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PLANNING AND EXECUTING THE SPRING WORK.

The spring campaign will be more strenuous than is usually the case upon the average Michigan farm this year. This will be true for the reason that weather conditions last fall did not permit of the usual amount of fall plowing, and the lateness of the spring, together with the deep freezing of the ground during an especially cold winter, is likely to delay the active work in the fields until a later date than is usual in our state. It will thus be more important than ever that the spring work be wisely planned and effectively executed to the end that the crops may be gotten in on time and in such a manner as to not impose a handicap upon the success of the season's efforts at the very outset.

Saving Time and Labor.

Under these conditions, and with the prevailing shortage and high price of farm labor, it is particularly important that a maximum of results be accomplished with the expenditure of a minimum amount of time and labor from the very start in the spring campaign of work. These results can only be accomplished by careful planning and the judicious execution of plans which must be sufficiently flexible to adapt themselves to the uncertain weather conditions of the spring season.

When the fields get into condition to work, nothing short of absolute necessity should keep the teams out of those fields, and the teams should be efficient so that good, big day's work may be accomplished. The modern tendency is toward the use of at least four horses on large implements, and even on smaller farms there is no economy in permitting one man to spend his time with less than a three-horse team during the heavy work of preparing the land for spring crops. With an efficient team and efficient implements one man can accomplish a great deal in disking and fitting ground for oats, or plowing and fitting ground for corn, potatoes, beans, sugar beets, etc., provided he keeps everlastingly at it every day and all day during suitable weather. The accomplishment of a reasonably good day's work every day is far more effective than spasmodic efforts which result in the alternate over-crowding and idleness of the team. Very much of this factor of success with the spring campaign depends upon proper planning and the use of proper judgment in the execution of plans.

The Effectiveness of Time and Labor Expended.

The saving of time and labor, however, in the accomplishment of the spring work is not more important so far as results are concerned, than that the time and labor required in preparing the land and planting the crops be effectively expended to the end that we may secure a maximum of results at a minimum of cost. This factor of success depends not only upon wisely laid plans, but some variation in their execution as climatic conditions may indicate. Since one can never tell what the weather conditions may be later in the season, it is the part of wise economy to be prepared for unfavorable conditions as far as possible. To this end the land should be fitted or plowed for spring crops—even late planted crops like potatoes and beans—sufficiently early in the spring so that a desirable degree of moisture can be conserved by proper cultural methods until the planting season arrives. The Michigan potato crop was not a little shortened last season because of the late plowing, and this is not an uncommon experience in Michigan.

But it is not alone in the plowing and preparation of the soil for the late planted crops that we need to make prepara-

tion for a proper conservation of soil moisture. As the land for the earlier planted crops is ordinarily plowed and fitted upon many farms, a sufficiently good seed bed is not provided for best results. Often there are spaces between the furrow slices and the bottom which breaks the capillarity of the soil and prevents the crop from drawing upon the water stored in the lower strata of the soil, thus making it easily susceptible to the drouth during the early summer. Again, the surface of the soil is permitted to crust over after it is plowed, or perhaps it is partially fitted and there is

practiced, the timely working of the land after it is plowed has much to do with the conservation of its moisture and the proper fitting of a seed bed for the crops to be planted. It requires about so much labor to fit the land for spring crops and it costs no more to do this labor when it will prove most effective as a factor which will make for the production of maximum yields.

The Necessity of Carefully Considered Plans.

There is no new principle involved in the above discussion. It is something which every reader knew as well before



Saving Time and Labor on the Farm of P. J. Spalding, of Lapeer County.

an unnecessary escape of moisture which may be needed later by the crop.

The judicious use of harrow and roller after the ground is plowed, depending upon its moisture content, will be most beneficial in securing a suitable seed bed and a consequent good start for the crops when same are planted. Some of our best farmers are also practicing the disking of fields before plowing, not alone stubble fields, but sod fields, to break up the sod and conserve soil moisture, as well as to insure a better job of plowing and later fitting for the preparation of a good seed bed and establishing capillarity between the surface soil which is moved and the subsoil below.

But whether or not this system is

as after reading, yet it is a fact that very many who may recognize a fundamental truth will not act upon its obvious suggestion unless the matter is brought specifically to their attention at a timely season. There are some, however, who may not have appreciated the importance of having a well defined plan for the detailed accomplishment of the work of preparing for the planting of the spring crops. Although these may have a general idea of the tasks in hand, the time it will take to accomplish same, etc., yet unless the plans are figured out to the smallest practical detail, they are likely to find the season far advanced and the work far behind, while if the plans are made in detail there will certainly be less interference



A Method of Saving Time and Labor Used on Many Michigan Farms.

with them, and additional labor will be secured, if necessary, to carry them out, so that a handicap to the success of the season's campaign will be far less likely than if a less comprehensive plan is made.

Of course, these plans will be more or less interfered with by weather conditions, but in their adaptation to these conditions the executive ability of the farmer will be put to a test and much of his success will depend upon his ability in management in the overcoming of unfavorable conditions. Both the saving of time and labor, and the effectiveness of the time and labor expended in the spring campaign upon the farm are important factors in farm management, in which headwork is as important as handwork, and should be employed to the best possible advantage.

GROWING ALFALFA SEED IN MICHIGAN.

Not long ago it was thought by many that alfalfa seed could not be grown successfully under Michigan conditions. Experience has shown, however, that this opinion was not correct. Today, alfalfa seed is grown with considerable success in many parts of the state and on many classes of soils. The only objection to the production of alfalfa seed in Michigan at the present time is that there is not enough produced to supply the ever increasing demand.

One of the most important considerations in connection with growing a good crop of alfalfa is the getting of a good stand, and to this end good seed is desirable. It is well known that the best plants of alfalfa grow from seeds that have been produced locally, or from seeds of plants that have been acclimated to local conditions. Most of the alfalfa seed now used in this state comes from foreign countries and from the western part of the United States. It is not acclimated to Michigan conditions, and hence loses value in that respect. A test of alfalfa seed carried on at the Michigan Experiment Station, in which seed from several localities was used, showed that although the germinating vitality was good in each case and an almost perfect stand was secured, the seed which came from localities having a similar climate to Michigan stood the winter better than seed which came from localities having a different climate. Michigan-grown seed, and seed which came from Germany gave a stand near 95 per cent in the spring; while the stand was low in the other cases, and in some instances the plants were nearly all killed by the severe winter. To secure a good crop the seed should have a good germinating vitality and be adapted to our climatic conditions. Another objection to foreign-grown seed is that it often contains weed seeds that are not at present found here, but may be introduced if infected seed is used.

Many Michigan farmers grow their own clover seed. Why can not the same be said of alfalfa seed? The outlook for the growing of this valuable crop is good, and there will be not a few acres sown to alfalfa this coming spring and summer as well as in the future. This will create a demand for good seed, and home-grown seed ought to have the preference over seed grown in the west or in foreign countries.

Where stray plants are found under conditions where they can develop properly by receiving a plentiful supply of water, food, air, and sunshine, they are usually found to be producing seed in abundance. If one wishes to grow the seed he must see that the plants are put under the proper conditions, and the plants will do the rest.

If the soil is properly prepared and the

alfalfa seed drilled in rows far enough apart to permit of cultivation, and then cultivated so as to keep down the weeds and conserve the water, the alfalfa will produce seed of a good quality providing good seed has been used in the beginning. Or, if a farmer has an old field of alfalfa in which the stand is thin and where June grass is creeping in, he could go on this field and plow a back furrow by throwing two furrows together, then leave a slice a furrow wide and plow another back furrow; leave another slice a furrow wide and plow another back furrow, and so on across the field. These back furrows could be cultivated and smoothed down in the same manner as cultivating a potato or corn crop. The plants growing on the unturned furrow slice will then have an ideal condition in which to branch out and let in the air and sunshine which are necessary for the development of good seed. Water would be saved to the plants by the cultivation. Seed grown on plants which have withstood conditions that have killed their neighbors should produce plants that are better adapted to the locality in which they are grown. In growing alfalfa seed one cutting is taken off for hay and then the plants are allowed to go to seed. Growing seed does not kill the plants.

Alfalfa seed has been grown at the Michigan Experiment Station. Certain strains have produced at the rate of over five bushels of seed per acre in one season when the plants were set two feet apart each way and cultivated like potatoes.

Ingham Co.

C. H. SPURWAY.

FARM NOTES.

Applying Lime to the Soil.

Will you kindly advise me through your paper the best way to apply ground limestone or lime, and about the amount? Soil is gravelly loam and rolling. About 12 or 15 years ago it produced fine crops of hay and grain but having been cropped continuously since has become depleted or run down. Will appreciate advice as to best means of applying, fitting the ground to apply, and time to apply. Have stable manure to apply. Should manure be plowed under and lime on top and worked in or should both be turned under?

Jackson Co.

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Undoubtedly the best way to apply ground limestone or ground quicklime or hydrated lime, or, in fact, any form of lime which may be used, is with a lime distributor made for the purpose which will distribute it as evenly as possible. In the practical science department of a recent issue of the Michigan Farmer will be found a discussion of the proposition of applying lime to the soil from a scientific standpoint. In this discussion emphasis was placed upon the importance of using a finely ground product, whatever form of lime may be applied. As to the form of lime it is best to use, the best authorities practically all favor a finely ground limestone in which the lime is in the form of a carbonate and recommend the application of at least one ton per acre, and some as high as eight tons per acre in preparing the soil for alfalfa.

In the discussion above referred to, the success with which clover or alfalfa is grown upon any soil is mentioned as a certain and safe indication as to its need of lime. For several years the writer tried unsuccessfully to get a stand of alfalfa upon his farm and finally determined to try the application of lime as a last resort. Consequently a carload of lime was purchased, mostly finely ground limestone, but to make the experiment more valuable some ground stone lime and some hydrated lime was included in the shipment for the purpose of testing comparative results. The ground limestone was applied at varying rates from one to three tons per acre, and the ground stone lime and hydrated lime in varying amounts from 300 to 1,000 pounds per acre. The lime was applied a year previous to seeding the land to alfalfa last year. A good stand was secured upon all this land, and apparently a thorough inoculation of the soil was secured, which was not the case in previous seedings of alfalfa on the same ground. Little, if any difference, could be seen from the lighter or heavier applications of lime last fall, but the ultimate results may vary considerably and will be watched with considerable interest.

The result, so far as apparent, has convinced the writer that for success with alfalfa, lime is necessary upon his soil, and where difficulty is experienced in getting a good stand of clover it undoubtedly pays to make an application of lime upon the soil. In this case it would probably be more profitable to apply it the previous year, although this may not

be important. In any event it should not be applied together with stable manure, as in that case it would tend to liberate the nitrogen and result in a loss of this valuable plant food as ammonia gas. It could properly be applied on the surface of the land after plowing and thoroughly worked into the soil, and in case caustic lime is applied it should be worked in at once for best results. Lime, however, should not be applied for some crops, as for instance potatoes, since it will increase the activity of the scab fungus the same as it does the bacteria which are peculiar to the alfalfa plant. So far as experience now indicates, lime can be profitably applied to our soils only as an administrative agent to aid in the growing of these legumes which will add to the productive capacity of the soil, and in case they can be grown with a desirable degree of success without applying lime, it will probably not pay to use it upon Michigan soils. Wherever lime is used a check plot should be left in order that comparative results in its application may be determined and used as a guide in future years.

Salt as a Fertilizer.

I have a field of wheat and have heard of putting salt on crops for fertilizer. Would you advise such a course? If so, when, how, and how much would you apply? Would packing salt do as well?

Leelenau Co.

J. M.

Salt cannot properly be called a fertilizer, and is not a direct fertilizer, in any sense of the word, although it has been in more or less common use as an application to the soil for many years. In England it was a common practice during the early '80's to sow salt in the early spring on wheat land that was especially rich in plant food, the idea being that a larger deposit of silica in the stalk would result, enabling the wheat to stand better than would otherwise be the case. There is, however, no data to show that salt is of value as a fertilizer or administrative agent when applied on wheat. Salt has, however, been found to be a valuable agent in increasing the yield of barley upon some soils. In fertilizing experiments extending over a period of twelve years, at the Canada Experimental Farms, the use of 300 pounds of salt per acre per year gave better average yields than were secured by the application of any of a number of combinations of fertilizers. This result may be considered as rather remarkable inasmuch as salt is not, as above noted, a direct fertilizer.

It does not necessarily follow, however, that the same results would obtain on other soils. There are certain crops on which salt is generally applied, one notable example in a garden crop being asparagus. Experimenters declare, however, that it is of doubtful value from a fertilizing standpoint, but that salt does not seem to harm the asparagus and may be applied in such quantity as to keep down weeds in the row without injuring the plant. There are many practical farmers who believe salt to be a valuable agent in the controlling of cutworms, wireworms and other larvae which infest the soil, and a few who believe that the application of salt to wheat or other grain, in the spring, aids in securing a stand of clover in a dry season.

Where salt is applied, the cheapest grade obtainable should be used, and a farmer who has come to believe in it should conduct a careful experiment on his own account to determine whether it is of any value under his conditions or not. There is not enough experimental data to support the theory that it pays to apply salt to the soil, and from his own experience, the writer believes that it does not. There are, however, some cases where experience has pointed in the other direction, hence the advice above given.

What Caused the Seeding to Fail?

Last spring hundreds of acres that were sowed to clover in April while ground was cracked with frost, and also what was sowed in spring grain, came up all right, but was eaten off by some insect life. In a week after it came up, one couldn't find a clover plant; all gone long before drouth set in. Could you tell us what destroyed it, and how to avoid the same thing this spring?

Mecosta Co.

J. G. G.

It is difficult to tell just what the cause of the failure was in the case mentioned above, without knowing all the conditions. It is the writer's opinion, however, that the loss of this seeding was due to some other cause than its being eaten off by insects, as suggested in this inquiry. On sandy land, after the young clover plants first come up, they are very easily injured, by the blowing of sharp grains of sand against them, and many times seedlings are injured in this manner. However, if the surface of the

ground becomes quite dry just after the plants get up, they may die from lack of moisture on sandy land, when there is plenty of moisture further down into the soil, but where the plants cannot reach with their tiny roots which are not supplied with sufficient moisture through capillary attraction in a coarse grained soil to keep them alive under such unfavorable conditions. On land such as above described it is a better plan to sow the clover seed with a disk drill, or to harrow it into the surface soil at a time during the spring when the soil and weather conditions are favorable for its germination and rapid development of the young plants so as to avoid possible damage to, or loss of seeding through conditions such as are above mentioned.

Treating Oats for Smut.

Kindly advise me through the Michigan Farmer how to treat oats for smut with formaldehyde.

Saginaw Co.

R. F.

The formaldehyde treatment for smut is best applied by spreading the seed out thinly on a tight floor and sprinkling or spraying the mixture on and stirring thoroughly, then shoveling into a compact pile and covering with canvas or blankets for two hours, then spreading the seed thinly to dry. The mixture should be used at the rate of one pound of formaldehyde to 50 gallons of water, using about one gallon of this mixture to each bushel of grain, or enough to wet each kernel of grain thoroughly.

Fall vs. Spring Plowing for Beans.

Is fall plowing better than spring plowing for beans? What kinds of beans yield best, what kind of fertilizer is best to use, and how to be sowed? What is the best and easiest way of taking care of beans?

Saginaw Co.

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There is little data obtainable on the comparative effects of fall and spring plowing for the bean crop, since most farmers fall plow for earlier planted crops, such as corn and oats. However, plowing for the bean crop should be done as early in the spring as possible in order to conserve moisture and kill the weeds before the crop is planted. Beans are mostly sown in drills at the rate of three-quarters of a bushel of seed per acre, the pea beans, or other small varieties being the most generally used. Two or three hundred pounds of fertilizer may be used per acre, but should not all be put in the drill with the beans, if any is sown therein as the bean seed is very easily injured by the action of potash in the fertilizer. Most growers make a practice of sowing in the drill tubes on each side of the row in which the beans are sown, using three tubes for fertilizer, putting a little in with the beans and some on each side. They should be given level, shallow cultivation during the early part of the growing season and harvested with a two-row harvester such as is in common use.

Great care should be taken to get seed free from anthracnose and other fungous diseases, if possible, as this disease, commonly called blight or rust, is getting altogether too prevalent in Michigan bean fields. It would be a profitable investment for every commercial bean grower to secure seed from a clean field for next year's planting.

TOP-DRESSING THE MEADOW WITH COARSE MANURE.

Will you let me know through your columns what you think about top-dressing a meadow that I am going to mow this year? Will the rough stuff from bedding such as straw and bean pods, be raked into the hay? Is there any fertilizer that would be better? It was number one timothy last year and I am anxious to get a good crop this year.

Macomb Co.

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Some of the coarser material of the manure will undoubtedly be raked up with the hay and this cannot be helped. I don't think enough of it will be raked up so that it will materially injure the hay unless you want to sell the hay. If you want to sell the hay on the market it may cause you some trouble, but if you want to feed it I don't think it will injure it enough so that you need to worry about it.

Yes, there is another fertilizer that you could use to top-dress the meadow that would obviate this trouble, and that is commercial fertilizer. Take a good commercial fertilizer like a 2-3-4, use 300 or 400 pounds per acre early in the spring and you can certainly get results, and there won't be any litter to rake up with the hay. Of course, you will have to spend some money for this fertilizer, but you can use the stable manure on other crops and undoubtedly to good advantage.

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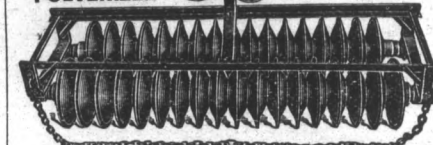
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ECONOMIC MATERIAL FOR SOIL IMPROVEMENT.

This was the title of the third and last address by Dr. C. G. Hopkins, of the University of Illinois, before the last session of the Round-Up Institute held at the M. A. C.

While there are methods whereby soil can be prepared for the production of special crops under an intensive method of culture, yet the great question is what to do with the great mass of the normal soils of our principal farming districts. Dr. Hopkins stated that three things are generally needed: First, nitrogenous vegetable matter; second, phosphorus; third, limestone.

Dr. Hopkins first considered the nitrogen supply. He stated that, comparatively speaking, there was not much nitrogen in the soil, the great source of supply is in the air. In view of the fact that we can put the nitrogen of the air into the soil through the growing of leguminous crops, the Doctor discouraged the idea of buying this element, except where one is doing intensive farming. The element is the most abundant of all the ten elements concerned in the production of plants. But, in spite of this fact, nitrogen costs more than any of the other elements. It is an economic matter, then, to follow such a rotation of crops and method of handling those crops that this element may be produced in sufficient quantities to supply the growing plants. A suggestive rotation for one who keeps live stock is to put the land into corn two years, following this with oats and clover. A fifth field should be sown to alfalfa, which can be broken up in five years, when another field is seeded to this crop. A suggestive rotation for the grain farmer is wheat, corn, oats and clover. All straw should go back onto the farm where one does not keep stock, especially.

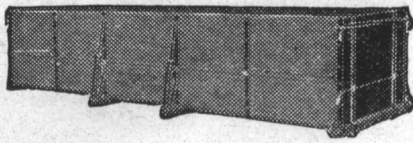
The Doctor then suggested five nitrogen facts: First, to produce one bushel of oats requires one pound of nitrogen. Second, to produce one bushel of corn requires one and one-half pounds of nitrogen. Third, to produce one bushel of wheat requires two pounds of nitrogen. Fourth, an average ton of farm manure contains ten pounds of nitrogen. Fifth, an average crop of clover, contains 40 pounds of nitrogen per ton. From these facts it will be seen that two and one-half tons of clover, or the amount that usually grows on an acre will supply to the soil as much nitrogen as 10 tons of farm manure. From his observations, the Doctor was of the opinion that, following proper methods, the grain farmer was in a position to keep up the nitrogen and humus in the soil easier and more cheaply than is the live stock farmer. An animal retains about one-fourth of the nitrogen contained in the food which it eats. In this country statistics indicate that there is about one domestic animal for each 10 acres of tillable land. This fact indicates at once the impossibility of maintaining the soil fertility of the whole country through a system of live stock farming. Some other means must be employed or our land must ultimately become incapable of plant production sufficiently large to make farming profitable.

The element of phosphorus was next considered. The Doctor favors the use of raw rock phosphate. To be valuable such raw phosphate must contain a good percentage of phosphorus and should also be ground very finely, so fine that 90 per cent should pass through a sieve of ten thousand meshes per inch. If the raw rock phosphate is placed upon soil in which there is no vegetable matter, little good will accrue from it. One must supply the land with this vegetable matter that the acids resulting from decomposition may act upon the phosphorus in the rock and make it available for the use of the plants. The Doctor recommended the use of one ton of raw rock phosphate per acre to begin with, and thereafter the use of one-half ton, once in every four years. His experience indicated that one was paid for the fertilizer during the first four years, but at the end of that time two-thirds of the value of the rock will remain in the soil and would afterwards be made available for the crops.

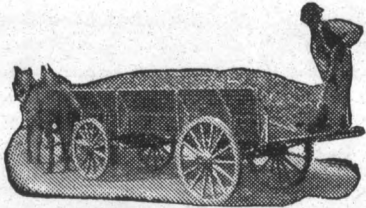
Limestone was next considered. He declared that many soils did not need the addition of limestone, they being well supplied by nature. The element not only aids in the correcting of the acidity, but also supplies calcium, which he declares to be quite, if not more, important on many lands than is the element potassium. Many brands of lime also contain magnesium, which he also declared to be an element that is often lacking. With re-

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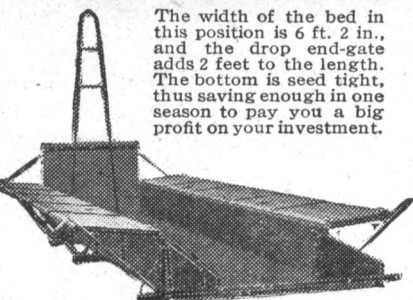
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Send just a postal card, giving your name and address today, and receive by return mail our big book of complete information, full detail illustrations drawn from actual, daily use on farms, together with copy of iron-clad signed guarantee, and our great, fair, man-to-man **FREE TRIAL OFFER** that will place this modern invention on your farm for one full month's test, without paying anything down or depositing any money in the bank, or anywhere, or without signing any agreement of any kind. This is a **FREE TEST** offer and we take all the risk, excepting the price of the postal card you are to send before you turn this page. Send that card today. **INVESTIGATE.** We will give one Melrose Box a free ride on the train to your station, if you will give it a free ride around your farm and plenty of exercise for a month—we furnish return ticket if you get tired of your visitor. Send that card today.

