916
\$50.
ATCO AUTOS
ASK FOR AGENCY TERMS
Send for 1916 announcement showing the Autos in various makes and models including Roadsters, Touring Cars, Trucks and "Jitneys". Buses, at prices representing a fraction of their original cost. All sold on Easy Payment Terms. \$50.00 now will secure any car for future delivery. Any one may also be purchased at from five to eight dollars per week. We ship everywhere to anyone. Atco Autos Guaranteed for One Year. Prices from \$275.00 to \$785.00.
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FACTORY TO RIDER
1916 Model
Saves you big money. Buy direct and save \$10 to \$20 on a bicycle.
RANGER BICYCLES in 94 styles, colors and sizes. Greatly improved; prices reduced. Other reliable models, \$11.95 up.
WE DELIVER FREE to you on approval and 30 days trial and riding test.
Our big FREE catalog shows everything new in bicycles and sundries. A cyclopedia of information which every person should have. Write for it.
TIRES, lamps, wheels, parts and supplies at half usual prices. A few good second hand bicycles taken in trade \$3 to \$8 to clear.
Do not buy a bicycle, tires or sundries until you write and learn our wonderful new offers, low prices and liberal terms. A postal brings everything. Write now.
MEAD CYCLE CO., DEPT. T-77, CHICAGO

AUGUSTA BASKET COMPANY
Manufacturers of
Best Quality Fruit
Packages, Baskets,
Crates, etc.
Write for 1916 catalog and price list,
Augusta, Mich.
Box 52.
"BASSWOOD QUARTS"

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Fence Facts
Before you buy any fence, get this valuable book.
Empire Fence
Big No. 9 wires, open hearth steel heavily galvanized.
Bond Steel Post Co.
Direct from factory—freight prepaid. Save dealer profits.
Thousands write that it outlasts everything else.
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TIMOTHY \$3.00 PER BU.
SAVE MONEY—Buy Direct from Grower.
New reseeded Iowa Grown Timothy, free from noxious weeds. Guaranteed Satisfactory or money refunded. Write today, 100-page catalog and Free Samples. Low prices on Clover and all grass seeds. Write before advance.
A. A. BERRY SEED CO., BOX 331 CLARINDA, IOWA

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Mention The Michigan Farmer.

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WOOD OR IRON
POSTS
This fence appeals to the man who takes pride in the appearance of his home and wants a permanent improvement at moderate cost. Built of large wire, heavily galvanized. Will last many years.
Our Republic Royal Blue Gate is a model for strength, durability and convenience. Extra heavy frame of high-carbon steel. end-bars do away with malleable connections—reduce chance of breakage. Galvanized or painted, as desired.
Gate raises 80 inches at front end and 12 inches at hinge end. See your dealer. Write for illustrated folder and Catalog.
Republic Fence and Gate Co.
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Automatic Stock Proof Latch
ROYAL BLUE FARM GATE

400,000 Farmers Have
Bought 25,000,000 Rods!

DIRECT
FROM FACTORY
FREIGHT PREPAID
Every inch Basic
Open Hearth wire,
Double Galvanized.
13c PER ROD UP.
Money Saving Fence Book and sample free. Just write postal now to
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GOOD AS CAN BE GROWN
Prices Below All Others
I will give a lot of new sorts free with every order I fill. Buy and test. Return if not O. K.—money refunded.
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Over 700 illustrations of vegetables and flowers. Send yours and your neighbors' addresses.
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Farmers' Clubs

OFFICERS OF THE STATE ASSOCIATION OF FARMERS' CLUBS.

President—R. J. Robb, Mason.
Vice-president—C. B. Scully, Almont.
Secretary and Treasurer—Mrs. J. S. Brown, Howell.

Directors—Alfred Allen, Mason; C. T. Hainline, Alma; W. K. Crafts, Grass Lake; Edward Burke, St. Johns; Mrs. C. J. Reed, Spring Arbor; Roy E. Moore, Bellevue.

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

Associational Motto:

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

Associational Sentiment:

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

YEARLY PROGRAMS.

The first of the yearly Farmers' Club programs for 1916 to reach the editor's desk is that of the Ingham County Farmers' Club, the official address of the Club, Mason, Mich., being given on the outside cover, in addition to the name of the Club and the year for which the program serves. The title page has at the head the date of organization, which was 1872, and the date for which the program serves, 1916, in opposite corners. On this page the title given is "Year Book of the Ingham County Club," which is followed by the motto of the Club, which is the following quotation from Garfield: "Growth is better than permanence; permanent growth is better than all."

On the succeeding page is given a list of obligations of the members, numbering seven, which call attention to the amount of annual dues which are fifty cents for each family; that the place of meeting is at the homes of members; that regular meetings occur the second Saturday each month; that well filled baskets are expected in time for the table committee to serve dinner promptly at noon; that the program commences at 2:00 p. m.; that members are expected to act upon any committee when asked, and that the members are expected to do any work assigned them by the various committees willingly and cheerfully.

The next page is devoted to a list of the officers and directors of the Club, the organization having six directors in addition to the usual list of other officers. The succeeding page contains a list of the standing committees of the Club, which include program committee, locating committee, floral committee, music committee and memorial committee. The chairman of the program committee to whom we are indebted for the copy from which this review is being made is ex-associational secretary, Mrs. W. L. Cheney, of Mason Mich., who would be glad to exchange programs with a similar officer of any other Club using printed yearly programs.

Succeeding pages of this booklet are devoted to the monthly programs of the meetings, at each one of which some particular subject is emphasized. For instance, the February meeting is insurance day; the March meeting mutual benefit day; the April meeting seed and weed day; the May meeting farm day; the June meeting school day; the August meeting bird day; the September meeting alfalfa day; the October meeting Chapin day, so named in honor of the host; the November meeting women's day; the annual meeting in December, anniversary day celebrated in January 1917, the fiscal year for which the program serves beginning with February, 1916.

The programs for the several monthly meetings are complete, except as to assignments for musical numbers. The table committee for each meeting is

announced below the program for that particular meeting. The discussions are in each case along lines in accordance with the general topical designation for the several meetings. The question box is made a feature of occasional programs. On the last page of the booklet appear the names of the heads of families which are members of the Club, numbering fifty-nine. This program shows the result of much thought on the part of the committee, who have omitted nothing which would contribute to its usefulness to Club members during the year.

CLUB DISCUSSIONS.

Discuss Pasture Problems.—Charleston Farmers' Club, of Kalamazoo county, held their regular meeting at the pleasant rural home of Mr. and Mrs. A. P. Simpson, Wednesday, February 16. A delicious picnic dinner was served at noon, to which all did ample justice. The meeting was called to order by the president, Floyd Coville. The roll call and the minutes of the last meeting were read by the secretary, Mrs. L. J. Bradley. The business of the meeting was then transacted, after which an excellent program was given. After the close of the program a very interesting discussion was entered into, on the subject, "Pasture on the Lowland, or Pasture on the Upland." At the close of the day the meeting adjourned to meet again on Wednesday, March 15, at the home of Mr. and Mrs. A. P. Simpson.—Mrs. Cora A. Palmer, Reporter.

Will Plant Fish.—An exchange of valentines followed the usual opening exercises of Columbia Farmers' Club, held at the home of Mr. and Mrs. Wm. Parker. President Luther Cook retired and the new president, W. E. Randall, was inaugurated. When the Club assembled after dinner, fish planting in Columbia streams and lakes was advocated, and A. R. Palmer, C. Davison and J. Freeman were appointed a committee to procure some from the state. Dr. and Mrs. E. N. Palmer were elected honorary members of the Club. A. R. Palmer gave a report of the Jackson County Club and its approval of the county agent plan. All interests today are becoming highly organized and of these the county agent is the leader. All opposition disappears when the plan is tried out. M. G. Every spoke briefly on farm interests and Will Parker told of the consolidated schools of Kansas and other facts brought out by his western trip. The program was pleasantly interspersed with literary and musical numbers.

Club Changes Name.—Members of the Four Towns Farmers' Club met at the home of Chas. Mercill in Gilford for the February meeting, with President Aldrich in the chair. After a bountiful dinner a communication was read from R. P. Reavey inviting the members to attend a banquet March 2, at Caro. A motion to change the name of the Club from "Four Towns" to "Commonwealth" was discussed and adopted. The members engaged in a spirited discussion on the subjects of beans and tile drains, marketing farm products with the co-operation of the federal government, and a specialist is expected to visit the Club and explain the benefits to the community in organizing and cutting out the middleman. At the next meeting the main topic will be "Buying Direct." The schedule of meetings for the balance of 1916, follows: March 16, Edward Wilson; April 26, Jacob Botimer; May 18, Marcus Hobart; June 15, C. N. Aldrich; July 20, James Reid; August 17, Picnic in Findlay Bros.' Grove; September 21, Frank Preston; October 19, Alfred Covill; November 16, Mert Aldrich; December 14, Knox Young. Archie Lindsey entertained the members with several old-fashioned songs which were greeted with hearty applause.

Gentlemen's Day.—The Indianfields Farmers' Club was pleasantly entertained at the home of Mr. and Mrs. Albert Arnold in Caro, on February 17. Nearly every member was present. A bountiful dinner was served by R. W. Black and his able assistants. After dinner was served the meeting was called to order by President S. G. Ross. The gentlemen taking part in the program certainly knew how to entertain. An excellent program was given. Debate, "Resolved, that the equalizing board of the state tax commission ought to be abolished." Affirmative, S. G. Ross, F. Arnold and W. Eldridge; negative, R. W. Black, Chas. Pierce and A. Andrews. Mr. Pierce not being present, Mrs. E. Purdy was chosen to take his place. Both sides put up very strong arguments but as it was getting late no decision was made. The Club adjourned to meet March 16 at the home of Mr. and Mrs. Chas. Pierce.