Remember The Melrose costs but little more than a standard make of old-fashioned, single-purpose wagon box. It weighs less than an ordinary, cumbersome, single-purpose hay rack, regardless of the fact that it is steel bound, silled, braced and bolted throughout—absolutely indestructible. It is guaranteed—it has been tried, tested and proved. It is recommended by farmers and by the U. S. Government Agricultural Experiment Stations. Melrose Wagon beds are on exhibition at both the Chicago and Kansas City Stockyards.

PONY MELROSE

Inventor of the Melrose Convertible Wagon Box

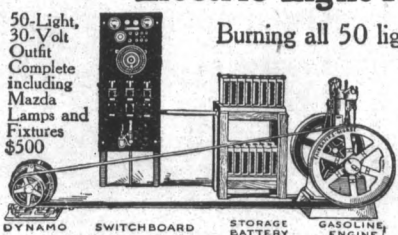
The American Wagon Co. Dept. 66 112 W. Adams St., Chicago, Ill.

ELECTRIC LIGHT for the FARM

Light for all your buildings at any hour of the day or night. No danger of fires or explosions from lamps or lanterns. No lamps to clean and fill. And with all its advantages

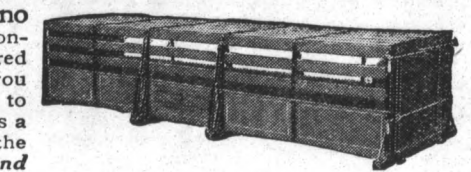
Electric Light Is Not Expensive

50-Light, 30-Volt Outfit Complete including Mazda Lamps and Fixtures \$500

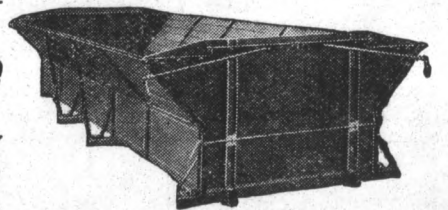


Burning all 50 lights of this system for 5 hours would only cost about 10 cents for fuel oils. You would seldom burn all lights at once hence this low cost would be much reduced. Let us give you full particulars. Write for Catalog No. CD 601

Fairbanks, Morse & Co. Chicago Detroit



Have one box for all purposes—not a lot of heavy, back-breaking, space-taking makeshifts that cost you more for the expense of sheltering and handling each year than their actual money value. You can prove the Melrose at our expense.



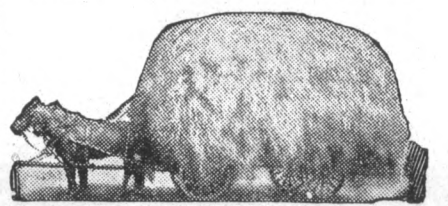
The Melrose is built of selected, long leaf, hard pine, double kiln dried. Steel sills; steel bracket and telescope braces throughout. It positively cannot bulge, warp or spring.



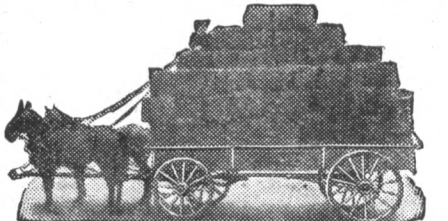
Built for any and every purpose on the farm. It is guaranteed for five years—a straight-forward, above board, honest guarantee that means just what you want a guarantee to mean. Take it on your farm and prove it before you buy.



Two full size cows or bulls can be hauled, taking only one minute to make the change to the stock bed. A mere boy can go to town with a load of straw, cordwood or pigs, and return with screenings, fertilizer or sawdust.



Here the strength is absolutely proved—4800 pounds of baled hay. Yet with all this strength the Melrose weighs even less than an old-fashioned hayrack. The entire bed is practically indestructible and will last a lifetime.



The FARMER'S SON'S GREAT OPPORTUNITY

Why wait for the old farm to become your inheritance? Begin now to prepare for your future prosperity and independence. A great opportunity awaits you in Manitoba, Saskatchewan or Alberta, where you can secure a Free Homestead or buy land at reasonable prices. **NOW'S THE TIME**—not a year from now, when land will be higher. The profits secured from the abundant crops of Wheat, Oats and Barley, as well as cattle raising are causing a steady advance in price. Government returns show that the number of settlers in Western Canada from the U. S. during the last year was upwards of 125,000 and immigration is constantly increasing.

Many farmers have paid for their land out of proceeds of one crop. Free Homesteads of 160 acres and pre-emption of 160 acres at \$3.00 an acre. Splendid climate, good schools, excellent railway facilities, low freight rates, wood, water and lumber easily obtained. For pamphlet "Last Best West," particulars as to locations & settlers' rate apply Supt. Immig., Ottawa, Can., or Can. Gov. Agt.

W. C. McINNES, 176 Jefferson Ave., Detroit, Mich. C. A. LAURIER, Marquette, Mich.

gard to the amount of lime to use, the Doctor stated that he would recommend from two to five tons per acre for the first application and two tons per acre every four or five years thereafter.

Following the consideration of these different elements, the Doctor then rehearsed the conclusion of a number of experiments, all of the figures for which we were unable to secure, but which purported to prove that phosphorus was the element which the general farmer should provide from outside sources. For example, the addition of \$11.40 worth of nitrogen in the form of a commercial fertilizer once in five years resulted in a net loss of \$4.67. When the same value in nitrogen and phosphorus was both added there was a net gain of 25 cents. By adding \$11.40 worth of potassium, a loss of \$8.60 was shown. When potassium and phosphorus was added, at the same cost, a net return of 29 cents resulted. This indicated that phosphorus was needed and when added made money, but barely sufficient to overcome the loss resulting from the expense in adding the other elements. A similar result was obtained from a long series of experiments conducted in Pennsylvania. In each instance in the latter state, by the addition of \$7.20 worth of nitrogen every four years, losses accrued ranging from \$1.70 to \$4.62. Where potash alone was added at the rate of \$9.96 worth every four years, losses occurred in every instance except one, where a profit of 45 cents resulted, the greatest loss being \$8.81. Where phosphorus was added alone the net gain amounted to \$5.04, \$4.32, \$5.62, \$4.46, \$7.82, in five different plots. In Illinois, following a five-year rotation of clover, corn, oats, corn and wheat, the addition of \$12.50 worth of phosphorus gave a net return of \$25.50. The Doctor also referred to experiments conducted at Rothmstedt, England, to support his contentions.

He again referred to the necessity of having in the soil decaying vegetable matter, and made a distinction between decaying vegetable matter and humus. The nitrogen of the plants combines in the decomposition and forms acid which dissolves the phosphate rock. The acids are formed from this material similarly to the manner in which acids are formed in cider, ensilage and sauer kraut.

In closing, he again referred to Ohio experiments, showing that where 15 successful crops had been grown without fertilizer the average yield was now 15 bushels per acre. On the same kind of land where farm manure had been added the average yield was 56.6 bushels per acre, whereas on land where both farm manure and raw phosphoric rock were used the average yield was 62.4 bushels per acre.

GROWING CLOVER ON SANDY LAND.

My farm is in Benzie county and I am writing for advice in regard to seeding a five-acre field on which I have so far failed to get the seeding to grow. Can get the seed to start all right but it dries out. I know the field is in poor condition and there is some quack grass in one part of it. I am thinking of plowing the field early this spring and then disking or dragging till July and then sowing clover, with perhaps buckwheat, and on a part of the field I wish to try some alfalfa. This, however, I would sow without a nurse crop. Will good hardwood ashes be any good to me to sow on the field, and how much could I afford to pay for them, providing the freight did not cost me more than 25 or 50c per cwt? Also, how much would I need to put to the acre? The soil is sandy loam and has had corn and beans planted on it for several seasons. On part of the field one year ago last season I sowed peas and oats and sowed clover with them, but the dry weather did them all up.

Benzie Co. C. N. B.

The sandy soils of Benzie county, if they are handled right from the very beginning, will produce profitable crops, but they won't stand poor farming. They ought to be handled by men who understand the basic principles of soil fertility. A few successive crops like corn and beans without any clover in the rotation will get them into such shape in a short time that profitable crops cannot be grown. These soils were naturally deficient in vegetable matter, and so, too, they were not seemingly strong in available soil fertility. Now you have got to handle such lands as that from the very beginning with care, with intelligence, or else you will reduce their crop producing power in a short time. This evidently has been the case with C. N. B.'s farm or else there would be no trouble in growing clover in that locality. Northern Michigan is the natural home of common red clover, if it is given a chance, and with common red clover in the rotation if the land is properly handled those soils can be built up so that they are as productive as almost any soil.

Now this land has been robbed of its vegetable matter, and of its available plant food and the only thing to do if you want to make some money off from it farming, is to go to work and build it up again. It lacks, first, vegetable matter; second, probably lime, and third, available plant food, and these must all be supplied before you can hope to make very much profit in farming. My plan would be, if you can get hardwood ashes at not to exceed \$7 or \$8 per ton, delivered at your station, to put on about a ton of hardwood ashes after this land is plowed in the spring and harrow it in. Hardwood ashes contain over 30 per cent of lime, about two per cent of phosphoric acid, and five per cent of potash. Those are just the things you want. Now instead of sowing this to clover this spring I would sow it to field peas and when they got nearly mature I would plow them under, put on another dressing of hardwood ashes, a ton to the acre, and then seed to clover or alfalfa in August. I believe you will get a good stand of clover and also alfalfa, and if you do get these plants started, then by careful handling, turning under crops of clover, you can keep up the vegetable content of the soil and put it into good physical condition and can raise profitable crops of corn and beans or potatoes.

If you can't get hardwood ashes, and it certainly will not pay to buy hardwood ashes and then pay 25 to 50 cents a hundred freight on it, this would be excessive freight, for 25 cents a cwt. would be \$5 a ton freight, and 50 cents a hundred would be \$10 a ton freight. Nobody could stand any such freight as this. I say if you can't get hardwood ashes at a reasonable figure then you can buy lime and phosphoric acid and potash. You can get ground limestone delivered to you, certainly for \$4 or \$5 per ton. You can get a phosphate and potash fertilizer containing 10 per cent of phosphoric acid and four per cent of potash delivered to you for \$16 or \$17 per ton, and this will be cheaper than hardwood ashes, if the freight amounts to as much as you say, any they will take the place of hardwood ashes.

Of course, in this way it takes some little money and time to build up a soil, but it will pay in the end, but if you think you cannot afford to get along without a crop this season, if you will fertilize the land well and sow it to field peas you can harvest these field peas. They are valuable and are in great demand. You can get over \$3 a bushel for them. Then plow down the stubble and fertilize again and seed it, but, of course, you won't incorporate anywhere near as much vegetable matter as you would if you plowed down the whole pea vines. These vines, however, after they were threshed, could be taken back and spread on the land and plowed down, or they could be fed to stock and the manure put on the land. If you desire to grow peas this year and peas have never been grown on that land before, I believe it would pay you to inoculate the soil. Probably it would not be necessary to inoculate the soil for common red clover but it certainly would pay you to inoculate for alfalfa.

COLON C. LILLIE.

THE CAUSE OF WAVY GROWING GRAIN.

When looking crosswise of the rows of drilled grain some fields have the appearance of water waves and many observers erroneously attribute the cause to the grain drill feeds. The feeds have just as much to do with the cause as does the color of the paint on the drill and no more.

No modern grain drill feed of any make bunches the seed. Cylinder feeds have nine to twelve corrugations and make one revolution to each revolution of the main drill wheels. The main wheels are four feet and cover twelve feet of ground each turn. One ninth of twelve feet is sixteen inches, so it is apparent that if the feeds were the cause the waves would be sixteen or less inches apart, but a measurement will show them to be about twenty-eight inches—just the stride of an average horse.

The real cause is a jerking motion of the drill when at each pause the seed on the way through the tube and boot bunches. The agitator feed drills of forty years ago and the double run feed drills of today produce exactly the same result, when used in the same way, and the waves are always about twenty-eight inches apart regardless of what kind of drill or what kind of feeds distributed the seed.

The remedy is to use a team which does not keep pace or step together.



Hupmobile Long-Stroke "32" Touring Car, \$900

F. O. B. Detroit, including equipment of windshield, gas lamps and generator, oil lamps, tools and horn. Three speeds forward and reverse; sliding gears. Four cylinder motor, 3 1/2 inch bore and 5 1/2 inch stroke. Bosch magneto, 106-inch wheel base, 32 x 3 1/2 inch tires. Color, Standard Hupmobile Blue. Roadster, \$900.

Two cars whose name is your guarantee

We refer to the two leading Hupmobiles—the Long-Stroke "32" Touring Car, and the Standard 20 H. P. Runabout.

Both the product of the same engineering skill and the same shop organization that originated the Hupmobile.

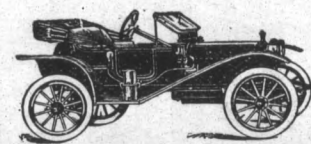
Both incorporating elements of value not found elsewhere at the price or near it.

Each the sign and symbol of the highest and best construction of its particular type.

The Long-Stroke "32," with its cylinders cast in one piece, its three bearing crank shaft, its enclosed valves—a motor of extraordinary pulling power and sturdiness and absolute silence, perfectly dust-and-oil-tight.

Multiple disc clutch, 13 inches in diameter.

Three-speed transmission, large enough for a 40 H. P. car.



Standard 20 H. P. Runabout, \$750

F. O. B. Detroit, with same power plant that took the world touring car around the world—four cylinders, 20 H. P., sliding gears, Bosch magneto. Equipped with top, windshield, gas lamps and generator, oil lamps, tools and horn. Roadster with 110-inch wheel base and highly finished steel box mounted on rear deck, \$850.

Each a feature for the equal of which you must go beyond Hupmobile price.

And a full floating rear axle of especially strong construction.

Fifteen thousand owners, the world over, testify to the worth and serviceability, the staunchness and durability, of the Runabout.

It, too, has a unit power plant; multiple disc clutch; and sliding gear transmission.

All the power you will ever need or want and to spare.

If you are in the market for a touring car around \$900, or a two passenger car, around \$750, get in touch with the Hupmobile dealer.

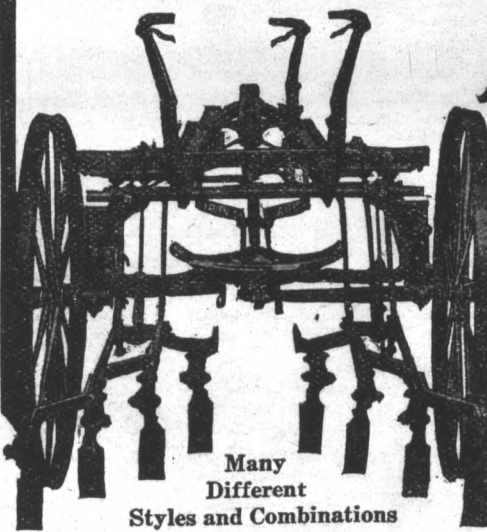
He will show you the actual value in these cars; the value that sets them above other cars of their prices.

Write for complete catalog.

Hupp Motor Car Co., 1258 Jefferson Ave., Detroit, Mich.

GROW 100% POTATO CROPS

It is the 100% crops that make the big profits. And 100% crops are made possible only by right cultivation. By killing the weeds, holding the moisture and making plenty of plant food available, you can grow 100% crops.



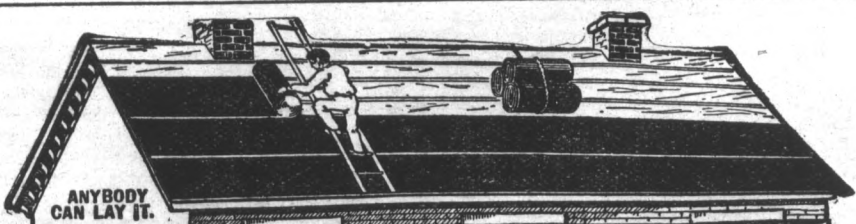
Many Different Styles and Combinations

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will do it. They make fields of average fertility outyield ones naturally much more fertile. Their accurate adjustment for shallow or deep cultivation, their separate tooth adjustment, their quick and easy regulation for different width rows, their double row extension, their easy pivot-wheel control on hillsides and rolling land, and their special fixed wheel cultivator for flat country, combine to make IRON AGE CULTIVATORS best for potato cultivation. When a cultivator does perfect potato work under all conditions, it is right for other crops.

Ask your dealer to show you IRON AGE CULTIVATORS—the kinds that are made to work and last. Backed by 76 years' experience, and modern in every detail. Write today for special cultivator booklet.

BATEMAN MFG CO., Box 104 C. Grenloch, N. J. Makers of complete line farm, garden and orchard tools.



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TERMS CASH: We save you the wholesalers' and retailers' profit. These special prices only hold good for immediate shipment.

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Warranted For Twenty-Five Years. To Any Station East of Rocky Mountains, except Texas, Okla., Colo., N. D., S. D., Wyo., Mont., N. M., La., Ga., Ala., Miss. and Fla., on all orders of three rolls or more. Special Prices to these States on request.

THE FARM LABOR PROBLEM.

It has taken us a long time to realize that the gross income of a farm is not all profit. It has taken us nearly as long to come to the opinion that the largest yields and the greatest gains made with feeding stock are not always the gains or the yields that are produced the most profitably. It is not the gain per day which counts so much as the gain per unit of cost. In most of the operations upon a diversified farm, the margin of profit is so close that profit or loss oftentimes depends to a large extent upon the amount of labor expended in a certain operation.

Greater gains can be made upon a lot of fattening cattle by feeding them grain in some form other than shocked corn. We feed shocked corn to our cattle because we save an initial expense of \$3 to \$4 per acre in the husking. That is not all, for all the expense of grinding, mixing, and the hand-feeding of other rations is saved. What is more, the single man that we keep during the winter season is kept busy all the time and he is able to care for as high as eighty steers. We hog down corn because we are able to save from \$7 to \$10 per acre on the cutting, husking, cribbing and shocking. This saving has always just so much clear profit to us. Such are but two typical examples of handling problems which may well be termed labor troubles. Having the men work three and four horses at one time are others. There is no use in paying a man \$2 to work 75 cents worth, (the value of a day's work of the horse), when he can work \$2.25 or \$3 worth as well.

By the use of such methods we are able to handle 160 acres in Ohio, 145 of which is under the plow, with the aid of one man. At haying time and when setting up the corn we are able to trade work with our neighbors. In winter the one hand does all the work. Everything except the wheat and potatoes are fed to stock and the proceeds from these two crops are used in buying additional feed.

We have a tenant house, purchased off another farm for \$400, and moved to our own place at a cost of \$50. We always get a man with a family. Such men are steadier and far more reliable than the average single man. They are not away over Sunday, leaving the chores for someone else. They get interested in the farm work, and it is not getting uncommon for a man to stay with us two and three years. They board themselves and it is not necessary for us to convert our own home into a boarding house. Having hired men about the home has ever been one of the bugbears of farm life and has driven hundreds of farmers to city work. By arranging our farm methods and operations as we do, we do not suffer any financial loss, indeed, we think we are making more money by keeping down labor expense, we are getting more efficient help, the housewife does not become a cook for the men and our home life is not disturbed.

Ohio.

CLYDE A. WAUGH.

AMOUNT OF CORN TO PLANT.

In planting corn on ordinary land in checks 3 ft. 8 in. apart, will one raise more good, sound corn by planting three or four kernels in a hill? I will admit that one will get more fodder, but will one raise as much or more sound corn by planting four rather than three kernels in a hill? If one wants to plant for yield, would it not be better to plant in hills 3 ft. 6 in. apart each way and three kernels in a hill?

Hillsdale Co.

W. H.

The amount of corn which should be planted per acre depends altogether upon the condition and fertility of the soil. On ordinary Michigan soil probably more good sound corn would be grown where planted three feet eight inches apart each way and three kernels in a hill. However, where the land is made very fertile, as is the case in many of the corn growing contests where phenomenal yields are secured, the corn is planted much more thickly than this. In one case, the data for which I have before me, a boy who grew 132½ bushels of shelled corn per acre, planted it in rows four feet apart, with hills about 18 inches apart in the drill, and two to four kernels in each hill. It is entirely a matter for individual judgment how many kernels are planted in a hill, the purpose for which the corn is to be used, and the nature and fertility of the soil being important factors in the decision. Thus individual experience of success with three or four kernels to the hill is not a very valuable guide as to how the corn should be planted by the average reader.

Do You Grow Beans?

An Up-to-Date Farmer Tells How to Make the Bean Crop Profitable.

"Grow beans as a cash crop and that is my hobby. I have fertilized beans for eight years, and what I know I have learned by experience.

There are only two ways to use fertilizer on beans. Either sow 200 pounds per acre on each side of the bean row, that is, by using a fertilizer grain drill, 11 hoe, and let six tubes sow fertilizer and five tubes the beans, and get on 200 pounds to the acre. Don't let the fertilizer run in with the beans as there is too much danger of burning them.

I am going to sow fifty acres of beans this Spring. Some of the ground is very poor. On the poorest I will sow 300 pounds of A. A. C. Co. High Grade Fertilizer broadcast with a drill and work the ground in good shape, and then when I sow my beans will sow 200 pounds more per acre on each side of the beans, making 500 pounds per acre on the poorest ground.

I have used many kinds of fertilizer—different kinds and analyses. But at the extra cost I prefer A. A. C. Co. High Grade Fertilizer with a high analysis, especially for lighter soil. Some authorities claim that you don't need any Nitrogen for beans. My experience in growing beans is to use a quick acting fertilizer with high percentages of Nitrogen, Phosphoric Acid and Potash. Last season on a soil that would not grow ten bushels of beans per acre, by using 500 pounds of A. A. C. Co. High Grade Fertilizer I grew 28 bushels per acre.

Let me say, don't be satisfied with 10 or 11 bushels per acre. If your soil is not too heavy, and if you get it rich enough, you can grow 30 to 40 bushels per acre. I am speaking of pea beans. They are the kind I grow. Sow from three pecks to one bushel per acre according to size of beans. Above all, don't use cheap Fertilizers, for they are too dear to buy for the plant food they contain." (Name given on application).

We furnish quick acting, high grade Fertilizers of many different compositions to meet the requirements of all crops grown on various kinds of soils. We make grades where either the Nitrogen, Phosphoric Acid or Potash are component parts, with the right percentages of the other elements of plant food to properly balance the Fertilizer to use on muck land, clay, light soils, etc.

If your land is rich in Nitrogen you will save money by using Phosphoric Acid and Potash to balance out the plant food in the soil. Progressive farmers who study

out these things are more successful than those who have not realized the great difference in Fertilizers. Even at the same price, one grade of Fertilizer under certain conditions will produce more profitable results than another.

In selecting Fertilizer the farmer cannot be any too careful. He should make sure that the goods are manufactured by a reliable firm, so that he may depend upon getting full percentages of plant food and of the highest agricultural value, also in first-class mechanical condition. The reputation of the manufacturer is very important.