Buy Your Fence Now



PRICES ADVANCE MARCH 15, 1916.

Buy Your Next Year's Requirements Now and

Save From One to Three Cents Per Rod



Owing to the steadily increasing cost of raw material it is necessary for us to advance the price on all styles of UNITED FENCE on March 15, 1916. But in accordance with our policy we are giving our customers the opportunity of purchasing their fence at the low price. Take advantage of this advance notice and mail your order today to insure prompt delivery.

GUARANTEE

We guarantee our fence to be made from the best Galvanized Hard Steel Wire, both stay, line wire and knot, and to be the most perfectly woven fence on the market.

NOTE—Close prices on other styles all No. 9 Heavy Fence will be quoted upon request. All styles put up in 20, 30, and 40 rod rolls only.

MEDIUM STOCK FENCES

No. line wires	Height in feet	No. 9 top and bottom and No. 12 filler. with the exception of the first four styles listed which have No. 13 filler.	Weight per rod	Price per rod F. O. B. Port Huron, Mich.	Price per rod F. O. B. Minn- neapolis Minn.
Spacing in inches					
7-26-16	3, 3 1/2, 4, 4 1/2, 5, 5 1/2, 6	4 3/4 lbs.	\$0.15	\$0.16	
7-26-30	3, 3 1/2, 4, 4 1/2, 5, 5 1/2, 6	5 1/2 lbs.	.18	.19	
8-34-16	3, 3 1/2, 4, 4 1/2, 5, 5 1/2, 6, 8	5 3/4 lbs.	.18	.20	
8-34-30	3, 3 1/2, 4, 4 1/2, 5, 5 1/2, 6, 8	7 lbs.	.22	.24	
8-45-16	4, 5, 5 1/2, 6, 7, 8, 9	6 lbs.	.19	.21	
9-42-16	3, 3 1/2, 4, 4 1/2, 5, 5 1/2, 6, 8, 8	6 1/2 lbs.	.21	.23	
9-42-30	3, 3 1/2, 4, 4 1/2, 5, 5 1/2, 6, 8, 8	8 lbs.	.26	.28	
10-50-16	3, 3 1/2, 4, 4 1/2, 5, 5 1/2, 6, 8, 8, 8	7 1/4 lbs.	.24	.26	

HEAVY STOCK FENCES

All No. 9 Wire				
9-48-12.....	3, 4, 5, 5, 6, 8, 8, 9.....	12 lbs.	\$0.36	\$0.39
10-50-12.....	3, 3 $\frac{1}{4}$, 3 $\frac{1}{2}$, 4 $\frac{3}{4}$, 5 $\frac{1}{2}$, 6, 8, 8, 8.....	13 $\frac{1}{4}$ lbs.	.40	.43
10-50-16.....	3, 3 $\frac{1}{4}$, 3 $\frac{1}{2}$, 4 $\frac{3}{4}$, 5 $\frac{1}{2}$, 6, 8, 8, 8.....	14 $\frac{1}{2}$ lbs.	.44	.47

POULTRY FENCE

18-50-24	1 1/2, 1 3/4, 1 3/4, 1 3/4, 1 3/4, 1 3/4, 1 3/4, 2 1/4, 2 1/4	12 lbs.	.39	.42
Staples Galvanized, 1 1/4 inch, per bag of 25 lbs.			.85	.90
Brace Wire, No. 9, Soft, per coil 25 lbs.			.80	.85
Stretcher, all iron, double draw			7.50	7.75
Barb Wire, 4 pt., per 80 rod spool			2.85	3.10
Barb Wire, 2 pt., per 80 rod spool			2.70	2.95

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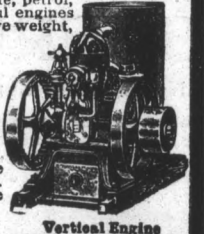


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Grandsons of Friend Hengerveld De Kol Butter Boy and Pontiac Aggie Korndyke. From high record A. R. O. dams at farmers' prices.

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Stock for sale at all times. Berkshires of unsurpassed quality and breeding, at reasonable prices. A choice bull calf, nicely marked, five months old, sire's dam with record of over 27 pounds. Dam of calf a grand daughter of Hengerveld De Kol. Price \$50.00.

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Berkshires of best breeding, of various ages, either sex, all registered stock, no akin, special reduced price. Write your wants quick.
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Berkshires. Of various ages, either sex, open or bred, prolific strains. Registered, at moderate price.
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REG. Berkshire sows due to farrow in April. Gilts \$18. Yearlings \$20. Mature sows \$30. All guaranteed.
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Write for my plan
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I have started thousands of breeders on the road to success. I have a very large and fine herd. Every one an early developer, ready for market at six months old. I want to place one hog in a community to advertise my herd.