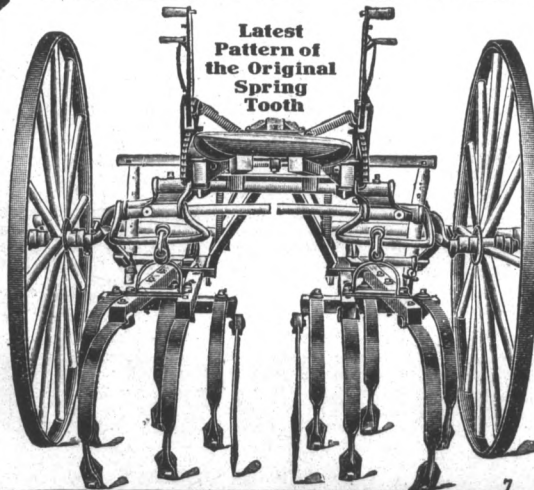
Write us and we will tell you how to fertilize properly and economically. Will also send booklet on Fertilizers, including article by John A. Widdsoe, Ph. D., telling how to fight drought with fertility and why richness of soil makes up for lack of moisture. Every farmer should read it. There is nothing so expensive to the farmer as a poor crop. Some farmers are satisfied with fair crops and ordinary Fertilizers because they have never used the best. We want agents for unoccupied territory.

THE AMERICAN AGRICULTURAL CHEMICAL COMPANY

DETROIT SALES DEPARTMENT, DETROIT, MICHIGAN.

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SPRING-TOOTH, or Solid Shovel, Pivot Axle, or Rigid Axle, Walking or Riding style; also wood frame Lever Drags! Which one do you want? Try it at our risk! Each one is perfect. Right up to 1912! Most liberal terms ever offered and a factory price that proves how others overcharge or give you cheap quality.

We show here the original spring-tooth cultivator. Does everything any spring tooth does, in all soils—does it better. Does work no other cultivator can do. Has widest range of adjustments. With center section of 5 teeth bolted in, makes a first-class, easy riding, spring-tooth harrow. Also a perfect Broadcast Seeder and Bean Harvester with simple attachments.

Detroit-American Guaranteed Forever

No other cultivators made, regardless of prices asked, compare with Detroit-Americans. Thousands in use in all States. Satisfaction guaranteed. We deal only direct from factory.

Write! for free book. See the cultivator you want at the right price. Also shows the Detroit-American Manure Spreaders, Tongueless Disc Harrows and Engines. Don't wait till it's too late to learn how much we save you. Send postal by next mail.

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A few pounds of Aetna Dynamite saves weeks of hard labor for your horses and your hands, to say nothing of the dollars. This process doesn't leave a big pile of stumps on your hands. It splits them into kindling wood which is easily gathered up.

Efficiency on the farm is just as much of a money-saver as efficiency in business, and AETNA DYNAMITE is a money-saver in stump-blasting, ditch-digging and road-building. The field that may be useless today may be made ready for planting tomorrow. And this can be done easily, safely and efficiently.

AETNA DYNAMITE has been made ever since the process of making dynamite was discovered. It is beyond question the highest grade explosive for farm and commercial purposes, and with just a little care can be handled as safely as ordinary merchandise.

Send today for our illustrated booklets showing the processes of stump blasting and the results obtained from this world-famous brand of dynamite.

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The most effectual remedy in use for the cure of ailments of horses and cattle is

GOMBAULT'S CAUSTIC BALSAM



Used as a Blister
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This preferred remedy is prepared exclusively by J. E. Gombault, ex-Veterinary Surgeon to the French Government Stud.

As a **HUMAN REMEDY** for Rheumatism, Sprains, Sore Throat, etc., it is invaluable. Every bottle of **Caustic Balsam** sold is warranted to give satisfaction. Price \$1.50 per bottle. Sold by druggists, or sent by express, charges paid, with full directions for its use. Send for descriptive circulars, testimonials, etc. Address
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E. R. HARDEN
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LIVE STOCK

FEEDERS' PROBLEMS.

Raising Pigs Without Milk.

I sell my milk to a retailer in the city and at most times of the year it is impossible to get any skim-milk except in very limited quantities, and then only occasionally. I have not been very successful with pigs under these circumstances. Would you advise me to discontinue to attempt to grow pigs or can you suggest something that will take the place of skim-milk, both for the sow and for the pigs at weaning time?

Calhoun Co.

C. A. R.

It is, of course, a more difficult proposition to raise pigs successfully and economically without skim-milk than where this excellent feed is available in compounding the ration. It is not, however, an insurmountable obstacle to pig growing where this feed is not available, and it is not advisable to abandon this factor of farm production entirely, even under these circumstances. By using plenty of middlings, a little oil meal and tankage, and possibly some molasses to increase the palatability of the feed, one can grow pigs very successfully without skim-milk. Of course, the pigs should not be weaned at too early an age under these circumstances, and if possible should be given clover or alfalfa pasture, or in the winter some cooked potatoes or roots to provide needed succulency and bulk in the ration. It is difficult to lay down any set rule for the management of pigs under these conditions, but with a variety of feeds judiciously compounded to give a proper balance and palatability to the ration, it is entirely possible to grow pigs profitably without any skim-milk, although not with quite the success that can be attained where this excellent feed is available.

Soy Beans as a Pasture Crop.

I have a field which I had corn on last year which I wish to put into wheat this fall. Instead of putting oats on this field this spring, as is the usual custom in my locality, I wish to put some crop on it that I can pasture this summer and turn the remainder under this fall for fertilizer. What would you recommend? I read an article in your paper not long ago in regard to soy beans. Will they make good pasture for hogs and are they a good fertilizer? What time do you sow them and in what way? What time are they ready to plow under? Would you recommend disking the field or plowing it?

Cass Co.

C. H. R.

Soy beans make very good pasture for hogs and sheep and may also be used as a soiling crop for cattle to be cut and fed in August and early September. They would not be available for use, however, as early as common Canada field peas, or peas and oats sown for the same purpose, which would perhaps yield as valuable a feed and prove as valuable for the improvement of the soil as would the soy beans. If the soy beans are grown, they should be planted about two weeks after corn planting, in rows 28 to 32 inches apart, using from two to three pecks per acre of the seed. They should be planted shallow, not more than one inch deep and be given two or three surface cultivations.

Spring Sown Forage Crops.

Many around here had their clover seeding killed last season, and intend sowing oats and rye, or oats and Canadian field peas, or cowpeas for hay. By demonstration it has been proven that mixtures of grasses will produce more per acre than different kinds alone. I would like to know whether a mixture of oats, rye, and peas would be a reasonable mixture for hay and if there would be any more returns per acre than oats and rye, or oats and peas.

Allegan Co.

J. E. B.

It is better not to experiment on too large a scale with new and untried crops or combinations of crops. On good, strong soil oats and peas make the best substitute for clover hay that can be sown in Michigan. The oats are in this case sown to hold up the peas, and this combination will make a better forage than if spring rye were sown with them. Cowpeas or soy beans may be used with success where it has been demonstrated that they are adapted to local soil conditions, but should be experimented with on a small scale before a large area is planted.

Cooked vs. Uncooked Corn for Hogs.

I would like to ask through the columns of the Michigan Farmer the value of cooked and uncooked shelled corn as a fattening ration for hogs.

Ingham Co.

F. R.

There is an abundance of experimental data on this subject. It has been made the subject of experiments in Kansas, Iowa, Ohio, Wisconsin and Canada, and in every case except one a larger amount of cooked corn was required to produce

100 pounds of gain, and in this case an average of five trials showed slightly better results from cooked feed, but the difference was too small to make the cooking profitable. In an average of ten trials, 505 pounds of cooked grain were required to produce 100 pounds of gain, as against 476 pounds of uncooked grain. In the case of some feeds, such as cull beans and some kinds of roots cooking is doubtless profitable, however, in which case it is sometimes an advantage to cook other grain with them.

The Feeding Value of Corn Cobs.

Please give your opinion on the food value of corn cobs ground up with the corn, as a feed for cattle.

Barry Co.

F. F. W.

There is very little digestible nutrients in corn cobs. They contain, also, an excess of fiber. Practically the only benefit gained from grinding corn, cob and all, as a stock feed is that it adds bulk to the meal and makes it a little lighter feed.

HOW TO HALTER BREAK A COLT.

When a boy I learned a quick and easy method of halter breaking a colt, which I have since used many times without a single failure. First, purchase a 3/4-inch rope about 10 feet long. Make a small loop in one end, just large enough so it will easily slip into the colt's mouth over the lower jaw; then pass the other end of the rope over the colt's neck and down through the loop in his mouth, and draw the rope up tight enough so he cannot get the loop, or rope, out of his mouth. Next step to one side four or five feet and a little in front, and command the colt to "come here," at the same time give the rope a sudden jerk, but not too hard at first. Jerk the rope first from one side and then the other, and every time you jerk the rope, step up to the colt and gently pat him on the neck. It is best to choose a place in the barnyard where the ground is comparatively soft, and away from any fence, as most colts will at first rear up and sometimes throw themselves, but they will soon get sick of this and not try it many times.

In halter breaking a colt with a rope as described, do not try to learn him to lead by pulling straight forward, but always give the rope a sudden side jerk, and never forget to pat him on the neck every time. By treating a colt in this manner, and keeping perfectly cool, it does not take much over an hour to learn the most stubborn colt to follow you anywhere. Of course, it is a good plan to spend an hour or so for several days in training the colt as described above, before trying to hitch or lead him with a common halter, and then he will not learn the habit of trying to pull on the halter, which is a habit very hard to break. It is best to commence to teach a colt to lead at the age of five or six months.

Ottawa Co.

JOHN JACKSON.

LIVE STOCK NOTES.

The best judges believe that it will pay farmers who have sufficient feed on hand to make careful purchases at this time of a good grade of fleshy 900 to 1,200-lb. feeder steers, or such as can be turned back on the market within 60 to 70 days. Undoubtedly, such purchases will cost in the Chicago market relatively less now than by the time that grass starts up. Stockers and feeders are relatively cheap as compared with ruling prices for prime beef cattle, the latter selling far in advance of other years. Recent prices for the best cattle offered on the market were higher than ever before in March, and a year ago the best cattle were disposed of between \$6.50 and \$7.35 per 100 pounds.

Sheep and lambs have had enormous advances since the winter's low time, lambs selling in the Chicago market at the highest prices recently recorded since June, 1910. The situation has become unusually strong, and owners of fat live muttons are obtaining substantial profits, despite the dearth of corn, alfalfa hay and other feeds. The country has no large supplies of sheep or lambs left for marketing, the great bulk of the flocks fed in the middle west having been shipped out some time ago, so that mutton eaters are now dependent very largely upon Colorado-fed lambs. Neither feeders nor breeders are making any decided efforts to replace their flocks, and it looks like a growing scarcity of mutton from now on. This seems a great pity, for the people of this country are really becoming great mutton eaters.

Word comes from Montana that there will be a shortage of fully one million pounds in the wool clip as a result of two bad seasons and large sales of sheep last autumn. Fortunately for sheepmen of that region, the winter was not hard on their flocks, and losses are reported as small. Hay is abundant, and owners have a fair surplus to sell. In Wyoming winter conditions were much less favorable, and a considerable movement has taken place of flocks from Wyoming to Montana.

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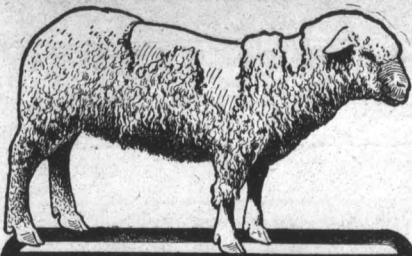
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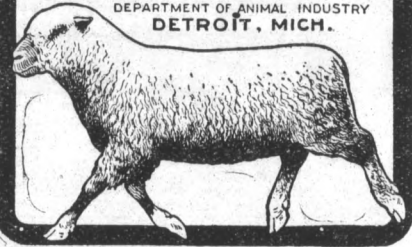
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SUMMER MANAGEMENT OF THE FARM FLOCK.

As a general proposition early shearing is preferable. After shearing both ewes and lambs should be carefully dipped to destroy ticks. This pest is very injurious to the health and vigor of the lambs. Some flock owners prefer hand shears but I think it is only a question of time when shearing machines will be used in all localities where sheep are raised.

Sheep need attention while they are out to pasture. The careful flock master will see his sheep every day. There are so many little problems constantly presenting themselves that are easily taken care of if noticed in time that it pays to keep close watch of the flock. A lamb may be affected with maggots. Another may be beginning to scour, (which is a sure indication of stomach worms), or a sheep may go lame, (a sign of trouble that needs immediate attention). Some of the ewes may have too much milk in their udders, and it is well to count the flock and see that none are missing. All of this attention to little details goes to build up a healthy and profitable farm flock.

Sheep need plenty of salt during the summer. If the flock is being pastured on green forage crops or on clover and alfalfa it is an excellent precaution to mix salt with air-slaked lime. Two-fifths salt and three-fifths lime makes a good mixture. They will eat it and the lime has a tendency to neutralize the acid condition of the stomach caused by the fermentation of the green feed, thereby preventing bloat.

Internal Parasites.

In the majority of cases where a careful investigation of the causes of death in the flock has been made it has been found that the losses were due to parasites. These parasites have proven a barrier to more than one flock owner's path of success. The rapid growth of lambs in the spring and early summer beguiles many inexperienced flock owners into thinking this healthy vigor must continue as the lambs add grass to their diet. These hopes are rudely blasted as the lambs begin to decline in thrift and condition as the summer advances. Old shepherds know what this means, yet few of them succeed in escaping the losses from stomach worms and other less common parasites that prey upon their flocks. Lambs that are affected by these parasites must be well fed on grain to carry them through the winter to an age when they can offer a strong resistance to stomach worms. Preventative measures are too long delayed and often neglected by flock owners who know the dangers that confront their lambs. A thrifty and vigorous lamb can quickly degenerate into a lifeless, skin and bones apparition by following in the trail of worm-infested ewes.

While stomach worms and intestinal worms may be removed by gasoline, coal tar creosote and other vermifuges, the dosing involves some risk and expense and is seldom effective in eradicating the pests. Bronchial parasites can scarcely be reached by medicines and no remedy can prevent a lamb that is worm infested from becoming stunted. Successful flock owners are beginning to realize that

they must adopt the English system of changing pastures with their ewes and lambs, if they obtain approximate immunity from the injury of these parasites.

The more I study the sheep business and the more carefully I note the results of my own experience and observation, the more I am coming to appreciate the necessity of a frequent change of pasture for the ewes and lambs. It costs money to change our system of pasturing sheep and to divide our pastures into small lots but we must practice this method if we succeed in keeping our lambs free from stomach worms.

We know that these worms come from the sheep to the lambs through the wet grass that is eaten. We know that it takes a certain time for the pests that have dropped on the grass to develop enough to get into the lambs. That time is estimated to be from eight to twelve days. We know that the lambs are born free from parasites. We know that it is quite possible to keep the mothers free from parasites before the lambs are born. By putting these facts together we can readily see that if we change our pastures frequently we will lessen the danger of the lambs becoming infested with these worms through the grass they eat. There is no branch of stock handling that affords as interesting and profitable field for study as sheep husbandry.

At this season of the year every flock owner should plan on sowing special forage crops to supplement failing pastures and provide a change of feed for his flock. Each year adds convincing proof that it is unsafe to rely upon pastures alone to sustain the flock during early summer and autumn. The time when sheep can be turned out early in the spring has passed not because pastures have less sustaining power than formerly, but experience has proved that it is unwise to allow the flock to fall away in condition at this period. Even under the most favorable conditions the quantity of pasture grass diminishes and the quality deteriorates as the advance of the season checks its growth. If the season happens to be favorable for the growth of pasture grass no loss is encountered as the forage affords a change of feed and all that is not needed by the sheep at this season can be cut and cured for winter feeding.

Supplementary Forage Crops.

Oats and field peas make an excellent combination crop to assist in carrying the flock over the hot summer months and when the weather and other conditions are favorable yield a large supply of palatable forage. When the pea seed is cheap it will be best to mix the oat and pea seed half and half, but when peas are bringing a high price good results will come by mixing two bushels of oats and one of peas. Oats and peas come at a time when most needed and are one of the best crops to stimulate the milk flow in the ewes and promote a rapid growth of the lambs for market.

For early pasture rye is the best crop within the reach of every flock owner. Sheep are very fond of rye and when enough sheep are kept on a rye field to keep down the woody growth it will provide good grazing for a number of weeks.

Rape is pre-eminently the forage crop for sheep and under the most favorable conditions it will produce an immense amount of highly nutritious forage. The flock owner who neglects to provide an abundant supply of rape is allowing dollars of profit to slip through his hands. Rape will thrive on all well-drained soils and can be sown alone or as a catch crop with other crops such as oats, barley and corn and after these crops are harvested it will take possession of the soil. From four to eight pounds of the Dwarf Essex variety sown in the field broadcast at the last cultivation of the corn crop will give a good stand if moisture conditions are right. As a feeding proposition I know of none better than fattening sheep and lambs upon rape. Try it on your own farm this fall and be convinced of its advantages. Sheep relish rape and the additional amount of feed obtained from the corn field makes a very satisfactory supplemental profit to the corn grower and flock owner.

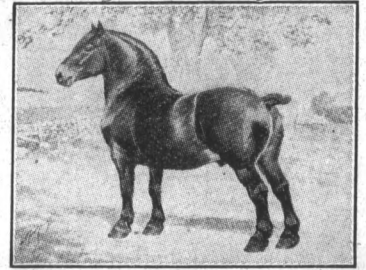
New York. W. MILTON KELLY.

THE CATTLE SITUATION.

Statistics covering the feeder cattle movement from five leading western markets, Chicago, Kansas City, Omaha, St. Joseph and Sioux City, compiled by M. F. Horne, statistician of the Union Stock Yards Company, of Chicago, show that such shipments during January and February aggregated 199,453 head, showing a decrease of 64,928 head from such shipments for the same months last year. The comparison shows plainly that the western country is relatively shorter of feeding steers at the present time than the territory around Chicago, and this is also true of the sheep situation as affecting Kansas City and Omaha territory compared with the parts of the country which the Chicago market is in the habit of supplying with feeding sheep and lambs. Furthermore, the unprecedented demand for cheap beef everywhere throughout the country has resulted in seriously reducing the supply of cows and heifers available for beef to such an extent that packers have been drawing heavily upon the class of young steers usually returned to feeding districts for fattening and converting into choice beef. Besides the dearthness of feeder cattle the purchases of such stock have been lessened through the high price of corn, scarcity of roughness and the high price of hay. Mr. Horne says: "It would seem that those who are fortunate enough to have growing young cattle on hand would do well to hold them for the later spring and summer demand; or, better still, finish them for market, rather than sacrifice them now on the market for beef. With almost a certainty of better markets later on for both young cattle and finished beef, the man who is well prepared to hold the growing animals until the resulting scarcity develops need have no cause to regret his action in doing so. But the most impressive lesson of a study of the cattle situation of the whole country today is the imperative need of raising more cattle in the corn belt. A few more raised on each farm will solve the problem of a future beef supply, the gravity of which is not yet fully realized and which at least within the next five or ten years can be solved in no other way."

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VETERINARY

CONDUCTED BY W. C. FAIR, V. S.

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

Indigestion—Colic.—I have a horse that was shipped from Michigan last spring; has always been in good flesh until a few weeks ago. He has had several attacks of indigestion or colic; besides, when he lays down is unable to get up without help. W. H. C., Humboldt, Tenn.—Give your horse 1 oz. ground ginger, 1 oz. bicarbonate soda, ½ oz. powdered charcoal at a dose in feed two or three times a day. A change of feed will help him.

Umbilical Hernia.—Our 10-month-old colt has a small rupture close to navel and I would like to know how to treat it. J. E., Hamilton, Mich.—The hernia is so small that it will perhaps never hurt your colt; however, if you care to get rid of bunched have him operated on before turning on grass.

Hard-Milking Cows.—I have two cows that milk hard, not so difficult to milk them when they come fresh and are giving much milk, but after a time it is hard work. W. T., Inlay City, Mich.—If you will dilate teat openings with a sound, it will help them some, but usually such work is not attended with very good results.

Calf Has Scours.—I have a calf three weeks old that has scours, and would like to know what will cure it. I feed it all the warm skim-milk it will drink. J. M., Alamo, Mich.—Give your calf 5 grs. salol and 5 or 10 grs. sub-nitrate bismuth at a dose three or four times a day. You might add 10 grs. bicarbonate soda to milk calf drinks, three times a day.

Loss of Vision—Ophthalmia.—I have a cow that came fresh three weeks ago; since then she has gone almost blind in one eye and the other is now affected. There appears to be a thin scum that covers eye ball. R. H. S., Whittemore, Mich.—Blow some calomel into eye once a day and apply a saturated solution of boracic acid to eye once a day. Give her 2 drs. iodide potassium at a dose in feed three times a day.

Acute Indigestion—Loss of Appetite.—I have a cow that too sick suddenly and soon became weak, walked quite slow and has not been well since. She seems to have lost her appetite and has fallen away in milk supply. W. E. W., New Carlisle, Ind.—Give your cow 2 drs. fluid extract nux vomica, 1 oz. fluid extract gentian and ½ oz. fluid extract cinchona at a dose three times a day.

Diseased Kidney—Abnormal Liver.—Am anxious to know what ailed a hog that we butchered a short time ago. One kidney seemed to be hollow and filled with mucus. Sometime ago we had a chicken that failed to thrive, after death I examined her and found liver very much too large. A. D., Coopersville, Mich.—It is not unusual to find a kidney such as you speak of in hogs, but often do very little harm. The chicken suffered from enlargement of the liver and sometime later would have caused its death.

Nodular Disease.—I keep 75 ewes and have 64 lambs, but during the winter four of the sheep, also four lambs, died. The ewes were two or three years old and none of them pregnant. Fifteen of my ewes look bad and those that died I thought had consumption. I thought perhaps they might have worms, but on examination found a lot of hard lumps on intestines and some other patches which appeared to have a sort of slimy yellow substance in them. Their stomachs seemed to be normal. J. J. H., Brant, Mich.—Your sheep suffer from nodular disease, a parasitic bowel trouble and when in advanced stage is incurable. By giving each diseased sheep 2 or 3 ozs. of a one per cent solution of coal tar creosote it can perhaps be checked. Also fairly good results follow giving 5 gr. doses powdered sulphate iron and 30 grs. of common salt at a dose in feed once or twice a day.