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Duroc Jerseys for sale—a few choice fall pigs of either sex. Fancy Buff Rock cockerels. JOHN MCNICOLL, Station A, Route 4, Bay City, Mich.

Duroc Jersey—Sept. pigs either sex & Holstein bull calves & 2 Registered Holstein cows.
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Heavy Boned Durocs—A fine bunch of Bred sows and fall pigs for Sale.
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Stock For Sale—All Ages
Correspondence Solicited, Visitors Always Welcome

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O. I. C. Bred Gilts
Choice 100 lb. Pigs \$16.
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O. I. C. SPRING BOARS of good type and Red Polled bull calves.
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O. I. C. choice serviceable boars: bred gilts for April and May farrow: Fall pigs not akin. Write for low prices and photo. A. V. Hatt, Grass Lake, Mich.

O. I. C.'s. All sold except one July boar and a few Oct. pigs.
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Way Brothers Stock Farm. The home of the big for sale. Registered free. J. K. Way, Three Rivers, Mich.

O. I. C. serviceable boars, tried sows, gilts bred for March and April farrow, summer and fall pigs. I pay express. G. P. ANDREWS, Dansville, Mich.

O. I. C. Gilts bred for March, April and May farrow. Recorded in buyer's name.
H. W. MANN, Dansville, Michigan.

O. I. C. Strictly Big Type

Sows & Gilts bred for March & April farrow all sold. Also fall boars. Have two extra good July boars and One May boar for sale and Three July gilts and three Sept. gilt right good ones. Address, Newman's Stock Farm, Mariette, Mich. R. 1.

O. I. C. and CHESTER WHITE SWINE
Big type with quality. We have the undefeated breeders young herd at seven State fairs this year. They were sired by Abo 2nd, one of our many good herd boars. Special prices on all hogs for the next 30 days. Get a Gilt bred to the Great Schoolmaster, the highest priced boar of the breed, Champion over champions. Write for our big catalogues with history of the best herd in the whole country. Come and see them.

Rolling View Stock Farms, Cass City, Mich.

O. I. C. Choice Spring boars and bred Gilts. Glenwood Stock Farm, Zeeland, Michigan.

Registered O. I. C.'s. Attractive prices on fall pigs and last spring gilts. All from large litters. Elmer E. Smith, Redford, Mich.

O. I. C.'s 20 bred sows for sale. 8 last April gilts averaged 270 lbs. Jan. 10, 1916. They are a very growthy lot. Have some May gilts and last fall yearlings, also a few service boars and plenty of last fall pigs. Otto B. Schulze, Nashville, Mich.

O. I. C. Choice gilts bred for April and May farrow. Also last fall pigs of excellent quality.
A. J. BARKER, ADA, MICH. R. No. 3

O. I. C. Sows bred for March and April farrow. Priced to sell, from best of stock. Write for photo and pedigree. E. B. MILETT, Fowlerville, Michigan.

O. I. C. SWINE I am offering choice gilts strictly O. I. C. type bred to farrow the forepart of May, also fall pigs price right. Stock registered in purchaser's name free of charge. A. J. Gordon, R. 2, Dorr, Mich.

O. I. C. Choice Boars ready for service. I pay express and register fees. JULIAN P. CLAXTON, R. 3, Flint, Mich.

Breeders' Directory—Continued on page 343.

Veterinary.

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

Eczema—Ringworm.—Several of my cattle have an itchy skin trouble and there are a few bunches which break open and discharge yellow matter. I have been thinking perhaps that it was ringworm. W. J. H., Rapid City, Mich.—Apply one part iodine and 15 parts lard to itchy parts two or three times a week. Paint the suppurating bunch with tincture iodine every two days.

Symptoms of Pregnancy.—How can I tell for certain whether a cow is pregnant and has been so for seven months? C. H., Muskegon, Mich.—Giving your cow a drink of cold water, you should be able to detect movement of calf in right flank, or you should be able, by manipulation of the flank, to feel foetus and if in doubt pass the hand well into the rectum and then you can be certain.

Partial Loss of Power.—About five weeks ago we bought some little pigs seven weeks old, shut them in a pen, fed them milk, ground corn, oats and barley, cooked. After a while three out of the seven began to drag their hind quarters. We let them out to exercise, but they did not improve. I also gave them some turpentine and sweet milk and rubbed their backs with turpentine. E. M., Postoria, Mich.—Keep your pigs dry and warm, feed them skim-milk and oat meal; also give them a few vegetables.

Lumpjaw.—I have a heifer that has a lump on her jaw which is hard and seems to be sore. If lumpjaw, is it contagious? W. H. S., Coldwater, Mich.—If this is the only case you have in your herd, fatten her and sell her for beef; if not, clip off hair and apply one part red iodine mercury, and four parts lard and give her 1 dr. of potassium iodide at a dose in feed three times a day. Lumpjaw is communicated from one animal to the other, but not highly contagious, unless in a suppurative state.