Wound.—About two weeks ago my five-year-old horse was kicked, left hind leg being cut open above hock; Vet. put three stitches in it. I applied hot vinegar and wormwood to take out swelling. Have applied hydrogen peroxide to the wound. What had I better apply to remove swelling? W. J. D., Milford, Mich.—Dissolve ¼ lb. sugar of lead in a gallon of water and add 1 pt. fluid extract of arnica; apply this lotion to swelling three or four times a day. You will find it difficult to reduce joint to its normal size.

Loss of Appetite—Vertigo.—Nine-year-old horse became dull, dumpy and lost appetite. During the night he must have had a fit, for the barn was disarranged and his head badly bruised. His bowels are not in good condition and excrement is covered with a slimy mucus. R. R. P., Hudsonville, Mich.—Give horse 8 drs. of aloes, 30 grs. calomel, 1 dr. ground nux vomica and 2 drs. ginger made into a bolus and given at one dose. This will act as a cathartic. Also give 1 oz. bicarbonate soda, 1 oz. ground gentian and 1 dr. salicylic acid three times a day; you may mix it in feed. Give enough well-salted bran mash and roots to keep bowels open.

Scirrhus Cord.—I have a three-year-old colt that was castrated last summer; the wound has never healed and he shows some lameness in one hind leg. T. R., Munith, Mich.—The end of cord adhered to skin of scrotum, a tumor has grown



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on end of cord and perhaps the cord has become diseased. The unhealthy tissue should be cut out and the cord cut off above the tumor, then he will heal up. You should employ a competent Vet. to do this work.

Azoturia Infection.—Have a 1,400-lb. mare whose water becomes very dark colored when she is not working and when exercised is thick and milky like. She appears to have good life and her appetite is excellent. J. S., Montague, Mich.—Give her 1 oz. bicarbonate soda and 2 drs. powdered nitrate of potash at a dose in feed two or three times a day for ten days, then give a dose occasionally when you think it is required.

Nervousness.—I have a six-year-old horse that is quite uneasy and fidgety when in stable. He is well fed, but fails to lay on flesh. Our local Vet. examined him and thought it a case of nervousness. He prescribed 1 dr. doses of iodide potassium and nux vomica which I gave him for a few days and thought it helped him. Before giving him this treatment I blistered stifle joint, but it failed to do him any good. F. M., Caledonia, Mich.—I am inclined to agree with your Vet. and the treatment he prescribed is a proper remedy to palliate such an ailment. It is also very important to either work a horse of this kind moderately every day or let him have outdoor air and exercise. You had better continue giving iodide potassium and nux vomica and I would also recommend that you change his food supply, salting him well and feeding some roots.

Brood Mare in Poor Condition.—I have a mare that is due to foal next June which is in a weakened condition. Her hind legs stock, her coat is rough and she is all out of condition. C. H., Kingston, Mich.—First of all you had better examine her teeth, they may need floating. Also give her ½ oz. ground gentian, 1 dr. powdered sulphate iron and 1 dr. ground nux vomica at a dose in feed three times daily. She should be well fed, groomed twice a day and if you have roots feed her some once a day.

Occult Spavin Lameness.—Have a six-year-old mare that is heavy in foal which shows considerable lameness without showing any fever or swelling of leg. I blistered her left hind ankle joint. S. S., Silverwood, Mich.—You should never treat a case of lameness without first being pretty certain where it is located. I am inclined to believe it is a case of hock lameness, without any visible enlargement. Apply one part iodine and ten parts lard to hock twice a week.

Billiousness—Dropsy.—Our 14-year-old mare is due to foal April 26; she breathes rather heavy, is dull and dumpish and is also swollen under belly. J. S., Woodland, Mich.—Give her 20 grs. calomel at a dose twice a week for two weeks. Also give her ½ oz. ground gentian and ½ oz. powdered buchu at a dose in feed three times a day until the desired effect is produced; then give this medicine when you believe she needs it. She should be fed some well salted bran mash and roots to keep her bowels open.

Ophthalmia.—I have a young Clyde mare, coming five years old that has a film growing over right eyeball. She has had eye trouble for the past two years or more. By my description can you tell me what it is and if curable or not? G. E. C., Plymouth, Mich.—Your young mare suffers from periodic ophthalmia and now she has either opacity of cornea or lens of eye, making her case incurable.

Impaction Followed by Death.—I have owned mules for the past 16 years and never had a sick one before. Both my farmer and his assistant labored treating this mule for four days and were unsuccessful in moving his bowels. I am anxious to know what caused his death and what kind of medicine would have saved his life. B. E. B., Toledo, O.—Your mule died the result of impaction causing inflammation of bowels and death. The best results follow giving repeated doses of raw linseed oil. Your mule may have suffered from volvulus or a telescoping of bowel. It is possible that treatment would not have saved his life.

Lumbago.—I have a valuable cow that shows lameness and stiffness in back and when she lays down it troubles her to get up. This ailment first showed some two weeks ago. P. C., Owosso, Mich.—Give her 1 oz. doses powdered nitrate potash for two days and she had better have a dose three times first day and twice the second day; then give 2 drs. salicylate of soda at a dose in feed three times a day for 20 days. Apply one part turpentine, one part aqua ammonia and four parts olive oil to back three times a week.

Grub in Tongue.—There seems to be a disease affecting the cattle in my locality and I am told it is grub of the tongue. The tongue swells, is covered with small black spots and is very tender. While the tongue is sore the cattle refuse to eat. I lost one last year and am quite sure she starved to death. A. J. F., Harbor Springs, Mich.—Gangrene of the mouth in young calves is not uncommon when they are teething, but I am at a loss to know what should cause death of your cattle, unless they have spinal meningitis with a paralysis of throat and tongue. If the tongue is the only organ affected, you should try to ascertain the cause; this would be best done if you employ a Vet. A lotion of borax water or alum water would perhaps help their tongue. I need more symptoms, both before and after death, to positively state what the ailment is.

Pulling Feathers—Eating Feathers.—I would like to know what will stop hens from feather eating and pulling feathers. G. W. L., Mallet Lake, Mich.—By making a complete change in their food supply, you will perhaps overcome this trouble. Are you sure they have enough exercise and are not lousy? I find when fowls have plenty of salt they will not form the habit of pulling and eating their feathers. Put a tablespoonful of salt into 2 qts. of moistened meal or shorts and feed them some of this food.

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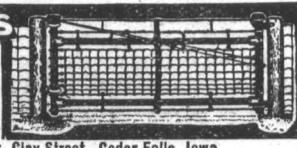
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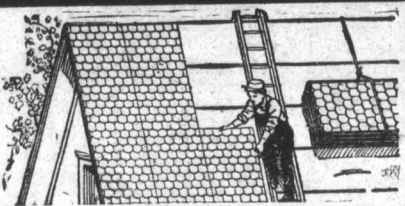
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POULTRY AND BEES

HOW I FEED CHICKS FOR BEST RESULTS.

I do not feed chicks for 48 hours after they come from the shells. Then for the first week, besides having wheat bran, commercial chick food and charcoal before them in hoppers, I feed Hungarian grass seed sprinkled in about two inches of chaff from the hay loft, allowing them to eat all of it they want.

The second week I feed, three times a day, all they will eat of hard-boiled eggs ground up, shell and all, with bread that has been toasted rather brown. The toasted bread prevents bowel trouble, a trouble which it is easier to prevent than to cure. When the chicks have passed the second week I begin giving a wet mash. Wet mashes, if properly made and fed, are, in my opinion, more conducive to best results than dry mash feeding.

I find the chicks grow well on the mash and become very vigorous. I dampen the mash with milk or water, making it just damp enough so that when thoroughly mixed it will turn out in a crumbly state but is not sticky or sloppy. Thorough mixing must be insisted upon, as this is the secret of feeding wet mashes with best results. My mash consists of equal parts by measure of wheat bran, wheat middlings and ground corn, with a little linseed or soy bean meal added. I never give more of the mash at a time than the chicks will eat up clean. This damp mash I feed in the evening just before the chicks go to roost.

If I am growing a flock of broilers I begin feeding the wet mash twice a day after they are four weeks old, giving the extra feeding about 10 a. m. I also keep the dry mash, commercial chick feed, grit, beef scraps and fresh water always before them. The dry mash is fed in hoppers, thus saving time and labor. Sweet or sour skim-milk supplies a well balanced ration and makes the chicks grow faster than any other food that I have used.

Some people think that you can over-feed chicks and chickens, but I believe that is a mistake. If you want to grow 3-lb. broilers in twelve weeks you must not only feed them all they will eat but you must also tempt them to eat more by putting before them a change of food that they will relish whenever they show signs of losing their appetites.

Wayne Co.

J. P.

ADVANTAGES IN GROWING PURE-BRED POULTRY.

While there are many ways in which farm women can earn their own spending money, I think poultry raising one of the pleasantest. It furnishes the outdoor exercise and change so necessary to keeping up one's strength and spirits through the busy season on the farm. Of course, there is much poultry grown in towns and villages, but the farm offers conditions and advantages which should not be overlooked. However, the farmer's wife, as a rule, is too busy to think of pure-bred varieties and what they might do for her, but goes on trying to make the mongrels pay. Now we all know that it is hard to show and feel pride in a mongrel of any kind that one does in a pure-bred, this applying even to the family dog or cat. So, why not give some attention to pure-bred poultry, for who will not take pride in a nice even flock of fowls all of a color.

Statistics show that there is more money in pure-bred poultry. There is more than one reason for this, for, besides feeling greater pride in them, and therefore giving them better care, one can sell eggs for setting and fowls for breeding purposes. Then, too, an even lot of pure-bred fowls, when sold on the regular market, will bring a better price than a mixed lot of mongrels. I have proven this to my own satisfaction. I have had no other than pure-bred fowls on the place in the last ten years, and last fall I wrote a man in Detroit for quotations on poultry. Old hens were selling at 13 cents a pound. I sent him two large crates of hens. When my returns came I learned that they had graded No. 1 and that I had received a premium of 1½ cents a pound over the current quotation, or 14½ cents. I feel thoroughly satisfied that it pays to keep nothing but well bred poultry.

As a rule, upon most farms the women are too busy with other things to bother with the fowls. Therefore I think we

women ought to see what we can do in the direction of producing more and better eggs and market fowls. I have a family of six children to work for, do all my own work and still find it pleasant as well as profitable to take care of my poultry. My gross receipts for 1911 were \$450, and my feed bill did not run very high. I fattened all my poultry last year on cull beans, of which I secured a ton on June 15, and they lasted until the fore part of the past winter. The ton cost me \$15 and I found them splendid feed, both for laying hens and for fattening fowls, but they must be thoroughly cooked and fed carefully, until fowls become accustomed to them. But will give my methods of feeding at some other time. In this I simply wanted to bring to the attention of enterprising farm women the advantages in growing pure-bred poultry.

Huron Co.

G. L. P.

FACTS BEARING ON THE WORK OF THE SITTING HEN.

The feed of a hen during incubation should be of such a nature as to tend toward a costive habit, thus keeping her clean on the nest and also intensifying, rather than hindering, the enhanced heat peculiar to that period. In all cases we speak of temperature as usually taken by a clinical thermometer, although the highest temperature—that of the blood at the heart—is probably two degrees, or even more, higher. In domesticated mammals it varies from about 93 to 103 degrees, but in birds is higher, running from 100 degrees in some sea fowl to the swallow at 111 degrees. A hen when broody shows a rectum temperature of about 110 degrees. By the end of the first week it is about 109, at the end of the second 108, and at the end of the third sometimes as low as 106 degrees, which is also the temperature of a chick a week old.

This does not mean that the eggs suffer a change of heat from 110 degrees to 106 degrees, partly because the chicks give off heat from themselves during the last week and so require less from the hen, and partly because when a hen becomes broody an arterial plexus is developed (a network of blood vessels) so as to raise the heat of that part of the body covering the eggs. As incubation proceeds the feathers fall off from the breast, so that with the warm body actually touching the eggs less heat is required. Owing to the movements of the hen's body the eggs mostly arrange themselves in a circle with the broad end outwards. In the last week the eggs incline a little, so that the broad end is higher, due chiefly to the more solid contents being at the narrow end, and the large air space at the wide end.

It is a curious instinct that makes a hen return to her nest promptly in cold weather. Possibly on a cold day she feels chilly and is glad to get back to the warmer squatting position on the eggs, while on a warm day she enjoys her stroll, and so extends it. Hens are very irregular in the length of time they are absent from the nest. In hot weather they often rise in the nest, opening their feathers to cool themselves, and so cool the eggs, but even then we may have more chicks dead in the shell than in cooler weather.

Many think that the washing of eggs spoils them for setting but that is a fallacy. All dirty eggs are better washed. I once found a nest in a very low place, and let it alone to watch the proceedings. It came very wet for some days, and those eggs were sometimes under water, yet they hatched all right.

Perhaps the most important thing the hen teaches us when managing her own affairs in her own way is that chickens require nothing but warmth for some time after hatching. She rarely leaves the nest after the chicks first begin to chirp until all are strong enough to go off with her. Thus they get next to nothing to eat for the first two days, and very little for a week. A hen must eat very little when she has to do her own foraging, and I have had some that ate very little when fed. They seem to drowse in a sitting house, in a state akin to torpidity. For feeding, a mixture of equal parts wheat, barley, and corn is as good as any. A handful of grit and a very little green food twice a week, a cabbage leaf cut up, will be enough for a dozen. No soft or sloppy food should be used. If we give only barley and corn, with no relaxing food at all, they become too costive, and the reaction from it causes scours.

Canada.

W. R. GILBERT.

SHE QUIT COFFEE

And Much Good Came From It.

It is hard to believe that coffee will put a person in such a condition as it did a woman of Apple Creek, O. She tells her own story:

"I did not believe coffee caused my trouble, and frequently said I liked it so well I would not quit drinking it, even if it took my life, but I was a miserable sufferer from heart trouble and nervous prostration for four years.

"I was scarcely able to be around at all. Had no energy and did not care for anything. Was emaciated and had a constant pain around my heart until I thought I could not endure it. I felt as though I was liable to die any time.

"Frequently I had nervous chills and the least excitement would drive sleep away, and any little noise would upset me terribly. I was gradually getting worse until finally, one day, it came over me and I asked myself what is the use of being sick all the time and buying medicine so that I could indulge myself in coffee?

"So I thought I would see if I could quit drinking coffee, and got some Postum to help me quit. I made it strictly according to directions and I want to tell you that change was the greatest step in my life. It was easy to quite coffee because I had the Postum which I like better than I liked the old coffee. One by one the old troubles left, until now I am in splendid health, nerves steady, heart all right and the pain all gone. Never have any more nervous chills, don't take any medicine, can do all my housework and have done a great deal besides.

"My sister-in-law, who visited me this summer, had been an invalid for some time, much as I was. I got her to quite coffee and drink Postum. She gained five pounds in three weeks, and I never saw such a change in anyone's health."

"There's a reason."

Ever read the above letter? A new one appears from time to time. They are genuine, true, and full of human interest.



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BY THE PHILO SYSTEM

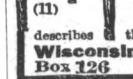


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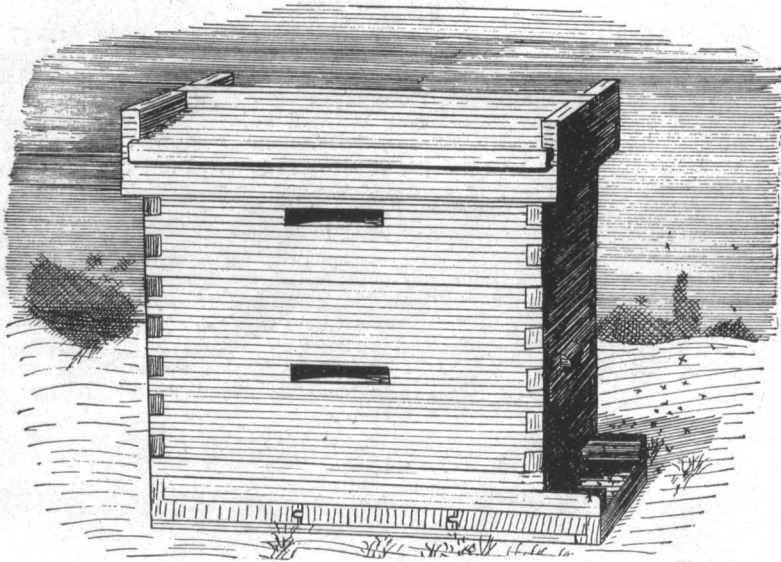
A BEGINNER'S OUTFIT FOR BEES.

The question is often asked, what would be a good outfit to begin with for one who has never kept any bees? I'll try to answer this question. First of all, of course, you must have the bees. Right here is a chance for nice discrimination. To the average man, or woman, a bee is a bee, and a colony of bees is a colony of bees, and that is all you can make of it. Now this is just about as near the truth as it would be to say that a cow is a cow, etc. There is just as much difference between a good and a poor colony of bees as there is between a thoroughbred cow and a scrub. As the beginner is not very well qualified to judge bees it is best for

hive. A colony, to do good work, should have their hive well filled with bees by the first of June. And, last but not least, don't buy a colony of bees in any old kind of a box, one having frames filled with a lot of crooked combs or with drone comb.

There is one more item and, considering present conditions, it is a very important one; that is, be sure there is no trace of foul brood in the hive.

In the meantime you should have had your outfit ordered so as to have it ready. For the first year this should consist of about the following: Three comb-honey supers, complete with sections and comb starters; one extra hive, complete with frames filled with full sheets of founda-



Of First Importance is a Good Colony in a Modern Hive.

him to get some good bee-keeper to do the judging for him.

Here are a few of the points to look for: First, they must be quiet in disposition. If you open a hive when honey is coming in a little, as, for instance, in the dandelion flow, or any time from that on until the clover flow is over, and the bees come diving out at you, stinging right and left, you might just as well close that hive up right away, for if you buy them you'll soon decide that bee-keeping is not in your line, anyway. Find a colony in which, when you open the hive, the bees

tion; one bee veil; one smoker; one good book on bees, and a year's subscription to some good bee journal. If you are very timid you might include a pair of bee gloves. Don't buy anything but standard hives. Whether they are new or old doesn't make so much difference, but you want something that, as you increase, you can buy supplies to fit.

Mecosta Co. L. C. WHEELER.

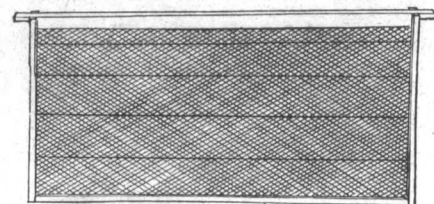
A CRACKER JACK TO SELL STOCK.

Mr. Swift Winegar, of Grand Rapids, Mich., who has been advertising poultry in our paper, writes under date of March 16: "Your paper is a cracker jack to sell stock. If I have good luck this year I will run an ad from September to spring. Just now I am putting up a 32-foot poultry house."

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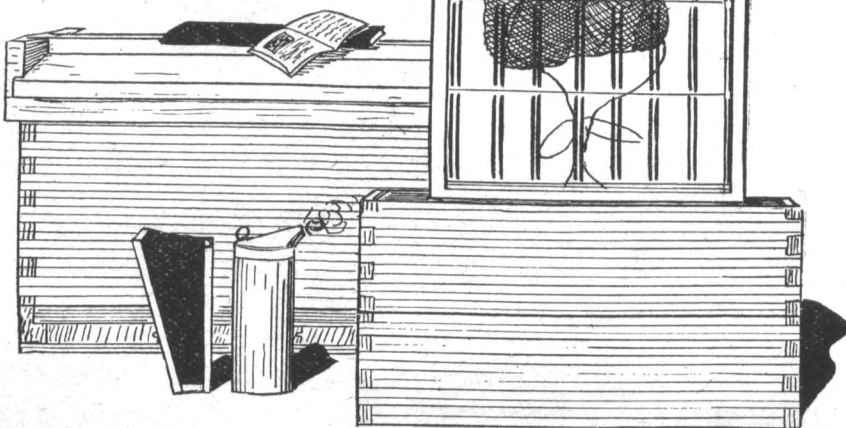
Cicero (Morris and Morgan's Latin Series). Edited by J. Remsen Bishop, Ph.D., Principal, Eastern High School Detroit;



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crawl quietly over the combs and apparently pay little attention to you.

Then as the queen is the main factor in a good swarm, look her up next and see that she is physically all right. Then look to see what kind of work she is doing. If it is along about the first of June, and she has plenty of stores to work on, you should find all the brood in the hive that the bees can cover. You must remember not to judge by comparing the combs of brood without considering the number of bees in the hive; also remember that because the colony is weak is no sign that the queen is not a good one. There are many reasons for a weak coi-



Beginner's Outfit—Three Comb-honey Supers, Extra Hive, Smoker, Veil and Book.

only besides a poor queen. Take especial notice of the manner in which the brood is deposited in the combs. A good queen will keep her brood compact, practically every cell filled as far as the brood goes. Avoid one that lays in patches.

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 The Lawrence Publishing Co.,
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DETROIT, APRIL 6, 1912.

CURRENT COMMENT.

The Coal Shortage. There has been a marked shortage of bituminous coal, not alone in the large manufacturing centers but at interior points as well, during recent months, owing to the traffic conditions which have obtained upon Michigan railroads. The railroads have attributed these conditions to the unusually severe winter which handicapped them not a little in the movement of freight. The manufacturers and others affected have declared that the trouble lies with the railroads which have not the terminal facilities or equipment necessary to the handling of the increased business incident to the large growth of the population and commercial activities in Detroit and other manufacturing centers of the state. There has also been a noticeable shortage of cars and difficulty in moving agricultural products and a general inability on the part of Michigan railroads to meet prevailing traffic conditions in an adequate manner.

In the meantime there has been trouble brewing between mine owners and the labor organizations representing their employes and at the present time there are something like 400,000 coal miners of the anthracite fields of Pennsylvania and in the central competitive fields comprising Pennsylvania, Ohio, Indiana and Illinois of the bituminous portion of the industry. Officially this movement is known as a "suspension of work," rather than a strike, pending negotiations for an increase of wages and other terms of agreement. Under the most favorable conditions it is thought that it will be at least thirty days before all the mines will resume operations, while in the anthracite industry there is some question as to the ultimate outcome of this movement. Involved in the controversy is the question of the business relations of railroads with the smaller independent coal producers, and in any event the present conditions are such as to at least aggravate the present scarcity of coal if nothing more serious.

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supply during the summer season when it can generally be secured at a somewhat lower cost, as well as with greater certainty. Such action will fortify them against a possible repetition of the present traffic conditions or labor difficulties, which might at any time become serious as has been the case in England during the past month when practically all the coal mines have been closed. There the situation assumed such a serious character that a minimum wage bill was passed by the government after negotiations for the settlement of the strike through official intervention had failed. It is not thought that conditions in this country will be anywhere near so serious, yet the outcome of a controversy of this kind is always uncertain until a definite agreement is reached.

Danger in Foreign Seed Potatoes. Perhaps one fortunate effect of the British coal strike is the present falling off

in importations of potatoes due to the tying up of traffic in England. These potatoes which were coming in in large quantities might easily be distributed for planting purposes, and this fact has led to the issuing of a circular by the Bureau of Plant Industry of the United States Department of Agriculture, warning American potato growers against the use of this foreign seed.

The great danger in the use of foreign seed potatoes lies in the fact that several potato diseases are prevalent in European countries which have not yet appeared in this country. One of the most dangerous of these is known as potato wart or black scab. This danger is imminent because the badly infected districts of England lie near Liverpool, from which many shipments are made to this country. There are other dangerous diseases of a fungous and bacterial nature which are likely to be introduced, not only from England but from Germany as well.

The danger from these diseases lies in the fact that soils once infested remain unfit for potato culture for many years. Another very good reason why foreign potatoes should not be used for seed lies in the fact that they are not generally well adapted to our conditions until they have been acclimated by several years' planting. Of more than 100 varieties tested by the Department of Agriculture none yielded as well as our best American sorts the first year, and the few ultimately satisfactory varieties required two or three years to become acclimated.

This warning is perhaps less important in Michigan than elsewhere, yet there is ever a tendency among potato growers to experiment with new varieties and oftentimes with those of a foreign origin. This tendency, however, should be curbed under existing conditions for the very good reasons above noted.

Net Results of the Special Sessions. The net results of the two special legislative sessions called by Governor Osborn, so far as important legislative enactments are concerned, are embraced in the passage of the workingman's compensation act and the submission of a constitutional amendment providing for equal suffrage in Michigan. The workingman's compensation act, which was passed during the first special session, is the bill drafted by the special commission of inquiry on this subject, and provides a definite compensation for various injuries which may be suffered by an employee against which the common law defense of contributory negligence of fellow employees is barred. This law is in line with similar steps taken by the federal government in connection with interstate commerce and by many states as well as progressive foreign countries. This bill was passed without any serious opposition, either on the part of employers or laborers, with the exception of certain Detroit labor interests.

The other most important action taken by the legislature at its second special session, was the submission of the constitutional amendment, providing for equal suffrage, which will be voted upon at the regular November election this year. The movement for the submission of such amendment was started by the ladies of the state who engaged in an organized effort to this end, who have acknowledged that their success was largely due to the aid of the representatives of the labor organizations, the State Grange and the State Association of Farmers' Clubs. Both of the farmers' organizations above mentioned have repeatedly expressed themselves in favor of equal suffrage, and their members will doubtless be pleased to have an opportunity to vote upon this

question at the coming November election.

The fate of the presidential preference primary bill in the second session was the same as that in the first, which was commented upon in a recent issue, the important legislative action noted above being practically the sole net result of the special sessions, except the expenditure occasioned by them. This is quite as much, however, as is usually accomplished at the special legislative sessions which have been held in Michigan. An example of what might be accomplished at a special session, provided the matter were approached in the right way, was afforded by the recent action of the Illinois legislature which was called by Governor Deenen for the purpose of acting upon the presidential primary bill in that state. Before calling the session, however, the Governor communicated with the members of the legislature, to determine whether the necessary two-thirds would support such a bill, and having ascertained that they would, they were called together on Tuesday and had an official copy of the bill before the Governor on Saturday of the same week. Apparently a little co-operation between the executive and legislative departments of the state produced better results than the method usually employed in controversies of this kind.

The High Cost of Living. The discussion of the cause of the high cost of living, which has received so much attention from so many sources in recent months, has been beneficial in disabusing the public mind, to some degree at least, of the impression that the farmers of the country are getting more than their legitimate profit in the production of staple food-stuffs. It is true that in some quarters this fact is not so well appreciated as it should be, and there are not a few among even the substantial business men of our cities who have not recognized this fact.

The better prices which farmers have been receiving for their produce in recent years has made the agricultural industry a more attractive one and is accomplishing what no sentimental "back to the land" movement could accomplish through its influence. In order to stop the tendency which has been manifested in recent years by country people to go to the cities in increasing numbers, and to turn the tide in the other direction, agriculture must become generally recognized to be as profitable as other industries with the expenditure of the same energy and ability. While it may not yet have reached that plane in comparison with some industries, yet it has in comparison with many, and there are notable examples of men who have been successful in other lines who are now turning to agriculture as a more congenial occupation and a more comfortable settlement for their old age.

Most of these have recognized the fact that as good opportunities exist in Michigan as in any section of the country, or of the world. A gentleman who has recently traveled around the world, traversing its best agricultural sections, recently stated that Michigan still looked good to him and that he intended to locate in the state permanently. There are a few among our substantial Michigan farmers who leave the state seeking a more congenial climate or larger opportunities, quite a proportion of whom return disappointed in their search.

The high cost of living affects the Michigan farmer as little as any man in the world for the reason that our diversified agriculture enables him to produce an abundance for his table, and at the same time gives him a wide range of choice in the products which he may grow, thus enabling him to follow the bent of his own inclinations to a greater degree than almost any other man. Let us appreciate the possibilities of Michigan agriculture more, put a larger amount of energy into our business and give our state the name which it merits, of being the best agricultural state in the Union.

The Country's Meat Supply. Doubtless many people among city consumers will attribute the increased cost of meat and meat products to the failure of the government to convict the packers of conspiracy to raise prices. There is no doubt, however, but that the present scarcity of both grain and forage throughout the country will further reduce an already depleted supply of meat animals in this country. The census for 1910 shows that we have about ten per cent less cattle than in 1900, while the

population has in the meantime increased about 20 per cent.

The economic conditions surrounding the sheep industry have tended to decrease the number of sheep upon American farms and the scarcity and high price of corn will without question greatly reduce the number of hogs maintained upon American farms during the coming year. This scarcity is beginning to be felt keenly all along the line, and there is no prospect of relief in the near future.

Repeated failures of clover seedings throughout wide sections of the country, due to untimely drouths, makes it comparatively certain that we cannot have a normal hay crop in the country the coming year. This will, of course, be largely offset by an increased production of corn and small grain in many sections, and the efforts of farmers throughout the country to avoid a similar shortage in home-grown feeds next winter will tend to make both grain and forage cheaper.

But this will not relieve the shortage of marketable meat animals since feeders of all classes of stock will be scarce throughout the coming year, owing to the necessity of marketing them prematurely, which has been felt by farmers over so wide a range of territory. Heren lies an opportunity which should not be neglected by Michigan farmers who grow live stock as a side issue. No animal pays its producer so well as one which is well fed and cared for from the beginning of its life until it reaches a marketable maturity, and every young animal produced upon the farm, whether it be a calf, a pig or a lamb, should be fed and cared for so that it will make a maximum growth from the start, since these animals are bound to bring a better price during the coming year than has prevailed for many seasons, and if grown mainly upon home-grown feeds will make this department of the farm production more profitable than has heretofore been the case.

While a scrub animal never pays for the feed it consumes, a good animal never pays so well for the feed and care expended upon it as it does under just such conditions as now prevail, and the farmers of Michigan and contiguous states can do themselves a good turn by giving increased attention to this branch of production, and at the same time to some extent aid in overcoming the shortage of meat animals which seems certain to obtain even under the best of conditions during the coming year, if not for several years.

HAPPENINGS OF THE WEEK.

National.

A gasoline explosion caused a fire at Brown City, Mich., which resulted in one person being killed and the injury of three others. An attempt was made to fill the tank of a coffee urn in a restaurant while the first was lighted, the explosion following.

Former Congressman William Watson, of Maryland, died of apoplexy Sunday. He was 62 years old.

Because of alleged insubordination, two privates were shot by a sergeant who is in charge of Yellowstone Park. They were located at a point 70 miles from Cody, Wyo., which is cut off from the outside world from November till June each year.

The action of the government against the sugar trust who was charged with the violation of the Sherman anti-trust law in restraining trade, resulted in a disagreement by the jury after 13 hours of deliberation. One man held out for the guilt of the defendants.

A tentative agreement has been reached by the miners and operators of the bituminous mines of the country which gives to the miners a five cent advance per ton. The anthracite miners and owners have failed to get together, although the representatives have agreed to hold another conference at which time it is anticipated that a settlement will be made, due largely to the moral influence of the adjustment of the bituminous dispute. The anthracite miners quit Monday and will suspend work until the representatives to the controversy agree. The soft coal workers may suspend work for a few days also.

Mayor Hinton, of Paris, Tennessee, has been indicted by a grand jury of receiving a bribe to influence an election. A bench warrant has been issued and served on the mayor.

Robert Taylor, senior United States senator from Tennessee, and known all over the south as "Fiddling Bob," died from the shock of an operation performed last Thursday. He was 62 years old.

Rivers all over Michigan are rising to unusual heights from the melting of the heavy snows. Much trouble is anticipated in cities and towns along the streams where proper protection is not provided.

The federal supreme court is now considering the state railroad rate cases. Should the court find the state statutes conflicting with the jurisdiction of the federal constitution the rate laws of many of the states will become void.

Last week primaries were held in New York state for selecting delegates to the republican national convention. The primaries, however, do not authorize the in-

(Continued on page 421).

Magazine Section

LITERATURE
POETRY
HISTORY and
INFORMATION

MICHIGAN FARMER
AND *LIVE STOCK* JOURNAL
PUBLISHED WEEKLY
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The FARM BOY
and GIRL
SCIENTIFIC and
MECHANICAL

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

AN EASTER STORY AMONG THE LILIES BY DAISY W. FIELD

"He hath burst Death's bonds asunder,
He hath triumphed o'er the grave!"

The jubilant young voice rang out in the gladness of the Resurrection, and the hallowed atmosphere of the time-stained old church seemed thrilled through and through with the glorious, vibrant melody. The beautiful young singer stood before the congregation, a calm, holy light in her great, gray eyes, a shaft of golden sunlight falling upon the bright tendrils of hair curling gracefully against the creamy, sweeping plume of her big white hat. Against the background of snowy Easter lilies and rich foliage, in her white serge gown, she seemed more, like an angel descended to earth for the occasion, than one of the inhabitants of this sordid world.

If a white-robed ghost had emerged from one of the vaults in the old burying ground, or risen from under the well-worn floor of the church and volunteered to sing that beautiful Easter morning, no greater amazement or consternation could have been depicted upon the faces of the older members of the congregation.

Deacon Potts looked aghast at Deacon Primmer; little Miss Truitt half rose in her seat, with an audible exclamation, and fell back pale and gasping, while everybody in the church glanced toward the high-backed pew where little old Dr. Darley was trembling excitedly. The Doctor's face became as white as his immaculate shirt-front, and the hymn-book he had been glancing through aimlessly, according to his custom, fell at his feet. He tried to look away out of the window, but, as if fascinated, like everyone else, by the apparition that had appeared this day before the eyes, his glance would return repeatedly to the slim, white figure among the lilies.

"It is Tempest—it must be!" he kept murmuring, while he trembled like an aspen leaf. "No—no—'tisn't, of course. How could I forget? Hasn't it been twenty years since she stood there, like that one, her clear, pure voice rising in that same song, that very expression on her rapt face? And isn't she sleeping the long sleep of the dead and the repentant, in the church-yard out yonder? I am an old fool—Why, how everybody's staring, first at this young stranger, then at me! Can it be—do they think—O, my God, if it should be—her child?"

At this thought, fraught both with bliss and anguish, the old man leaned forward upon the pew in front of him and remained there throughout the remainder of the service, which passed like a dream to those of the congregation who were old enough to remember clearly the tragedy of twenty years ago and which had left the old Doctor so utterly alone in the world. When the strange young girl who had sung the Easter solo arose to go, dozens of pairs of eyes followed her curiously. No one took any heed of the heavily veiled, black-robed woman, who passed out with her. The moment the pair were out of hearing, a subdued murmur filled the sacred edifice.

"Did you ever?" gasped Sister Trollop, hanging frantically to Trollop's coat-tails, as he edged his way to the center of the crowd. "If Tempest Darley herself had rose right out of the church-yard and walked in and sung that song, I couldn't a-been any nearer faintin'!"

"An' 'twasn't jest the looks," Deacon Primmer put in, at her side. "No human voice ever sounded so much like another. You could a-knocked me senseless with a feather."

"I nearly screamed out 'Tempest,' it was so much like her," little Miss Truitt supplemented. "I'm all of a-tremble yet."

"Wonder what the Doctor himself did think?" slyly muttered Mrs. Callam, peering over the heads of the rest to watch the old man make his tottering way toward the door, oblivious to his surroundings. She was a lean, raw-boned, hun-

gry-for-gossip looking woman, and her looks did not belie her unpleasant nature. "He's white as a sheet, and he's skippin' out. No wonder. He drove the poor young thing to her death. Naterally, he don't like the idee o' bein' hanted, an' in public, too. If that is her child, come back to shame him, it's no more'n poetic justice—just retribution." There are always those who find some reason to rejoice in the sorrow and downfall of others, people with a lust for scandal, ghouls who feast upon those who have fallen by the wayside.

The Doctor, still with that far-away, uncomprehending look in his faded eyes, made his way home to the little, shabby cottage which was all that was left to him, where he lived alone in his old age. Inside, he dropped into a rockingchair before his worn hearth and rocked to and fro violently as if his body were keeping pace with his thoughts as they trav-

eled the old familiar road back to the day when Tempest, his beautiful, angelic, only daughter, had sung the Easter solo, standing just where she had stood today—the young stranger who had volunteered to sing in the place of Miss Hynes, who had been suddenly taken ill, just before the service, too late to obtain a substitute. That was the last time her wonderful voice had ever been heard in the old church, the voice that attracted strangers for miles around, and even from the nearby city. That night Tempest Darley had disappeared with her lover.

The Doctor knew that he alone had been to blame for his daughter's flight, and therefore, for the whole train of ills that had no doubt befallen her afterwards—even for the loss of her immortal soul; for might he not have prevented it all by a single word. Might he not have seen her a contented village wife and mother, the comfort of his old age, had

he so willed? Instead of that, he had allowed her to fall to the lowest depths. Her pitiful death, her repentance, had wiped the stains from her soul! Would that they could wipe out the blots of his own past, the memories that haunted him like frightful spectres!

She had fallen in love with a young teacher of vocal music, who had come into the village, and who had been employed to train her voice, which gave wonderful promise. But the Doctor had little use for musicians and artists, "wandering Bohemians," he called them, scornfully, and had picked out a thrifty, practical, well-to-do young man of the neighborhood for his future son-in-law. When the young man of her choice approached him and asked him for his daughter's hand in marriage, he had willfully insulted him, and bade him begone, and never even speak to Tempest again, for the latter would soon be the

but this assurance was denied him. He spent much time and money in a search for the runaways, after his anger had vanished, but to no avail. He finally felt himself forced to the cruel conclusion of the rest of the villagers, that the musician had been like other men of the world, who set their hearts upon some village maiden, no better and no worse, and that, having coaxed her to flee with him, had subsequently deserted her. And so she had been ashamed to send any word home, preferring to suffer in silence, her innocence wrecked, her Darley pride broken and trailed in the dust. In this belief, his frail little wife had at last been forced to acquiesce, much against her will; and the doubt of her daughter's fate, coupled with the separation from her only child, drove her to the grave! Doctor Darley lived on alone, but for a few trusty old servants, in his lonely mansion, the Elms.

Thus ten years passed. Then the Doctor visited a distant watering place, for his health was slowly failing, and he had been advised to recuperate in some different climate. When he returned, some months later, he brought with him the body of a woman, in a costly casket, and had her laid away in the family vault, with appropriate, but very quiet, ceremonies. He had heard, as he was about to leave the place, that a woman was dying in the room above the one which he had occupied in the hotel. Moved by pity, he had answered the hasty summons to her death-bed, little dreaming of the revelation that was in store for him.

During her wild and fevered ravings, she mentioned, over and over again, a father whom she had disobeyed, begging his forgiveness, and assuring him that she had suffered for her sin—nay, that she was dying to expiate it. Her long golden hair, floating over her pillow and veiling her wasted form, reminded the doctor constantly of the sunny head that once made his home happy and her eyes were of the same dark shade of gray. But there was little resemblance in those drawn and colorless cheeks and sorrowful, drooping lips, to those of bright, blooming Tempest Darley. So it fell with all the force of a physical blow upon the old man, when an empty envelope was found among her scant possessions, after her death, addressed to "Dr. David Darley, The Elms, Wayne, N. H."

There was no enclosure in the envelope. If there had been it had been taken out, and there were no other marks upon her possessions or her clothing, to add further proof of her identity. But the Doctor never doubted that he had found his child—too late to do aught but lay her by her mother's side. And the only consolation he had was the mournful one of visiting her last resting place, and believing that at last the mother was reunited with her child. Heavy upon his conscience lay the awful burden of two deaths—the deaths of the two who had loved him, and whom he had loved!

Under this fearful thought, his health grew steadily worse, and as misfortunes rarely come singly, he met with business reverses that swept away his once comfortable fortune. Little by little his broad acres were disposed of, and at last his stately home, the Elms, was sold to satisfy his clamoring creditors. A younger doctor came into the village, fitted up an elegant office across the street from Doctor Darley's shabby rooms, and slowly but surely the latter saw his once lucrative practice passing over to the stranger. For a year or two past, he had been living upon a mere pittance, scarcely able to pay the rent of his shabby cottage, keep food in the cupboard, and fire upon the hearth.

Suddenly, the Doctor, who had been lost in this sad retrospection, started from his chair with a wild cry—half horror,



Grandma's "Easter Lilies."

eled the old familiar road back to the day when Tempest, his beautiful, angelic, only daughter, had sung the Easter solo, standing just where she had stood today—the young stranger who had volunteered to sing in the place of Miss Hynes, who had been suddenly taken ill, just before the service, too late to obtain a substitute. That was the last time her wonderful voice had ever been heard in the old church, the voice that attracted strangers for miles around, and even from the nearby city. That night Tempest Darley had disappeared with her lover.

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bride of another—a man—not a dreamer, a dawdler, as the worthy doctor chose to fancy one whose interests lay in a different direction from his own. Tempest had added her pleadings to those of her lover. In the stormy scene that followed, she had turned from her father, white with indignation and determination—for every Darley boasted of an unconquerable will—and that had been their last meeting. The young girl sang her part in church the next day, and then dropped from sight, accompanied by the man who had meant to make her his wife, before God and man.

For more than the proverbial nine days, people wondered and gossiped, gossiped, and wondered. No notice of their marriage ever reached the anxious and now-repentant father. He would have given all he possessed to know that all was well with his child, that he would again be permitted to look upon her dear face;

The Michigan Farmer

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Net Results of the Special Sessions.

The net results of the two special legislative sessions called by Governor Osborn, so far as important legislative enactments are concerned, are embraced in the passage of the workingman's compensation act and the submission of a constitutional amendment providing for equal suffrage in Michigan. The workingman's compensation act, which was passed during the first special session, is the bill drafted by the special commission of inquiry on this subject, and provides a definite compensation for various injuries which may be suffered by an employe against which the common law defense of contributory negligence of fellow employes is barred. This law is in line with similar steps taken by the federal government in connection with interstate commerce and by many states as well as progressive foreign countries. This bill was passed without any serious opposition, either on the part of employers or laborers, with the exception of certain Detroit labor interests.

The other most important action taken by the legislature at its second special session, was the submission of the constitutional amendment, providing for equal suffrage, which will be voted upon at the regular November election this year. The movement for the submission of such amendment was started by the ladies of the state who engaged in an organized effort to this end, who have acknowledged that their success was largely due to the aid of the representatives of the labor organizations, the State Grange and the State Association of Farmers' Clubs. Both of the farmers' organizations above mentioned have repeatedly expressed themselves in favor of equal suffrage, and their members will doubtless be pleased to have an opportunity to vote upon this

question at the coming November election.

The fate of the presidential preference primary bill in the second session was the same as that in the first, which was commented upon in a recent issue, the important legislative action noted above being practically the sole net result of the special sessions, except the expenditure occasioned by them. This is quite as much, however, as is usually accomplished at the special legislative sessions which have been held in Michigan. An example of what might be accomplished at a special session, provided the matter were approached in the right way, was afforded by the recent action of the Illinois legislature which was called by Governor Deenen for the purpose of acting upon the presidential primary bill in that state. Before calling the session, however, the Governor communicated with the members of the legislature, to determine whether the necessary two-thirds would support such a bill, and having ascertained that they would, they were called together on Tuesday and had an official copy of the bill before the Governor on Saturday of the same week. Apparently a little co-operation between the executive and legislative departments of the state produced better results than the method usually employed in controversies of this kind.

The High Cost of Living.

The discussion of the cause of the high cost of living, which has received so much attention from so many sources in recent months, has been beneficial in disabusing the public mind, to some degree at least, of the impression that the farmers of the country are getting more than their legitimate profit in the production of staple food-stuffs. It is true that in some quarters this fact is not so well appreciated as it should be, and there are not a few among even the substantial business men of our cities who have not recognized this fact.

The better prices which farmers have been receiving for their produce in recent years has made the agricultural industry a more attractive one and is accomplishing what no sentimental "back to the land" movement could accomplish through its influence. In order to stop the tendency which has been manifested in recent years by country people to go to the cities in increasing numbers, and to turn the tide in the other direction, agriculture must become generally recognized to be as profitable as other industries with the expenditure of the same energy and ability. While it may not yet have reached that plane in comparison with some industries, yet it has in comparison with many, and there are notable examples of men who have been successful in other lines who are now turning to agriculture as a more congenial occupation and a more comfortable settlement for their old age.

Most of these have recognized the fact that as good opportunities exist in Michigan as in any section of the country, or of the world. A gentleman who has recently traveled around the world, traversing its best agricultural sections, recently stated that Michigan still looked good to him and that he intended to locate in the state permanently. There are a few among our substantial Michigan farmers who leave the state seeking a more congenial climate or larger opportunities, quite a proportion of whom return disappointed in their search.

The high cost of living affects the Michigan farmer as little as any man in the world for the reason that our diversified agriculture enables him to produce an abundance for his table, and at the same time gives him a wide range of choice in the products which he may grow, thus enabling him to follow the bent of his own inclinations to a greater degree than almost any other man. Let us appreciate the possibilities of Michigan agriculture more, put a larger amount of energy into our business and give our state the name which it merits, of being the best agricultural state in the Union.

The Country's Meat Supply.

Doubtless many people among city consumers will attribute the increased cost of meat and meat products to the failure of the government to convict the packers of conspiracy to raise prices. There is no doubt, however, but that the present scarcity of both grain and forage throughout the country will further reduce an already depleted supply of meat animals in this country. The census for 1910 shows that we have about ten per cent less cattle than in 1900, while the

population has in the meantime increased about 20 per cent.