Vaginal Polypus.—Every morning I find a few blood clots on the bedding behind my 14-year-old mare, but so far as I can tell she is perfectly well. E. A. G., Carleton, Mich.—Leave your mare alone and she will perhaps get all right, or it is possible that the small bleeding polypus should be removed with very little trouble by a competent Vet.

Sore Throat—Distemper.—We have six horses that are troubled with sore throat and nearly all of them have swollen glands and find it difficult to swallow food and water. They also have a mucus discharge from the nose. W. A., Marlette, Mich.—Your horses are perhaps suffering from distemper infection and I advise you to have your Vet. keep watch of them until they recover. By applying counter-irritants to throat and giving fever medicine, to reduce their temperature, and tonics while they are recovering, also don't forget to give them good care.

Unthrifty Horse.—I have a six-year-old gelding that does not thrive; appetite is good, but he don't flesh up, he seems to tire easily. Am feeding him four quarts of ground oats and corn three times a day, and I might add that his teeth are in good shape. W. R. D., Port Huron, Mich.—Increase his feed, mix together equal parts by weight of powdered sulphate iron, ground nux vomica, powdered fenugreek, cooking soda, ground gentian and ground cinchona and give him a tablespoonful at a dose in feed three times a day.

Fistula.—I have a heifer that has a running sore back of elbow caused perhaps by a snag, and such remedies as bichloride of mercury, blue vitriol, iodine and various liniments have failed to heal wound. Our local Vet. calls it a pipe. G. W., Kings Mill, Mich.—In my practice I never hesitate to cut a bunch of this kind open, going to the bottom and removing all diseased tissue, then apply one part iodoform and seven parts boracic acid or apply one part turpentine and five parts raw linseed oil every day or two. Very likely you will find a foreign body which is acting as an irritant and when once removed your heifer will get well.

Barren Cow.—I have a cow that has been farrow for three years, but comes in heat regularly at which time she suffers pain until she relieves herself by throwing off a mucus discharge, but the cow appears to be in good health. She is giving at present about four quarts of milk daily. Do you believe that she will get with calf? S. S., Rose City, Mich.—She may be suffering from ovarian cyst, which, if crushed by hand through rectum, she might perhaps breed; however, it is doubtful. This is work for a competent Vet. or a herdsman to do.

Locate in Virginia

Virginia Farms are selling now for \$25.00 per acre and up—adapted to the growing of Corn, Alfalfa, Fruits, Grains, Grasses and the production of Beef and Dairy cattle. One farm of 500 acres yielded its owner a Hay crop of over 2,000 tons last year from Alfalfa alone. Lands are advancing in value each year—thousands of acres are waiting to be tilled by the most progressive methods of the day, to yield highly profitable returns. Virginia claims the finest apple growing section in the world.

Come to Virginia—now is the time to buy. Healthful climate, abundant rainfall, good water, public schools and churches. Cheap and quick transportation to the great Eastern markets enables you to command highest prices for your products. Virginia offers the greatest of opportunities for farmers and investors.

Send for hand-book with map and other literature telling about the opportunities to be had in the Old Dominion. Write now—while you think of it.

G. W. KOINER
State Commissioner of Agriculture
RICHMOND, VA.

DISPERSION SALE OF Registered Holsteins.

My lease on one of the McPherson Farm Co.'s, farms having expired and having decided to quit farming, I will offer at public sale on the farm 2 1/2 miles south and one mile west of Howell, Michigan, on **Wednesday, March 15th, at 1 o'clock P. M.** my entire herd of Registered Holsteins, consisting of: 2 daughters from a 21 lb., 3 year old who has a 29 lb. dam: 1 daughter from a 19 lb., 2 year old who has a 22 lb. dam: 1 daughter from a 22 lb. cow: All bred to freshen next fall. 1 heifer calf from a 13 lb., 2 year old with an 18 lb. dam at 14 years old: 1 heifer calf from a 20 lb., 4 year old: 1 heifer calf from a 22 1/2 lb., 10 year old cow: 1 heifer calf from a 25 lb. cow: 1 bull calf from a 19 lb. 2 year old and several bulls old enough for service, all from A. R. O. dams. Sale of horses, tools, etc., at 10 o'clock A. M. (No catalogues.)

Harmon Beaty, Howell, Mich.