The economic conditions surrounding the sheep industry have tended to decrease the number of sheep upon American farms and the scarcity and high price of corn will without question greatly reduce the number of hogs maintained upon American farms during the coming year. This scarcity is beginning to be felt keenly all along the line, and there is no prospect of relief in the near future.

Repeated failures of clover seedings throughout wide sections of the country, due to untimely drouths, makes it comparatively certain that we cannot have a normal hay crop in the country the coming year. This will, of course, be largely offset by an increased production of corn and small grain in many sections, and the efforts of farmers throughout the country to avoid a similar shortage in home-grown feeds next winter will tend to make both grain and forage cheaper.

But this will not relieve the shortage of marketable meat animals since feeders of all classes of stock will be scarce throughout the coming year, owing to the necessity of marketing them prematurely, which has been felt by farmers over so wide a range of territory. Herein lies an opportunity which should not be neglected by Michigan farmers who grow live stock as a side issue. No animal pays its producer so well as one which is well fed and cared for from the beginning of its life until it reaches a marketable maturity, and every young animal produced upon the farm, whether it be a calf, a pig or a lamb, should be fed and cared for so that it will make a maximum growth from the start, since these animals are bound to bring a better price during the coming year than has prevailed for many seasons, and if grown mainly upon home-grown feeds will make this department of the farm production more profitable than has heretofore been the case.

While a scrub animal never pays for the feed it consumes, a good animal never pays so well for the feed and care expended upon it as it does under just such conditions as now prevail, and the farmers of Michigan and contiguous states can do themselves a good turn by giving increased attention to this branch of production, and at the same time to some extent aid in overcoming the shortage of meat animals which seems certain to obtain even under the best of conditions during the coming year, if not for several years.

HAPPENINGS OF THE WEEK.

National.

A gasoline explosion caused a fire at Brown City, Mich., which resulted in one person being killed and the injury of three others. An attempt was made to fill the tank of a coffee urn in a restaurant while the first was lighted, the explosion following.

Former Congressman William Watson, of Maryland, died of apoplexy Sunday. He was 62 years old.

Because of alleged insubordination, two privates were shot by a sergeant who is in charge of Yellowstone Park. They were located at a point 70 miles from Cody, Wyo., which is cut off from the outside world from November till June each year.

The action of the government against the sugar trust who was charged with the violation of the Sherman anti-trust law in restraining trade, resulted in a disagreement by the jury after 13 hours of deliberation. One man held out for the guilt of the defendants.

A tentative agreement has been reached by the miners and operators of the bituminous mines of the country which gives to the miners a five cent advance per ton. The anthracite miners and owners have failed to get together, although the representatives have agreed to hold another conference at which time it is anticipated that a settlement will be made, due largely to the moral influence of the adjustment of the bituminous dispute. The anthracite miners quit Monday and will suspend work until the representatives to the controversy agree. The soft coal workers may suspend work for a few days also.

Mayor Hinton, of Paris, Tennessee, has been indicted by a grand jury of receiving a bribe to influence an election. A bench warrant has been issued and served on the mayor.

Robert Taylor, senior United States senator from Tennessee, and known all over the south as "Fiddling Bob," died from the shock of an operation performed last Thursday. He was 62 years old.

Rivers all over Michigan are rising to unusual heights from the melting of the heavy snows. Much trouble is anticipated in cities and towns along the streams where proper protection is not provided. The federal supreme court is now considering the state railroad rate cases. Should the court find the state statutes conflicting with the jurisdiction of the federal constitution the rate laws of many of the states will become void.

Last week primaries were held in New York state for selecting delegates to the republican national convention. The primaries, however, do not authorize the in-

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Magazine Section

LITERATURE
POETRY
HISTORY and
INFORMATION

MICHIGAN FARMER
AND LIVE STOCK JOURNAL
PUBLISHED WEEKLY
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The FARM BOY
and GIRL
SCIENTIFIC and
MECHANICAL

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

AN EASTER STORY AMONG THE LILIES BY DAISY W. FIELD

"He hath burst Death's bonds asunder,
He hath triumphed o'er the grave!"

The jubilant young voice rang out in the gladness of the Resurrection, and the hallowed atmosphere of the time-stained old church seemed thrilled through and through with the glorious, vibrant melody. The beautiful young singer stood before the congregation, a calm, holy light in her great, gray eyes, a shaft of golden sunlight falling upon the bright tendrils of hair curling gracefully against the creamy, sweeping plume of her big white hat. Against the background of snowy Easter lilies and rich foliage, in her white serge gown, she seemed more, like an angel descended to earth for the occasion, than one of the inhabitants of this sordid world.

If a white-robed ghost had emerged from one of the vaults in the old burying ground, or risen from under the well-worn floor of the church and volunteered to sing that beautiful Easter morning, no greater amazement or consternation could have been depicted upon the faces of the older members of the congregation.

Deacon Potts looked aghast at Deacon Primmer; little Miss Truitt half rose in her seat, with an audible exclamation, and fell back pale and gasping, while everybody in the church glanced toward the high-backed pew where little old Dr. Darley was trembling excitedly. The Doctor's face became as white as his immaculate shirt-front, and the hymn-book he had been glancing through aimlessly, according to his custom, fell at his feet. He tried to look away out of the window, but, as if fascinated, like everyone else, by the apparition that had appeared this day before the eyes, his glance would return repeatedly to the slim, white figure among the lilies.

"It is Tempest—it must be!" he kept murmuring, while he trembled like an aspen leaf. "No—no—'t isn't, of course. How could I forget? Hasn't it been twenty years since she stood there, like that one, her clear, pure voice rising in that same song, that very expression on her rapt face? And isn't she sleeping the long sleep of the dead and the repentant, in the church-yard out yonder? I am an old fool—Why, how everybody's staring, first at this young stranger, then at me! Can it be—do they think—O, my God, if it should be—her child?"

At this thought, fraught both with bliss and anguish, the old man leaned forward upon the pew in front of him and remained there throughout the remainder of the service, which passed like a dream to those of the congregation who were old enough to remember clearly the tragedy of twenty years ago and which had left the old Doctor so utterly alone in the world. When the strange young girl who had sung the Easter solo arose to go, dozens of pairs of eyes followed her curiously. No one took any heed of the heavily veiled, black-robed woman, who passed out with her. The moment the pair were out of hearing, a subdued murmur filled the sacred edifice.

"Did you ever?" gasped Sister Trollop, hanging frantically to Trollop's coat-tails, as he edged his way to the center of the crowd. "If Tempest Darley herself had rose right out of the church-yard and walked in and sung that song, I couldn't a-been any nearer faintin'!"

"An' 'twasn't jest the looks," Deacon Primmer put in, at her side. "No human voice ever sounded so much like another. You could a-knocked me senseless with a feather."

"I nearly screamed out 'Tempest,' it was so much like her," little Miss Truitt supplemented. "I'm all of a-tremble yet."

"Wonder what the Doctor himself did think?" slyly muttered Mrs. Callam, peering over the heads of the rest to watch the old man make his tottering way toward the door, oblivious to his surroundings. She was a lean, raw-boned, hun-

gry-for-gossip looking woman, and her looks did not belie her unpleasant nature. "He's white as a sheet, and he's skippin' out. No wonder. He drove the poor young thing to her death. Naterally, he don't like the idee o' bein' hanted, an' in public, too. If that is her child, come back to shame him, it's no more'n poetic justice—just retribution." There are always those who find some reason to rejoice in the sorrow and downfall of others, people with a lust for scandal, ghouls who feast upon those who have fallen by the wayside.

The Doctor, still with that far-away, uncomprehending look in his faded eyes, made his way home to the little, shabby cottage which was all that was left to him, where he lived alone in his old age. Inside, he dropped into a rockingchair before his worn hearth and rocked to and fro violently as if his body were keeping pace with his thoughts as they trav-

eled so willed? Instead of that, he had allowed her to fall to the lowest depths. Her pitiful death, her repentance, had wiped the stains from her soul! Would that they could wipe out the blots of his own past, the memories that haunted him like frightful spectres!

She had fallen in love with a young teacher of vocal music, who had come into the village, and who had been employed to train her voice, which gave wonderful promise. But the Doctor had little use for musicians and artists, "wandering Bohemians," he called them, scornfully, and had picked out a thrifty practical, well-to-do young man of the neighborhood for his future son-in-law. When the young man of her choice approached him and asked him for his daughter's hand in marriage, he had willfully insulted him, and bade him begone, and never even speak to Tempest again, for the latter would soon be the

but this assurance was denied him. He spent much time and money in a search for the runaways, after his anger had vanished, but to no avail. He finally felt himself forced to the cruel conclusion of the rest of the villagers, that the musician had been like other men of the world, who set their hearts upon some village maiden, no better and no worse, and that, having coaxed her to flee with him, had subsequently deserted her. And so she had been ashamed to send any word home, preferring to suffer in silence, her innocence wrecked, her Darley pride broken and trailed in the dust. In this belief, his frail little wife had at last been forced to acquiesce, much against her will; and the doubt of her daughter's fate, coupled with the separation from her only child, drove her to the grave! Doctor Darley lived on alone, but for a few trusty old servants, in his lonely mansion, the Elms.

Thus ten years passed. Then the Doctor visited a distant watering place, for his health was slowly failing, and he had been advised to recuperate in some different climate. When he returned, some months later, he brought with him the body of a woman, in a costly casket, and had her laid away in the family vault, with appropriate, but very quiet, ceremonies. He had heard, as he was about to leave the place, that a woman was dying in the room above the one which he had occupied in the hotel. Moved by pity, he had answered the hasty summons to her death-bed, little dreaming of the revelation that was in store for him.

During her wild and fevered ravings, she mentioned, over and over again, a father whom she had disobeyed, begging his forgiveness, and assuring him that she had suffered for her sin—nay, that she was dying to expiate it. Her long golden hair, floating over her pillow and veiling her wasted form, reminded the doctor constantly of the sunny head that once made his home happy and her eyes were of the same dark shade of gray. But there was little resemblance in those drawn and colorless cheeks and sorrowful, drooping lips, to those of bright, blooming Tempest Darley. So it fell with all the force of a physical blow upon the old man, when an empty envelope was found among her scant possessions, after her death, addressed to "Dr. David Darley, The Elms, Wayne, N. H."

There was no enclosure in the envelope. If there had been it had been taken out, and there were no other marks upon her possessions or her clothing, to add further proof of her identity. But the Doctor never doubted that he had found his child—too late to do aught but lay her by her mother's side. And the only consolation he had was the mournful one of visiting her last resting place, and believing that at last the mother was reunited with her child. Heavy upon his conscience lay the awful burden of two deaths—the deaths of the two who had loved him, and whom he had loved!

Under this fearful thought, his health grew steadily worse, and as misfortune rarely comes singly, he met with business reverses that swept away his once comfortable fortune. Little by little his broad acres were disposed of, and at last his stately home, the Elms, was sold to satisfy his clamoring creditors. A younger doctor came into the village, fitted up an elegant office across the street from Doctor Darley's shabby rooms, and slowly but surely the latter saw his once lucrative practice passing over to the stranger. For a year or two past, he had been living upon a mere pittance, scarcely able to pay the rent of his shabby cottage, keep food in the cupboard, and fire upon the hearth.

Suddenly, the Doctor, who had been lost in this sad retrospection, started from his chair with a wild cry—half horror,



Grandma's "Easter Lilies."

eled the old familiar road back to the day when Tempest, his beautiful, angelic, only daughter, had sung the Easter solo, standing just where she had stood today—the young stranger who had volunteered to sing in the place of Miss Hynes, who had been suddenly taken ill, just before the service, too late to obtain a substitute. That was the last time her wonderful voice had ever been heard in the old church, the voice that attracted strangers for miles around, and even from the nearby city. That night Tempest Darley had disappeared with her lover.

The Doctor knew that he alone had been to blame for his daughter's flight, and therefore, for the whole train of ills that had no doubt befallen her afterwards—even for the loss of her immortal soul; for might he not have prevented it all by a single word. Might he not have seen her a contented village wife and mother, the comfort of his old age, had

bride of another—a man—not a dreamer, a dawdler, as the worthy doctor chose to fancy one whose interests lay in a different direction from his own. Tempest had added her pleadings to those of her lover. In the stormy scene that followed, she had turned from her father, white with indignation and determination—for every Darley boasted of an unconquerable will—and that had been their last meeting. The young girl sang her part in church the next day, and then dropped from sight, accompanied by the man who had meant to make her his wife, before God and man.

For more than the proverbial nine days, people wondered and gossiped, gossiped, and wondered. No notice of their marriage ever reached the anxious and now-repentant father. He would have given all he possessed to know that all was well with his child, that he would again be permitted to look upon her dear face;

half ecstasy. For Tempest Darley's face had been pressed against the window pane at his elbow—not the pale face of the dying Magdalen, but the fresh, sweet countenance of the innocent girl whom he had driven from her rightful home, twenty years before! The next moment, the door opened gently, and the vision stood there, framed by the warm spring sunshine, as in a flood of gold.

"Tempest!" moaned the old man, trembling, hesitating. "Tempest, my child!"

"No, not Tempest—but her daughter!" answered a clear, musical voice, the voice of the young singer, as the vision stepped close to his side. "Grandfather, have you no welcome for me?"

He staggered as if he would fall, but the next moment her warm, young hands were clasped in his own, and his tears rained upon her sweet face. "God has forgiven me!" he whispered. "God has forgiven me, or he would never have permitted me this bliss!"

Then an awful fear, a wild suspicion, nurtured through all these years, crept into his heart. He could not forbear the question:

"Your father?"

"Is dead," answered the young girl, gently. "Died last year, and then my mother decided to carry out her long-cherished ambition to seek her old home and father again."

"What! Is she alive—my child, my Tempest? Impossible," he added, shaking his head, "she is dead—buried beside her poor mother."

"No grandfather, I have learned about the strange mistake you made. It was not your Tempest whom you buried, but a stranger. She had been a friend of my mother's, and to her had been entrusted a letter from mother to you. But she had failed to send it, for reasons of her own, and the empty envelope was found with her."

"My mother had desired to write to you, when her indignation died away, but father would not permit it. He declared himself as proud as any Darley, and since you had insulted him, he would not allow his wife to humiliate herself before you. I know, grandfather, how very wrong he was in this matter, because you were her father, and one should never

hesitate to ask the forgiveness of a parent. But my father was a proud man, and he never gave in. Once mother wrote to grandmother, but the letter must have been lost, for there was no answer. Then growing hungry for your love again, she entrusted a message to her whom you buried in mistake for your lost child. But the latter, who had posed as a friend of mother's, proved in reality to have been an enemy, and failed in her mission. I do not lay the blame on her willingly, because she is dead and can not defend herself, but I must explain away all that I can to you, else you will scarcely believe that your own child lives, and longs for you. Come grandfather," and taking him by the hand, she led him out into the sunshine, that he for the first time noticed was so bright and warm and inviting.

Down the street she led him, and turned a corner, in a direction which his feet had not trodden for many weary months. Presently they stood before a great gate that swung open to admit them to the beautiful grounds of a stately mansion, whose blinds were up, whose doors stood open, whose walks were swept and borders trimmed, as if the lonely rooms within again boasted occupants who loved the old place, even as the old man had loved it in days gone by.

"Where—where are you taking me, child?" murmured the old man, pausing for a moment on the loved and well-remembered path, as his dim eyes sought the clear gray ones that were like wells of truth.

"Home, grandfather," she answered, "to the Elms, henceforth again your home, with me and the other Tempest, who is waiting for you with outstretched arms. Look, do you not see her yonder, in the open door?"

Ah, were his old eyes deceiving him, or was it indeed one who had miraculously risen from the dead, on this beautiful Easter day?

"Father!" There was no longer any doubt. It was her voice. With a cry of rapture, the old man rushed forward.

While coming more slowly up the walk behind him, a young girl, with eyes like holy wells of truth, sang softly to herself—

"He hath burst Death's bonds asunder,
He hath triumphed o'er the grave!"

A VERNAL THANKSGIVING.

BY VAN R. W. HORTON.

Lo, Nature, laughing, breaks away
From Winter's icy grip!
Let's celebrate the longed-for day
With happy heart and lip!

Thanksgiving for the birds' return!
The rainbow and the showers!
And vernal suns that glow and burn
With life-restoring powers!

For song, and bloom, and breath of spring,
And tokens manifold
Of favor from the Gracious King
By whom the earth was bowled!

Propitious heaven is smiling near;
Below the ether blue,
The Hand that made the world is here,
Creating it anew.

And sod, and tree, and plant, are rife
With resurrection power
That intimates immortal life
For every human flower.

Under the snow, safe-coffined, lies
A humble creeping form,
And, lo! Its Maker bids it rise—
'Tis winged and not a worm!

Shall dormant chrysalids disclose
A wondrous care and plan
To keep them safe through winter's
snows,
But no one care for man?

And trees resume their leaves and bloom,
After the winter's frost,
But never spring return to bring
What withered man has lost?

Enrapt we hear the melodies
That thrill the robins' throats,
The blackbirds' trilling in the trees,
The bluebirds' mellow notes;

Our blood leaps with unwonted force
Through artery and vein,
Scatters new life along its course,
And we are young again!

Our snows are melting, and we feel
The coming of a spring,
Age's infirmities to heal,
And youth immortal bring.

While Nature swells her joyful noise,
Let mortals shout, and sing—
Thanksgiving for our present joys,
And for the coming Spring!

felt the horses turning into the gateway, and the next moment I saw the welcome light, always left burning, shining brightly through the uncurtained kitchen windows. Without stopping to fasten the horses, I caught the child up in my arms, ran into the kitchen, and laid the body down on the lounge. As I did this I caught sight of the child's face.

It was little Joey, Belle Murdock's crippled brother!

What did it mean? How came he, an almost helpless cripple, alone some two miles from his home on this stormy night? What devilment had been going on at Red Murdock's? I glanced at the clock. It was fifteen minutes after two—Sunday morning!

Joey was not dead. I could see him breathing. His left arm hung limply over the side of the lounge. I caught hold of it. It was broken. Doubtless the horse had stepped on it, and the poor little fellow had fainted from pain and fright. He must have help at once; and I rushed from the kitchen to summon Mary Jane and Jake.

A few minutes later Mary Jane, half-dressed, her nightcap still on her head, and her form all a-tremble with excitement, hurried into the kitchen. The moment she caught sight of me bending over the little body on the lounge, she threw up both her hands.

"Heavens an' earth! John Delvin what has happened?" she exclaimed. "You ain't got a whole piece of cloth on you!—Mercy on us! You are all bloody as a butchered hog!" and she made a dive for me across the room and seized hold of my arm. "John Delvin I—!" Here she caught sight of the form on the lounge. "Heavens an' earth! It's little Joey! Mercy on us! What has happened?" and straightway the kindly old soul was bending over the child, her amazement and fear all swallowed up in her sympathy and anxiety for the little sufferer.

Jake now entered the kitchen and stood blinking and staring at my torn clothes and bloody face, mute but vivid reminders of that desperate struggle in the lonely old negro cabin. Mary Jane caught sight of him.

"Land of goodness! Can't you see that the child is most dead? Quick, a pail of fresh water. Quick! Don't stand there a blinkin' like a demented lunatic," she called to him.

Jake glanced at the white face on the lounge and made a rush for the well.

"Th' poor little dear, he ain't got a dry dud on! Just help me get these clothes off an' somethin' dry on. He—mercy, his arm is broken!" and Mary Jane glared at me indignantly, as if I were to blame for the broken arm. "John Delvin, I knowed sometin' dreadful was a-goin' to happen when I dropped th' salt-cellar this mornin', an' th' salt went all over my left foot—murder, or sudden death, or—what's he clutchin' in his hand?" and she held up Joey's right hand.

The little fingers were closed tightly over a crumpled piece of white paper. I quickly caught hold of the hand, and, gently forcing the fingers open, seized the paper. It was soaked with rain and covered with mud. Very carefully I spread out the paper on the kitchen table, smoothed out the folds, and read, scrawled with a lead pencil, this message:

Elsie Lamont:

Come to me the moment you get this. I've something dreadful to tell you before I die, something that concerns your happiness for life.

Belle Murdock.

How the blood jumped through my

veins when I read those words! And hope again sang joyously in my heart; for I saw in them the acquittal of my wrongly-condemned love, the stopping of that unholy marriage, and—and over and above and beyond all the vision of Elsie's face and Elsie's eyes once again looking love into mine—But, Belle Murdock might be dying! might be dead! God alone knew how long little Joey had lain out there in the storm! I sprang from the table in a frenzy of excitement. The note must go to Elsie Lamont at once. At that moment the hired man came into the kitchen with the fresh pail of water.

"Jake! Jake!" I shouted, springing toward him as if I had suddenly gone insane. "Jake, take this note to Elsie Lamont as quickly as horses will take you! Tell her that I found little Joey insensible in the middle of the road with it tightly clutched in his hand. Tell her that time is very precious, that Belle Murdock might die at any moment—For God's sake get her there as quickly as you can, Jake! Tell her that you will take her at once to Belle Murdock. Go! Go!" and I caught the astonished man by the shoulders and fairly forced him outdoors. "The team is already hitched to the buggy. Go! Tell the doctor to come here at once. Little Joey is hurt. Go! For heaven's sake don't lose or tear it!" and I placed the wet note in his hand. "Go! Hurry!" and I gave him a final shove.

"Yes, sir! Yes, sir! I understand," and Jake, catching the fever of my desperate haste, ran to the barn, where the horses had stopped, jumped into the buggy and vanished, in a whirl of wheels and mud, into the darkness, now growing less every minute, for the storm had spent its fury and the sky was rapidly clearing.

I hurried back to the lounge. Mary Jane was cutting the shirt off Joey; and in a few minutes more he lay white and still, dressed in one of Teddy's nightgowns. How thin and pinched the little face looked! What a desperate battle his poor, weak, crippled frame must have fought alone with the darkness and the storm! Why had Belle Murdock chosen so helpless a messenger? How came she to get the opportunity to write the note and to dispatch Joey with it, without the doctor or the nurse knowing? What did the note mean? Could it be that at last Elsie was to know how greatly she had wronged me? What would she do? Would she—

I had forgotten little Joey, and was staring straight in front of me, when Mary Jane caught hold of my arm. "Look!" she cried joyfully. "He's comin' to!"

As I glanced down there came a wave of color into the white cheeks; and then, the eyes opened suddenly and looked up wonderingly into the kindly old face of Mary Jane, who was bending over them.