HOGS

POLAND CHINAS

From our thousand pound Grand Champion Boar and Big Stretchy Sows of best breeding. Spring Boars at a bargain. Bred Gilts and Brood Sows. **Millcrest Farm, Kalamazoo, Mich.**

Boars at Half Price

We still have a few big boned, big type Poland China boars ready for service, weighing up to 250 lbs. not fat at \$20 & \$25 each. Registered in buyer's name. Also registered black Percheron Stallion 2 years old \$25.00. **J. C. BUTLER, Portland, Mich., Bell Phone.**

POLAND CHINA gilts bred for March and April farrow. Fall pigs, satisfaction guaranteed. **G. W. HOLTON, Kalamazoo, Michigan.**

POLAND CHINAS of the big type, Spring boars, Gilts bred for April farrow. **A. A. WOOD & SON, Saline, Michigan.**

Large Strain P. C. a few choice boars of spring and early summer farrow. A choice lot of spring Gilts bred for spring farrow sired by Big Defender the boar that every body goes wild over. **H. O. SWARTZ, Schoolcraft, Michigan.**

Large Type P. C. April farrow. Sired by Big Des Moines, Big Knox Jr. and Giant Defender. Bred to Big Knox Jr. Smooth Wonder 3 and Big Jumbo, four great boars in state. Come or write. **W. E. Livingston, Farm, Mich.**

For Sale Poland Chinas either sex, all ages. Something good at a low price. **P. D. Long, R. F. D. No. 8, Grand Rapids, Mich.**

Heavy Boned Poland Chinas. Both sex and all ages at bargain prices. Also, **B. P. Rock Cockerels. ROBERT NEVE, Pierson, Michigan.**

POLAND CHINAS—Big and medium type. Gilts bred to big type boars for April farrow. Fall pigs, either sex. **L. W. Barnes & Son, Byron, Michigan.**

BIG type Poland Chinas—Western bred, long bodied Bextra large bone, pairs or trios not akin. We have Peter Mouw, H. Feschmeyer and Geo. Marshall breeding. Call or write. **W. Brewbaker & Sons, Elsie, Michigan.**

REGISTERED Poland China Spring Boars and Sows at \$15 each. Making this special price to make room for others. **A. G. Meade, Stanton, Mich., Colbys Ranch.**

Large Type P. C. Sows & Gilts all sold. Have 3 extra good spring boars. Sired by Big Defender. **W. J. HAGELSHAW, Augusta, Michigan.**

Large Yorkshires Gilts bred for spring farrow. Service boars. Pigs all ages. Prices Reasonable. **W. G. COOK, Route No. 1, ADA, MICHIGAN.**

Yorkshires Gilts For March & April farrowing For Sale. **Waterman & Waterman, Ann Arbor, Mich.**

Large Yorkshire Swine all ages. Red Poll Bulls ready to use \$25 each. **HOMER, MICHIGAN.**

GROWTHY PROLIFIC PROFITABLE	THE "MULEFOOT" HOG	DISEASE RESIST- ING
WE ARE NOW BOOKING ORDERS FOR SPRING PIGS		
THE CAHILL FARMS KALAMAZOO - - - MICHIGAN		

MULEFOOT HOGS. Just a few left yet for sale. **C. F. BACON, R. 3, Britton, Michigan.**

Hampshire Hogs—Nothing for sale but Apr. Boars. Taking orders for spring pigs. Write your wants. **John W. Snyder, St. Johns, R. No. 4, Mich.**

Hampshire Swine. Pigs of both sex. Bred Sows, Service boars. Write for prices. Price to sell. **FLOYD MYERS, R. No. 9, Decatur, Ind.**

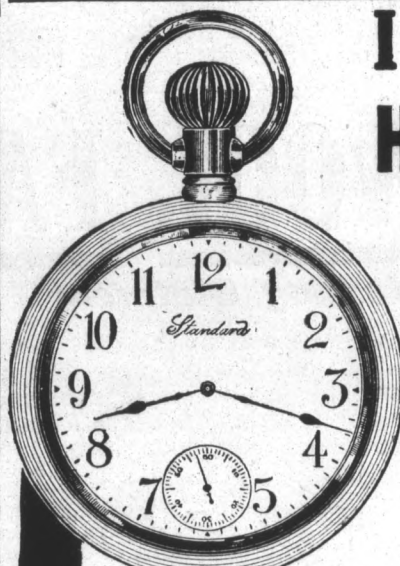
HAMPSHIRE Swine. The great pasture hog. Select herd headed by a mammoth son of the Great "Look Out." Have a few bred sows and fall pigs for sale. Booking orders for spring pigs in pairs and trios, not akin, at reasonable prices. **Geo. E. Starr, Grass Lake, Mich.**

SHEEP.

Kope Kon Farms
SHROPSHIRE and DUROCS. KINDERHOOK, MICH.

WOOL-MUTTON SHROPSHIRE EWES
Bred to high class imported ram. Special prices now to close out. Also M. B. Turkeys
Maplewood Stock Farm, Allegan, Mich.

Oxford Down Sheep. no stock for sale at present.
M. F. GANSSLEY, Lennon, Michigan.



This beautiful special stockman's watch is as handsome a time-piece as anyone could want. It is a genuine New York Standard Watch—both case and movement being American made. It is seven full jewels, stem wind and stem set, with heavy bevelled crystal, double sunk dial, brequet hair spring, etc. The case is genuine nickel silver, handsomely engraved with a locomotive on the back. It is a watch that is specially designed to withstand a lifetime of the hardest and roughest usage and is absolutely guaranteed in every way.

I WILL SEND YOU THIS HANDSOME STOCKMAN'S WATCH

FREE

To introduce MY Stock Tonic to just a thousand more readers of this paper I am going to give away one thousand magnificent Stockmen's Watches—Absolutely Free—I'll send them at once—to the first thousand readers of this paper who send in the coupon below. With this watch I will also agree to send a big trial feeding of

WILBUR'S STOCK TONIC the Greatest of All Live Stock Conditioners.

What is more, I will send you this Stock Tonic with the distinct understanding that it is to be used for two whole months at my risk—that if at the end of two months feeding the Stock Tonic has not been entirely satisfactory no charge is to be made. I simply want you to make a two months' trial of my Stock Tonic with the understanding that if it does not fatten up your live stock—kill the worms—that if it has not paid you to feed it—no charge is to be made. Then as a special inducement and to pay you for the trouble in making the test I will give you—Absolutely Free—one of the watches described above.

I Will Prove To You

that my Stock Tonic will positively rid your live stock of worms, fatten them up and keep them in the pink of condition. I will prove to you that you will actually get more milk from your cows, that you will fatten your hogs, steers, sheep and poultry for market in less time, that you will save grain, prevent disease and make more money from each animal you own. I have such absolute faith in Wilbur's Stock Tonic that I take all the risk in this trial feeding.

There Is No Secret About This Tonic

It is composed of twelve separate ingredients—plainly printed on every package—each one carefully selected and absolutely pure. These ingredients are acknowledged by veterinarians everywhere to be the finest tonics, appetizers, digestive aids and worm dispellers known

to medical science. Each one has a special purpose. A compound of these herbs, roots, etc., is absolutely sure to condition any animal—keep the blood clear—the system free from worms and disease and force the animal to put on fat rapidly. I have proved it so often there is no doubt about it. I have made and sold this Tonic for over thirty years and over a million of the best stock raisers in America are feeding it every day—I have thousands upon thousands of the finest kind of letters from all parts of the country telling me of the wonderful results from feeding this Stock Tonic. Now all I want to do is to show you that what it will do for others it will do for you. And as a special inducement just to get you to make this trial—at my risk—I am going to send you one of the handsome Stockman's Watch.

This Handsome Watch is Yours—FREE

It never costs you a cent. It is yours—forever—to keep and use every day—whether you ever pay for the trial feeding of Tonic or not. It's a handsome, dependable, fully guaranteed timepiece—would cost you \$6.00 to \$8.00 in any store. A watch you or any one will be proud to own, and remember, it's free.

E. B. MARSHALL, Pres.
Wilbur Stock Food Co., 955 Huron Street, Milwaukee, Wis.
Please send me at once one of your Stockman's Watches. Also send me 100 pounds of Wilbur's Stock Tonic. I agree to feed the tonic as directed for two months, and if it does what you claim, I will pay you for it at the rate of only \$2.00 per month until I have paid \$4.00. If it fails and I so report in sixty days, you are to cancel the charge and I will owe you nothing. You are also to ship me—FREE—enough Wilbur's Poultry Tonic—your guaranteed egg producer—to offset all freight charges on the shipment. It is understood that the Stockman's Watch and this pair of Poultry Tonic are to be mine—Absolutely Free—whether I pay for the Stock Tonic or not.

Simply Fill Out The Coupon

SEND NO MONEY. Just find out by actual test on your own stock that my tonic will make money for you. I have a watch all ready for you if you send that coupon right away. You can't possibly lose anything—you have everything to gain. Isn't it worth a postage stamp? Do it now—at my risk—fill out the coupon and mail it to me at once.

E. B. Marshall
President
WILBUR STOCK FOOD CO.
Milwaukee, Wis.



Name..... R. F. D.
P. O. State.....
Freight Office..... State.....
I own.....cattle.....horses.....hogs.....sheep.....
.....poultry. I own.....acres of land. I rent.....acres.....
of land. I am.....years of age.

NOTE.—This liberal offer only open to responsible farmers or stock raisers over 21 years of age.



I'll Send You This Big Can of CORONA ^{WOOL}_{FAT} Post Paid



SIMPLY mail me the coupon below and I'll send you this big can of **Corona Wool Fat**—the greatest preparation ever put on the market for Cracked and Split Hoofs, Contracted Feet, Corns, Grease Heel, Thrush, Barb Wire Cuts, Sore Shoulders, Sore Teats on Cows, etc. I want to prove to you **before you pay me a single cent**, that here

is a preparation you can't afford to be without. I want to send you, postpaid, this big can on

20 Days' Free Trial

I want to show you that you can keep your horse's hoofs in the finest condition—take out all foot soreness, cure all flesh wounds, etc. and do it quickly.