"Belle!—I—Oh—Th' letter!" and he tried to jump to his feet. "Th' letter, Belle's letter—I've got to take it to Elsie Lamont—Belle said I must take the letter to Elsie Lamont if it killed me. I've got to get it to Elsie Lamont!—Oh!" He suddenly raised his right hand and unclenched it. "I've lost th' letter. I've lost th' letter! an' Belle said she couldn't die happy if I didn't take it to Elsie Lamont! An' I tried, I did try to take it; but it got terribly dark, an' it rained an' thundered awful, an' I couldn't walk, an' I crawled, an' then my legs hurt, an' I couldn't move them, an'—an'—Oh, where is th' letter? I've lost it, an' Belle said I was th' only one in all th' world she

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THE BACHELOR UNCLE

BY EVERITT McNEIL.

I held my whip in my right hand. It had a heavy handle loaded with a rod of iron some three feet long. Gripping this handle tightly I slipped swiftly over the dashboard of the buggy, and, with my feet on the buggy tongue and my left hand on the back of one of the horses, I crept silently toward the man shouting at the horse's head. I could not see him, but I could hear him calling hoarsely somewhere near the head of the horse on my right. Quickly bracing myself against the body of the horse as best I could, I leaned forward, raised the heavy whip-stock, and then, pausing an instant to get the right direction, I struck with all my strength straight down through the darkness at the voice. I felt the heavy butt strike the man's head; the hoarse voice broke in the midst of a half-uttered word; and, by a momentary flash of lightning, I saw a white face falling backward.

The moment I was again back on the buggy seat, I bent forward and, gripping the lines tightly, urged the horses on. I heard two or three answering shouts from the darkness back of me; and then all was still, except the sounds of the storm and the chug-chug of my horses' feet in the thick mud of the road, nor did I again see or hear anything more of my assailants that night.

I do not understand how in the darkness and storm the horses managed to keep the right road. I know that I, before half an hour had gone, had lost all sense of direction, and was beginning to worry desperately over the fear that we were going the wrong way, when, to my great satisfaction, a flash of lightning, the first since I had struck the man at the horse's head, showed me the familiar outlines of an old stone barn that I knew was not more than two miles from home. I felt like shouting out my joy at this discovery. I would yet be in time to demand an accounting from Harry Rodney. I whipped up the horses and drove on as rapidly as possible, anxious to get quickly home where I could give a quiet hour or so to the consideration of the startling happenings of the day and to the planning of how I could best defeat Rodney without

making a public scandal of the affair. I did not wish to have the name of Elsie Lamont mixed up in a matter which, if made public, would keep the tongues of all the scandal mongers in the neighborhood busily wagging for many days.

Chapter XXV.—A Cry Out of the Darkness.

A little over half a mile from my home the road crosses a wooden bridge above a small stream of water. Perhaps it was five minutes after I had heard the wheels of the buggy passing over the planks of this bridge, when, from the darkness directly in front of the horses, came a child's cry of fear and pain, pitiful in its helpless agony; and then, before I could pull up the team, one of the horses shied, and again I heard the cry, coming from under the feet of the off horse and ending with an ominous suddenness. Both horses now stood perfectly still, as if they feared to raise a hoof in the darkness lest they should tread on what lay underneath them.

I do not think that anything ever gave me so dreadful a thrill of horror as did the cry of that little child, coming suddenly out of the darkness of the night, coming from under the very hoofs of my horses. For an instant I sat fairly gasping with astonishment and dread; and then, as I realized all that that cry meant, I jumped from the buggy in a frenzy of haste, and springing to the side of the horse, felt, while my heart almost stopped beating with the dread of what I should find, over the muddy ground. In a moment my hands came in contact with a wet little form, lying still and silent midway between the front and hind feet of one of the horses. As gently as possible I raised the child in my arms and laid the limp little body down on blankets in the bottom of the buggy. Then I seized the whip, and, regardless of the darkness, struck the horses a couple of sharp blows, only anxious to get home as quickly as possible.

Fortunately we were now within a short distance of the house, and I soon

AUNT BETTY, SUNSHINE MAKER.

BY GENEVA M. SEWELL.

"Day before Easter an' all of us knocked out with measles," groaned Tom Miner; "much use it'll be for Mother to cook anything for us; with this taste in my mouth I couldn't eat canary birds' tongues and taste 'em. Wow!"

"It's so dark in here you couldn't find your mouth if you wanted to eat," complained Timothy from his bed across the room, "I just know I could get up if they'd let me, an' it wouldn't hurt me neither."

"Oh, cut it out," growled Tom.

Just then "Ting-a-ling-a-ling," went a little bell across the hall.

"Hello," called Timothy.

"Hello!" was the answer, "Do you want some company?"

"You bet we do!" responded Timothy; "we're so cross if we touched we'd set fire to each other, or rather Tom is; I'm just—ahem—fussy."

"Forget it," snapped Tom.

"All right, we've got the remedy for both of you. Good-by."

There was a fussing and bustling across the hall in the girl's room and pretty soon the door opened and two shadowy figures appeared in the doorway.

"Hello, there, measles!" called Timothy.

"Measles yourself, and how do you like 'em," retorted Ruth, while Aunt Betty Moore, who was helping Mrs. Miner with the children through this measles time, deposited Daisy, whom she had carried in the big Morris chair and tucked her in carefully, then did the same for Ruth in the rocking chair. "We don't want any relapses," said she, "and if the measles are pretty well gone from the outside they are thick on the inside yet."

"If a bad taste is any sign, I'm one big measles inside," declared Tom.

"If it wasn't so bloom' dark in here we might play one of our new games an' make a fellow forget about measles for a while," complained Timothy.

"Oh, quit being a piker," growled Tom. You see he was pretty cross.

"Well, Timmy, suppose we play a game that we only need a light on the inside of our heads to play," interposed Aunt Betty.

"All right, fire away!"

"How's it played, Aunt Betty?" asked Ruth.

"By guessing things you have learned in your histories, readers and geographies. It is called 'The Thinking Game.'"

I'll give the first to show you how, and the one who guesses it may then give one."

"Sounds good," said Tom.

"I went into the yard, looked up and saw an Indian war; now guess."

"Looked up and saw an Indian war—Now what'd you see if you looked up—um—oh, yes—a hawk—oh, I know—Black Hawk's War," declared Tom.

"Right; now you make one."

"All right, I went into a butcher shop and bought a New York bay."

"Oyster," laughed Ruth. "Now I ate a plum and found a great English statesman."

"Huh—a plum—a plum—oh, I know—it's Pitt," guessed Timothy. "I went into a bookstore and bought a famous Quaker."

"I can guess that," said Daisy. "It's Penn. Now it's my turn, so I went into a grocery store and bought a cape."

"Gee, there's so many things in a grocery; let's see, coffee, tea, spice, sugar, huh—cape—cape," hesitated Tom.

"Cape Cod," guessed Ruth; "Is that right?"

"Yes."

"Huh, you beat me to it," said Tom.

"Well," began Ruth, "I went into a drug store and bought a battle of the Revolutionary war."

"That's dead easy, Brandywine," said Tom, promptly. "Now as you have opened the battles, so to speak, I'll give you a corker. I went into the barnyard and saw a battle of the Revolution."

"Wish I'd studied my battles better," lamented Timothy; "let's see—is it Bull-run?"

"That's in the Civil War, silly," said Ruth; "let's see, in the barnyard—oh, I know! Cowpens. That is a clever one Tommy. Now I went into the woods and found an ex-vice president who was tried for treason."

"Did you carry him home on your dress?" asked Daisy.

"Yes."

"Burr," shouted all three together.

"Let Daisy give one, she really guessed it first," said Aunt Betty.

"I've thought of a hard one. I went into the Bank of England and they gave me a country."

"Guinea," guessed Timothy, promptly.

"Well, I went into a hardware store and bought a battle of the Civil war."

"Oh, dear," sighed Ruth at last, "I give up; what is it?"

"Here, here, hold on," cried Tom.

OUR CHILDREN.

BY EFFIE HERENDEN.

Out from the hearthstone the children go,
Fair as the sunshine, pure as the snow.
They go with our blessing and prayer—
The Lord should be with them everywhere.

They so soon leave our brooding care,
So soon mount Youth's topmost stair.

Out from the hearthstone the children go,
The manly youths, and the maidens fair,
Some prove to us blessings rare,
Some fall into the tempter's snare.
Our love goes with them everywhere—
They cannot get beyond our prayer.

Out from the hearthstone the children go,
Our children, whom the Lord hath given,
Pure as the dew that falls from heaven,
Just in the springtime of life's joys.
Oh, if they only come back as they go—
Fair as the sunshine, pure as the snow.

"Don't be in such a rush; I'll have it in a minute—a hardware store—let's see, what do they sell there—stoves—nails—tools—knives—oh, I have it—forks—the battle of Five Forks. Say, I call that pretty clever, Tim, and I'll go into the woods and find an American writer."

"Hawthorne," guessed Ruth. "Well, I went onto a long elevation in the garden and picked a battle of the Civil war for dinner. It's not very plain, but it's all I can think of."

"An elevation in the garden—is it a mountain or a hill?" asked Timothy.

"Neither, it's a ridge."

"Pea Ridge," exclaimed both boys.

"Yes."

"You have it, Tim, you began first," said Tom, generously.

"Well," began Timothy, "we played a game and finally we all got a country in Europe."

"That surely is Hungary," laughed Aunt Betty. "I'll see if I can find a game to feed you with," and she went into the kitchen to bring up the children's luncheon.

"I think this game is a dandy," said Tom. "I'll catch some of the boys on it when I go back to school. I can think of a lot of names that could be worked in."

"So can I," assented Timothy. "I wonder what Mother will send up for dinner."

"Oh, don't talk of eating. I couldn't if I had to," grumbled Tom.

"I'm hungry and I know Mother will fix up something fine," said Ruth.

"Here they come," announced Daisy, as Mrs. Miner and Aunt Betty came into the room. Aunt Betty carried a little table which she set between the girls and

AMONG THE PEONS OF MEXICO.

Only a few years ago, one had but to visit the larger cities of Mexico to come in contact with its queer customs and peculiarities; but these have become so Americanized that today, to enjoy fully its charming characteristics the small towns and villages must be sought out and explored. It is quite true that quite a number of the inhabitants live in modernized homes, somewhat similar to those in the states, but the majority, those belonging to the peon class, live very much as their ancestors did a century ago.

Some of the homes of the peons are of adobe, but more are thatched cottages of bamboo, with dirt floors. These are almost devoid of furniture, with the exception of sewing machines, which are found in many of the humblest homes. The inhabitants generally are small of stature and one peculiarity is that there are very few middle-aged people. They appear to be either children or are quite old; this is more noticeable among the women. A bright attractive young woman is a novelty. Presumably there is something about the climate which causes them to age rapidly. A great many are blind and crippled, consequently there are a large number of miserable beggars. The women dress similarly to the poorer class of Americans, except that they do not wear hats, or bonnets, while invariably they have a rebosa, or scarf, wrapped around them regardless of the temperature. The peon men wear white muslin suits—just trousers, short coat, high hat and sandals. It is not an unusual sight to see a man with two, or even three hats on, one on top of the other. In the more prosperous homes the cooking is done largely on braziers, built of brick and the fuel is charcoal; but those who live in thatched huts cook out of doors on a campfire. Their food consists largely of tortillas (corn cakes) and frijoles (native beans). When a peon has work away from home, his wife carries his food to him, and she, with their children, share it. Quite often, when the husband works upon a railroad, his fam-

ily leave their little hut and go with him from place to place.

All the cities and towns, even the villages, have at least one plaza, and some have three or four, all laid out beautifully in walks bordered with flowers of every variety. These plazas are used for various purposes. In some towns the market is found upon their outskirts; in others



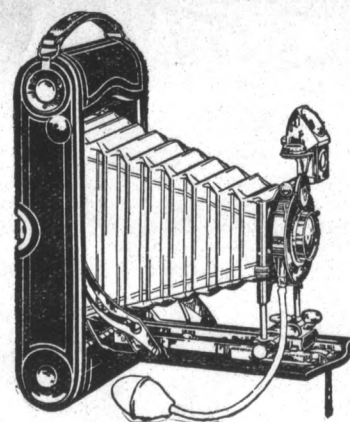
Thatched Cottage Typical of Mexican Peon Habitations.

are large fountains where the natives go for their drinking water. This they carry in jars upon their heads. The plazas are used also in celebrating their feast days, at which time booths are erected and the peons come for many miles to exhibit and sell their wares, such as pottery, beadwork, baskets and fine drawnwork. Feast days occur frequently in this care-free country, and during that time all work ceases. Almost invariably, in the center of each plaza is a band stand, for the Mexicans are passionately fond of music. These bands are composed largely of peons and are supported by the government.

Sunday is a gala day with them.

game and the players use grains of corn for counting. The Sunday markets are the best of the week and the stores are thronged with ready buyers. Every product of the soil is sold during the entire year, regardless of seasons, for it is summer time forever in Mexico. The Mexicans plow and get ready for their planting, while at the same time their neighbors may be threshing their ripened grain. All of the inhabitants are devout Catholics, and it is no unusual sight to see, at a railroad station, five or six peons cast themselves face downward upon the ground, thus forming a human bridge, that a priest may reach his train without soiling his sandals.

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covered with a white cloth. Then she brought a shallow pan filled half full of bran and containing several eggs wrapped in different colored tissue paper.

"Now this is a game to make you hunt your victuals," laughed Aunt Betty as she handed Daisy a piece of rattan like the toy balloons are fastened to. It was painted snow white and had a lovely yellow butterfly fastened to one end. "Now, Daisy, shut your eyes, take this fairy wand and say this verse, then touch your egg:

Peggy, Patrick, Mike and Meg,
See me touch my Easter egg—
Green and red and black and blue,
One for me and each of you
If I touch an egg of white
I must give the rest a bite.
If I touch an egg of gold
It is mine to have and hold."

The children were all watching eagerly in the dim light. Daisy took the "fairy wand," shut her eyes and touched a red egg.

"Oh, oh, what must I do now?"

"Just wait till the rest find theirs," answered Aunt Betty, giving Ruth the wand. Ruth touched a green one, and Timothy a blue one, and Tom got the white one.

"Oh, well, this is a big one an' I'm willing to give the rest of you a bite," said Tom cheerfully. Then Mrs. Miner and Aunt Betty helped the children to unwrap their eggs and open them onto a nice slice of hot toast. When Tom's turn came they gave him just an ordinary egg. "You must wait a bit for your bite of the white one," said Aunt Betty, and the first thing he knew he had eaten every last crumb of his egg and toast.

"Now I'm ready for my bite of Tom's egg," laughed Timothy when he had finished his egg.

"All right, you can have the shell for yours," retorted Tom, but when it was unwrapped there was no shell; it was just a big egg of blanc mange, done up in white paper. Each child was given a portion, with cream and sugar.

"Now you may have one more try for the golden egg, but each one must close the eyes now and keep them closed until all have touched their egg."

"Ready," called the children, and Aunt Betty quickly changed the pans, substituting one with all gold eggs.

"You first, Daisy," said she. "Oh, oh," gasped Daisy in delight at her golden egg, and "Oh-h-h" said the others when they found that they had golden eggs.

"Now, that is just for a sweet taste," declared Aunt Betty. "Peel the shell off." The children did so and found a lovely maple sugar egg. An egg had been pierced at one end and the contents shaken out, then the shell well rinsed and filled with warm maple syrup that had been stirred until it began to grain. When it hardened it was the shape of the egg.

"Well say, Mother, I call this a pretty flossy lunch for sick folks," complimented Tom. "I forgot I had a bad taste, and everything was fine."

"Aunt Betty is the one to thank," said his mother. "She thought of it."

"Aunt Betty always thinks of the dearest things," declared Ruth. "How did you ever think of that cute little verse?"

"Why, that verse is from a truly Easter game, only I changed it a little. We used to play it at home and only the other day Mary Neely ran across about the same thing in a magazine and they are going to play it at her party this evening."

"And we can't go!" wailed Daisy.

"Don't you mind that. I know lots of games, and after you've all had a rest and a nap we'll bring you back in here and play them," comforted Aunt Betty.

"I guess we'll have to call you the top-notch sunshine maker," declared Tom. That evening, after supper, the girls came into the room again.

"Got your games along?" asked Tom eagerly.

"Aw, we can't see to play anything with only the hall light," complained Timothy.

"This is another game that only needs light on the inside of the head," laughed Aunt Betty. "It is called 'expeditions' and is played by having the name of the place, the action and the object all begin with the same letter, like, 'I am going to Sahara to snare snakes.'"

"I catch on," said Tom.

"Well, then, you begin. We will begin by the first one taking the first letter of the alphabet and the next one the second, etc."

"And can we mention any place and any thing?" asked Ruth.

"Yes, no matter how ridiculous."

"Well, here goes," said Tom, "I am

going to Arizona to annex amphibians."

"Ruth take the next and then on around the circle," said Aunt Betty, when the children had stopped laughing.

"I am going to Boston to buy baked beans and brown bread."

"That sounds good to eat," said Timothy: "now I am going to Calcutta to capture creatures."

"I am going to Denmark to dig ditches."

"That's pretty good, Daisy," said Tom.

"I am going to England to—to—to—huh—I can't think of a verb."

"We'll have to have a forfeit, then," said Aunt Betty.

"Wait a minute; will any old thing do?"

"Yes."

"Well, then, I'm going to England to eat eagles—there," said Tom triumphantly.

"I am going to Florida to fight flatterers," said Ruth, and so the game went on through the alphabet several times, each one trying to think of clever or funny things to say. The first thing they knew father and mother were there laughing and saying it was bed time for "measley" folks.

THE BACHELOR UNCLE.

(Continued from page 414.)

dared trust with it, an' I've lost it!" and again he struggled to rise, thinking only of the duty he had failed to do, and not of his broken arm and the utterly exhausted condition of his crippled body.

"Joey, Joey," I said, bending quickly over him, "I found the letter in your right hand, saw that it was meant to go to Elsie Lamont, and sent Jake with it at once. Elsie will get it as soon as horses can take Jake to her; and I will tell Belle how bravely you tried to deliver it; and it will make her very happy to know that her little brother proved himself such a hero, for you have shown yourself a hero this night, Joey, an unconscious hero, the best and the noblest kind. Now you have hurt your arm, and you must lay perfectly quiet and not talk until the doctor comes. Belle will know, and everything is all right, so just close your eyes and go to sleep, and Mary Jane and I will take care of you."

"An' Elsie Lamont will get Belle's letter!" he cried, his wan face lighting up joyously. "I'm glad, 'cause it will make Belle happy, an' maybe it will help her to get well. I'm awful tired, an'—an' I guess I'll go to sleep. An unconscious—h-ero. An un-con-scious h-h-ero," he murmured again; and then, despite his pain-racked body, little Joey slept the sleep of utter exhaustion.

I left Mary Jane "mothering" him and hurried to my room. I wanted to be alone. My brain was in a fever of excited expectations. If Elsie Lamont should reach Belle Murdock before she died, and Belle Murdock should tell Elsie Lamont how Harry Rodney had deceived her and wronged me, what would Elsie Lamont do, she who had scorned me so long and cruelly? How would it affect my relations with her? Did she still love me? How sweetly hope sang: "Yes, yes, she loves you, has loved you all the time!" Her eyes had seemed to tell me that dear truth when I rescued her from the runaway horses; and now, if—if my heart and brain were on fire. I walked back and forth across the room, seeing nothing but Elsie's dear face, hearing nothing but Elsie's sweet voice, thinking, dreaming only of Elsie—all a-tremble with love's delightful intoxicant—

"Uncle John! Uncle John!" It was Teddy's voice that called me to my senses. He was sitting up in his bed, staring at me out of great, round, wondering, astonished, frightened eyes. "Uncle John, you—you aren't going crazy, are you?" I could hear his teeth beginning to chatter, and he had the bed clothes pulled up close around his neck. "You look awfully queer and wild, and act funny, and your clothes are all torn and bloody—Oh, Uncle John, I know what has happened! You've had a fight with that big man! Did you lick him, Uncle John? Did you lick him?" And he jumped out of bed. "Oh, did you lick him, Uncle John?" and he stood regarding me with that wrapt look of awe with which the small boy ever views a man who has just come from a fight.

When I looked in the mirror I did not wonder at Mary Jane's and Teddy's fright at sight of me, nor at the boy's quick conclusion that I had had a fight with Harry Rodney. My clothing was badly torn, my face and the front part of my shirt and vest were covered with blood, and there was a lump as large as an egg on the left side of my head.

"I've had a fight, sure enough, Teddy,"

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Austin Manufacturing Co., Chicago

I replied, as I hurried to the washstand; "but it wasn't the big man this time. That's to come yet," and I felt my blood beginning to boil at the very thought of Rodney and the wrongs he had done me.

"Tell me about the fight, Uncle John! Oh, do tell me!" and Teddy danced excitedly up and down in his nightgown.

"Not now, Teddy," I answered. "Go back to bed and sleep. Uncle has work yet to do, and no time to talk. Besides—"

Here I was interrupted by a sharp rap on the door and Mary Jane's voice.

"Doctor Anderson is here," she said, "an' he wants you to come right down."

How my heart jumped at her words! Doctor Anderson could tell me if Elsie Lamont were with Belle Murdock—if Belle Murdock were still conscious when Elsie came!

I made a hasty end of my washing and dressing, giving not the slightest heed—hardly hearing—Teddy's reiterated: "Do tell me about the fight! Please, please, do, Uncle John!"

I found Doctor Anderson bending over little Joey. "Poor little fellow," he said, looking up, "it would be cruel to awaken him. I will give him a hypodermic injection while he sleeps that will make him insensible to all pain, and he will never know when I set his arm. Will you help me, Mr. Delvin?"

"Yes—How is Belle?—Was she sensible when Elsie Lamont got there? Could she talk?—Were you in the room when Elsie came?—What did Belle do?—What did Elsie do?" and I stopped, breathlessly awaiting his answers.

"Yes, Mr. Delvin, Belle Murdock was conscious when Miss Lamont reached her, and surprisingly strong. She insisted on seeing Miss Lamont alone," and Doctor Anderson looked at me wonderingly. Doubtless his curiosity had been greatly excited by the remarkable and conflicting interests that had centered themselves around Belle Murdock's sick bed; but his professional courtesy quickly caused him to conceal all signs of inquisitiveness, and he continued quietly, with official self-composure and brevity: "Your hired man informed me that I was wanted here; and I came at once, leaving Miss Lamont alone in the room with Belle Murdock. Pardon me, Mr. Delvin, but I must give my attention to this poor little fellow immediately, and hasten back. I very much fear that the interview with Miss Lamont will not be helpful to my patient," and Doctor Anderson turned to little Joey.

I gave him what aid I could; but my brain was in such a wild turmoil with thinking of Elsie Lamont and Belle Murdock alone in that little room, and of what that meeting might portend, that I fear I was of little help to the good doctor. However, at last we had the arm set and everything done for little Joey that the skill of the doctor could suggest.