I want you to try this wonderful healing ointment at my risk—not yours. Try it on any case you have—apply part or all of it. At the end of 20 days if you are perfectly satisfied, send me only 50c for the big trial can. If you are not satisfied, tell me so and you won't owe me a penny.

CORONA WOOL FAT

The Wonderful Healing Ointment

is extracted from the skin and wool of the sheep and is the only remedy that will penetrate the shell of a horse's hoof—take out the soreness and grow new hoof. **Corona Wool Fat** does not burn, blister or cause suffering. It is a cooling, healing, penetrating ointment, quick in action, **heals without leaving a scar**. Read these letters—we have thousands more like them:

Corona Mfg. Co., Kenton, Ohio.

Gentlemen:—Corona Wool Fat is the best thing I have ever used for hard and contracted feet of horses. I have used about all kinds.

Yours truly,
P. D. Jamison,
Bridgewater, Maine.

Corona Mfg. Co., Kenton, Ohio.

Gentlemen:—I like Corona Wool Fat. I think it is fine to heal sores and cuts, and can truly recommend it to any one needing a good healing salve.

Yours truly,
Dewitt Conrad,
23 State St., Fort Plain, N. Y.

Send No Money—Simply Mail Coupon

If you have never sent for a trial can of Corona Wool Fat, fill out the coupon and mail it today. When you receive the **Corona Wool Fat**—try it—watch results—then if satisfied, send me only 50c—if not satisfied, just write and tell me so and I'll charge you nothing. Write for the big trial can **now**. Remember, I send it **postpaid**. You risk nothing in testing it. **Will keep your horses in working condition and put them in selling condition**. I take all the risk—send today.

Corona Mfg. Co., C. G. Phillips, Manager 48 Corona Blk., Kenton, O.



Cracked Hoofs
Before and After
Using Corona
Wool Fat



Corona Heals Barb Wire
Cuts Smoothly



Grease Heel Before and
After Using
Corona Wool Fat



For Collar Sores and
Sore Shoulders



Heals Inflamed Cows Udders



Galled Shoulder



A Bad Case of Scratches

Fill Out
the
Coupon
NOW

IT WILL CURE

Hard and Contracted Feet, Mud Fever, Split Hoofs, Corns, Grease Heel, Thrush, Quarter Crack, Cuts, Barb Wire Wounds, Sore Teats of Cows, Ulcer, etc.

Our Guarantee is on the Lid of Every Can. I have sent out a million cans the past eight months, and now have more than that number of satisfied customers. You need it; I have it for you, and you can try it out on the "before you pay" plan. Now, all I ask is a fair, square trial on its merits. **C. G. Phillips.**

Proof!

Corona Mfg. Co., Kenton, Ohio.

Dear Sirs:—I received the Corona Wool Fat all right and have tried it and it works just as you recommend and even better. My horse was sore in the front feet and she could hardly get out of the barn, and in two weeks time she improved so much that she was as limber as ever, and our blacksmith stated that he never saw anything as good as Corona Wool Fat.

Sincerely,
T. J. Tishell,
North Rush, N. Y.

Corona Mfg. Co., Kenton, Ohio.

Dear Sirs:—Having been in the dairy business all my life and as all dairymen will agree it is a hard matter to keep their horses going sound. I with the help of the shoeing smith were kept at our wits end until a friend of mine told me of Corona. It certainly does the work. Every horse is going sound and when it comes to sore teats on cows you have certainly solved the problem. In fact, my stable and barn boys all swear by Corona and the best part of it is, it is just as good for a man as for a horse or cow. Wishing you the success that is due you, I remain, Yours very truly,
Robt. T. Armil, Prop.
Oakwood Dairy Farms, Davenport, Ia.

Corona Mfg. Co., Kenton, Ohio.

Dear Sirs:—I am very well pleased with Corona Wool Fat, and am enclosing you remittance for more of this wonderful product. It is great stuff. Yours truly,
Louis J. Dumont,
R. F. D. 1, Wolverine, Mich.

Corona Mfg. Co., Kenton, Ohio.

Gentlemen:—Corona Wool Fat is just the stuff for my bank mules feet as it keeps the bank water from cracking their feet and getting sore. Enclosed find remittance for \$3 for which send me a ten pound pail. Yours truly,
W. F. Williams,
New Sharon, Iowa.

20 Day's Free Trial COUPON

CORONA MFG. CO., 48 Corona Block, Kenton, O.

Gentlemen:—Please send me the trial can of your Corona Wool Fat. It is understood that I am to use this for 20 days in accordance with directions, and if I am satisfied with the results I will send you 50 cents to pay for it. If it does not do as you claim I will owe you nothing.

Mention ailment you intend to use it on.....

Name.....

Address.....

County.....

State.....

1,000,000 Farmers, Stockmen and Blacksmiths are using **Corona Wool Fat**. Don't experiment—make sure of a quick cure by using **Corona Wool Fat**. There is no other remedy or healing ointment that will do the work as well.
C. G. PHILLIPS.