"I heard Elsie Lamont cry out your name, 'John Delvin,' so loudly that it reached my ears in the next room, where I was putting on my rain-coat to come here," Doctor Anderson said, as he buttoned up his coat to go.

I jumped to my feet and stammered out something, while I am sure my face flushed like a young girl's.

Doctor Anderson smiled enigmatically and continued, the smile lingering on his face while he spoke: "Pardon me, Mr. Delvin, but if I were your physician, I would insist on your going to bed at once, and getting a few hours' sleep. You have been driving mind and body at high-pressure for the past few days, and your nerves are all unstrung. You need rest sadly. Better take my advice. A few hours' sleep will rest your nerves wonderfully. And—and," he looked at me hesitatingly, as if he doubted if it were wise for him to speak the next words, "there may be strenuous work for you to do before the day is through. Now, I must hurry back to my patient. Good-night," and he was out of the door before my slow wits were ready with any words.

Little Joey had been placed in the "company" bedroom, which opened out of the sitting room, and was now sound asleep, while Mary Jane sat by the bed watching anxiously over him. With a whispered injunction to Mary Jane to call me at once, should there be any need, I went into the library and shut the door behind me.

(To be continued.)

"Grandma's Easter Lilies."—The pleasing picture upon our first magazine page is a post-card photo received from Doris and Alice Jacobs. The card bore the following: "Dear Editor:—Please accept our pictures for The Farmer. We are Grandma's Easter Lilies, at our Grandpa's farm in Cooper township, Kalamazoo county."

Why Should a Chicken

Lay a Soft-Shelled Egg?

Because, Willie, the chicken don't know how to create a hard shelled egg unless it has some food with lime in it.

So chicken-raisers often provide limestone, gravel, broken oyster shells or some other form of lime.

Let the chicken wander free and it finds its own food and behaves sensibly.

Shut it up and feed stuff lacking lime and the eggs are soft-shelled.

Let's step from chickens to human beings.

Why is a child "backward" and why does a man or woman have nervous prostration or brain-fag? There may be a variety of reasons but one thing is **certain**.

If the food is deficient in Phosphate of Potash the gray matter in the nerve centres and brain cannot be rebuilt each day to make good the cells broken down by the activities of yesterday.

Phosphate of Potash is the most important element Nature demands to unite albumin and water to make gray matter.

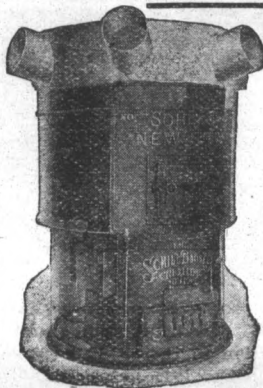
Grape-Nuts food is heavy in Phosphate of Potash in a digestible form.

A chicken can't always select its own food, but a thoughtful man can select suitable food for his children, wife and himself.

"There's a Reason" for

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because best—best in material, best in workmanship, and best for wear. Those facts are also true of the entire Beacon Falls line. When you want a high grade satisfactory rubber boot or shoe, insist that you be shown goods bearing the Cross. It insures you quality and service. If you can't secure Century Boots from your dealer, write us. Send his name. We will see that you are supplied. Send for illustrated booklet.

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We have a few positions open for men who will drive through the country. We will pay a regular weekly salary and expenses. Experience not necessary. The work is healthful and instructive, it will teach you a business. Write, giving references to

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Mention the Michigan Farmer.**



Woman and Her Needs

At Home and Elsewhere



Money Making Occupations for Women.

Turkey Raising.

By Elenore H. Donagh.

THE ideal occupation for the farm woman, it seems to me, should have certain characteristics. Assuming that she is already a busy woman, her money-making occupation should afford her change and pleasure, and must usually fit in with her regular farm program. Fortunate is that mother whose pin-money work brings added interest and pleasure to her household, and can be used to teach her children the great lessons of useful labor.

No one could have known less about turkeys than the writer, when, in her first year of farm life, she invested five dollars in a trio of these most interesting of farm fowls. They were of the ordinary grade Bronze variety, and, to be exact, the auctioneer knocked them down at \$4.95. The first egg of the season was taken from the crate in which they traveled home.

The hitherto prized chickens straightway took second place, and the turkeys became of absorbing interest. And well they might, for we had drawn a prize package in our trio. The two turkey hens in that first summer laid 108 eggs, the younger one laying almost constantly, the older proving herself an ideal mother, and the fine big Tom a wonderful helpmeet and caretaker. He was ready, as soon as the young were fairly started, to take them under his ample wings and protecting care, letting the old hen bring off another brood. As a cool business proposition we now know this trio of mature, hardy, prolific birds to have been worth to us nearer \$25 than \$5, for permanent breeding stock. The Department of Agriculture experts tell us that it costs no more to grow a pound of turkey meat than a pound of pork—six cents at a rough estimate. Yet pork is plentiful, raised with much hard labor and little profit, while in our own Michigan this season more than one city was caught short, and could not obtain, at any price on the day before Christmas, turkeys to supply the demand. People who stood ready to pay three times and four times the price of pork, had to let invited guests go turkey hungry.

After securing our trio we promptly consulted every turkey raiser among our neighbors, friends and relatives, and all others reported skilled in the art of turkey raising. We sifted all these ideas with one season's experience with chickens, and so accumulated enough knowledge to kill every turk that dared leave its shell. In fact, we did this literally, except for those few that the harassed turkey hens were at last able to hatch and escape with from our too watchful care.

We carefully gathered every egg, carefully set them under chicken hens, compelling the turkeys to offend nature's law, and lay again and again. We used chicken mothers for the poults, fastened them in coops and yards away from their needful grit and green and insects, and tended them with deadly care. We fed foods wet and pasty and crumbly, that soured in the sun and packed and baked in the digestive tract. Each successive brood would seem so promising for a few short weeks, then the discouraging change. Just when they seemed about to feather out and really get to be some size, the wings would begin their gentle droop, and the downy, fluffy bodies lose their pretty roundness. Deprived of nature's feather forcing insect food, of proper exercise and grit and green food, beset by the vermin of the chickens about them, without the dustbath of freedom, they wearily drooped and died.

Then I studied remedies, applied grease and powders according to rule, and gave medicines externally, internally and eternally.

And still they died.

In spite of my literally killing attention, the one old turkey who could stop laying long enough to hatch the eggs, brought off a brood, escaped with them beyond my range, brought them—or most of them—safely through the feathering out stage, turned them over to her feathered lord, and proceeded to raise a second nestful which were safely feathered before cold weather.

So, in spite of all, we sold our product that fall for \$40.60, receiving the highest price then known in the neighborhood, 18 cents, live weight. Apparently we had done well, for we still had six birds on hand to begin the next season. It looked like big returns on the investment, if we had had disappointments.

But we had, unknowing, killed the goose that laid the golden egg. Attracted by the price, thinking more pounds meant more profit, I sold the parent trio, keeping for the foundation of our future flock the six late immature poults, two small to sell profitably. Like the farmer who sells the best milkers, and keeps the defective cows for the foundation of his

selecting a breed which, though not the heaviest, is quick growing, and holds the record for greatest percentage brought to maturity, out of number of poults hatched. We were most fortunate in securing, from a prominent breeder in Wisconsin, the three remarkably fine hens that were the foundation of his flock. Why he sold them has always been a mystery to us. Each has proven herself invaluable, and no money could buy them. We secured a fine Tom, and started in.

The first year we did not realize the money value of the pure-bred crop, but did appreciate the comfort of distinguishing our own birds at the farthest end of the farthest field, and the pleasure and satisfaction in their beauty. The next year, when New Year's found the turkey market short, and a prominent merchant offered 25 cents a pound live weight for our entire crop, we sold. Back came the cost of all our high-priced breeding stock, and a generous profit besides. Nor did we sacrifice our breeding stock. That lesson is learned. A turkey hen once proven fit for the breeding pen is guarded like fine gold, and can only be removed for cause. No offer of money could tempt us. A Tom may serve a couple of years and go, but old hens are too valuable to be carelessly parted with.

These turkeys never lay in the chicken coops, but choose their nests like wild

free range' grit, water, (usually as drops of dew), green food and the most concentrated food known in all her realm, in the abundant insect life about them. She even teaches them to look up, not down, for their food. Your day-old hungry turkey will not notice the mixtures you place before it, but will eagerly snatch at the moving insect on a grassblade. And that is fortunate, for no other diet will force the growth of feathers fast enough to cover the sleek body and keep it trim and firm and shipshape.

No wonder the books so often tell us to protect young turkeys from dew and wet grass and from rain. Raised "by hand," the babies keep downy so long, and are so poorly protected by the slow growing, loosely folding feathers when they do grow, that they are unable to resist damp or shower. I find a good turkey mother on free range, will spread her wings umbrella-wise, and protect her young perfectly in even severe storms. Nor is it many days before their sleek, closely feathered bodies can move about in, or rather between, wet grasses, shedding water perfectly. Given freedom, and that means freedom from lice, the greatest danger is eliminated. With no forced feeding, no coddling, plenty of fresh air and exercise, our flock remains healthy and hardy.

As we now raise only pure-bred poultry we fatten no birds for market and have no turkeys with digestion troubles in fall and winter. We have carried a large flock through this winter, and, selling by single birds, pairs and trios, will not finish marketing our last season's flock till near the end of March. But we have not had a sick bird about during the year.

If people would learn to segregate their breeding birds when fattening the market turkeys in the early winter, much unnecessary loss would be avoided, and the young of the following season would be stronger. I do not mean to say that we raise every turkey hatched. Many fall by the wayside. But we do not lose any birds after they are grown, and the young go as the young quail or other wild fowl go, from natural causes. Those that die are the weak, the unfit, and those that meet with accident. What we keep illustrates the survival of the fittest.

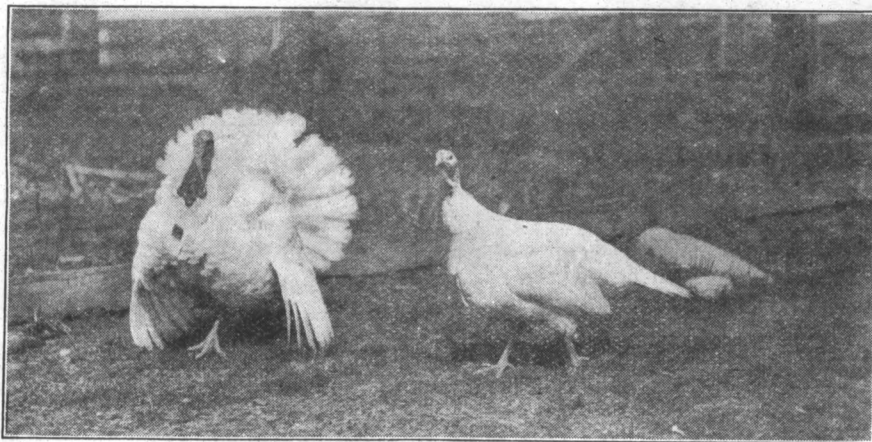
Now, as to the money-making end of the work. Hitherto I have emphasized the method used, but the purpose of this article is to show one of the pleasant ways by which farmers' wives may increase their supply of pin-money.

I have found the pecuniary returns very satisfactory. Taking one year after another, there has never been a time when the turkeys did not return a big percentage on the investment of capital and labor. When natural methods are used, and both old and young fed on dry grains and seeds, the work becomes a pleasure. To those who will remember that it costs no more to keep a turkey hen a year than a chicken, it will not seem unreasonable to keep a half-dozen turkeys instead of a trio and let the turkey mothers do the real work of raising the young.

The writer keeps a dozen for the ordinary breeding flock, and would sooner cut down the number of chickens than the number of turkeys. For chickens mean more work and smaller profits. There is no doubt that if half as much intelligent effort were to be expended on turkeys as is expended on chickens, more farmers' wives would have pin-money to spare, and wise men would not warn us that the turkey threatens to become as extinct as the far-famed Dodo.

The returns for this year cannot be known until later. But for last year the books are balanced. They brought in round numbers, just \$200 for the season, and were a pleasure from the moment the creamy balls left the shell to the time they spread out their beautiful white wings and sailed home to rest in the apple trees outside my window.

Expense? I cannot tell you. My partner says they fully repay the farm during summer and fall for the grain they eat,



Pair White Holland Turkeys, Owned by the Writer.

dairy herd, we started the next season with the whole half dozen late, stunted left-overs. We had double the number, but not half the foundation for success.

Like the old-fashioned novel writers, we draw a veil over the next few years. Enough to say that where the first season the baby poults died by dozens, the second year they died by regiments and by platoons. But for us they were years of careful study, and it has been my experience that, no matter how near failure I may have seemed in those first faulty years, the accounts always show that the turkeys have returned a profit on the investment.

Careful study of the turkey in the woods and fields as she made her nest, hatched and reared her young, of her habits summer and winter, as well as the best literature on the subject, gradually brought results. Our system eliminates the fussing and leaves the turkey raising a matter of pleasure as well as profit. We found that young turkeys, like young children, could be kept well if their good health began several generations back. They had then, at least, a start with a tolerable fighting chance, and we let the old turkeys rear them as nature intended, in perfect freedom. This method has brought success.

One season, after our turkey troubles seemed over, a neighborhood mix-up of flocks showed the error of having no positive method of identifying one's own. Once more a course of study on the subject was undertaken, and this time the object was to discover, if possible, a breed as good, or better, than the customary Bronze and Black, which could be readily distinguished on account of a characteristic color. We went to the Department of Agriculture for information,

creatures, in all sorts of secret places. Except to protect their nests from crows, I pay little attention to them. But crows with us cause serious loss unless this is done. Very early in spring, they usually go to the barn, finding in the hayloft a safe and sheltered spot for the precious eggs. The breed is so domesticated, that the turkeys on these nests may be handled almost as freely, when necessary, as sitting hens. I protect one hand with a gauntlet glove, but carry old and young, when necessary for their safety.

We turn the young out into the fields, or rather let the wise old turkeys take their young away, as their instinct teaches them. Usually they prefer the big woodlot for the first weeks, later gleaming the grain fields and meadows, thriving wonderfully when the grasshoppers arrive. The pleasantest part of the summer day is the trip of inspection to woods and fields, to count the young and keep them tame. I teach them to come at the turkey call and many a brood is found by the mother answering from her distant hiding place. A toy whistle may be used, or any call different from that used to call chickens.

Each flock is fed finely cut grains and seeds, but in smallest possible quantities. The object is to keep them tame. If the young appear I count and leave them, if too shy. I feed the mother and wait as quietly as possible until gradually, here and there, one pair of bright eyes after another appears and the poults shyly taste the scattered grain. After they all come from their hiding places I stop feeding. Except in prolonged wet weather, turkeys on free range require no artificial food. Like the "beggar who wanders in search of his bread," they find all they need. Nature furnishes to the poult on

by the amount they save by eating weed seeds and devouring noxious insects in the fields they wander over. For those who raise market fowls, the expense of fattening is easily reckoned. And many every year go to market with no fattening food except what they glean from the harvest fields. For wintering a flock one may reckon, roughly, on a dollar apiece.

For the busy woman who wants \$50 or \$100 extra to spend in the fall, I know of no way she may so easily earn it as by keeping a few turkeys, and letting them raise their young, and the money for her.

KNOW THYSELF.

"It is a good thing to know one's limitations." So spake a wise young man who had been successful to a certain degree, and whose friends urged him to try for greater heights. "I am doing all I am capable of doing. I have not the education, business ability, tact nor physical strength to try for anything else. I am a success right here. I have enough to live on comfortably and lay by a bit. Why give up something I know I can do well to try to do something I am utterly unfitted to do? I've reached my limit, and I know it."

To the person whose motto is, "All things are possible," the young man's attitude would seem foolish. His refusal to try for anything higher would be set down as lack of ambition. But on sober second thought, was it not based on sound common sense? The young fellow was not a genius; he had no education beyond the eighth grade; he had no social graces; no flashes of brilliancy, and last, but not least, no powerful friends. He was merely an ordinary young fellow who, by dint of hard work, had got a modest success in a small town. Friends urged him to try for bigger victories in a large city, but he, with greater wisdom, stuck to his first field. And by so doing he retained his success and added largely to his happiness.

He knew his limitations, than which there is no better knowledge for any of us to acquire. A large part of the unhappiness of this world is caused by the fact that most of us do not know when we are living up to all that is in us. We see someone else doing big things and it seems so easy we feel that we could do the same. We start out to try, only to find, after months of heartache, that our limitation was the washboard or the mixing bowl, or the typewriter, or perhaps the district school, and teaching music to the children of our native village.

A series of pictures running in a daily paper illustrates pathetically the lot of the girl who didn't know her limitation. She had a sweet voice, nothing big nor great nor powerful, just a sweet girl's voice that could please father and mother and the home friends. But an unscrupulous teacher persuades the family that the girl has a great future before her, so she leaves the home where she might have been happy doing the simple things she could do, to go to a great city and be unhappy trying to do something she never can do.

Every big city is full of its Tillie Clap-saddles, girls who ought to be back home singing in the village choir and helping mother with the housework, but who are lured to the metropolis by a hope of climbing to a height from which their limitations will forever keep them. And it is not alone the singers who are bound to awake to the sickening realization some day that they are drab failures; there are the girl who can draw a little, the girl who can write a little, the girl who can recite a little, or act a little. All are bound some day to find out that what is good enough to make her own little friendly circle applaud is not nearly good enough to meet all the competition that is coming from all those other girls from the other small towns who will meet together in that swirl called a metropolis to parade their tiny accomplishments. And oh, the tawdriness of all of it when the work of the real successes towers above.

Yes, it is a fine thing to know one's limitations. It spares us a lot of useless striving and a bitter load of heartaches and regrets.

DEBORAH.

If your milliner charges you a higher price than usual for your spring hat this season do not blame her. Milliners' supplies show a marked advance, ribbons especially being higher in price than last season.

HUMAN WELFARE QUERIES.

Editor Household Department:—What colors will be worn this summer?—J. L. D.

Tans and blues are both good.

Editor Household Department:—To what class of foods do beans belong?—Miriam.

Beans, peas and lentils are vegetable proteids.

Editor Household Department:—What vegetables are suitable to serve with fish?—Cook.

A salad vegetable is usually served with fish, as cucumbers or tomatoes. The tomatoes may be served either cooked or uncooked. Creamed onions may also be served and rice balls are nice.

Editor Household Department:—How do you caramelize sugar?—Mrs. X.

Melt the granulated sugar in a saucepan without the addition of water. Stir it constantly until all has melted to a liquid without grains or lumps, which usually form in melting. Pour at once into whatever it is to flavor.

Editor Household Department:—My baby is 18 months old and does not walk, would you do anything to encourage him to?—Young Mother.

I should let the baby take his time. Nature is wiser than mothers in most cases and when the baby is strong enough to walk he will start without being urged. You might rub his limbs night and morning with a little olive oil. This is said to be strengthening.

Editor Household Department:—What is the right proportion of baking-powder and flour for biscuits?—M. N.

Two even teaspoons of baking powder to one cup of sifted flour.

Editor Household Department:—Would like to have someone, through the columns of the Michigan Farmer, tell me how I can wash or clean white elder-down wool aviation caps, without spoiling them.—M. B. E.

Editor Household Department:—Will some of the farmers' wives kindly suggest the proper care for a butter-bowl so it will not crack? Should a new one be soaked in water for a few days before using?—Marita.

WOMAN'S MANAGEMENT OF HOUSEHOLD DUTIES AND THE EFFECT ON CREDIT.

BY WALTER JACK.

Neatness in the home can be coined in dollars and cents.

This is a fact that came to my attention several days ago, and in this case it proved true, much to the sorrow of a certain housekeeper.

A woman, the daughter of a wealthy farmer, married a half dozen years ago, and having plenty of money to carry on the farm, sought a loan. The woman was slack about the home, the man spent some time in the house trying to keep it in such condition as the good reputation of the family had demanded. In his efforts the farm appeared neglected.

A loan was in the process of negotiation. The real estate was of sufficient value to protect the lender to twice the value. The matter of reverses and loss of financial footing under the conditions was no cause of hesitancy. The matter that did block the way was a natural one.

It was 5 o'clock in the afternoon. The noon work had not been touched when the place was visited. The housewife was sitting down lazily washing dishes. A half-open door showed an unmade bed, a begrimed oil stove at the edge of the table and the unwholesomely prepared food appearing on the table caused thought. Not a promise was made about the loan when pressed. However, considerable inquiry was made. The lady apologized in view of her health. That led to a question as to the attitude of other members of the family relative to the financial condition of the daughter and her husband. One little matter after another was brought up, all being of so little importance that the banker, knowing the family as I do, but not seeing conditions in the home, would have no hesitancy in honoring the request.

In view of conditions in the home I was pressed for an opinion. The woman's housekeeping was a liability as much as that of first mortgage. It was necessary to advise the parties to shape matters as best they could until spring, and then the matter would be gone over, and at that time the loan might not be required.

Here is an instance where appearances enhance credit.

Favors are equally divided between rough and smooth straws. The mixed, rough straw turbans are very good, and are shown in browns, greens and blues.

SKirts are as narrow as ever, some of them more so. The dressy skirt is long, and trains are shown on the party gowns.

Acme Quality Porch Furniture Enamel

Gives a bright enamel finish that defies wear and weather. Good for both wood and metal.



Acme Quality No-Lustre Finish

Hard, washable. For walls, ceilings, woodwork. Easily cleaned. Does not show laps.

Acme Quality Paints Ward Off Decay

Paraffine gives a hard, shiny coating that keeps out a certain amount of cold and moisture. You can even demonstrate this by melting a common tallow candle. But what happens when the summer sun gets at a surface like that? It dribbles away, of course, just as inferior paint blisters, cracks and peels under the same circumstances. You know the rest.

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give a substantial surface in all weathers and climates. They last. They last a long time. They give you your money's worth—and more, because they don't blister, crack, peel or fade. They've got the right stuff in them—are easy to apply—look the best—represent real economy.

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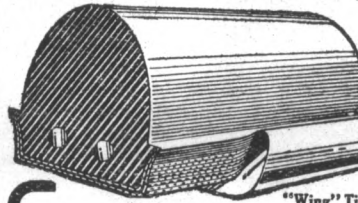
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Dept AA, Detroit, Mich.

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"Wing" Tire

The Goodyear "Wing" Tire in its field is quite as sensational a success as the Goodyear No-Rim-Cut Tire is in the automobile world.

The Goodyear "Wing" is far the most popular tire in existence. And only sheer superiority could have made it so. You'll get the utmost in service and satisfaction if you put "Wing" Tires on your carriage.

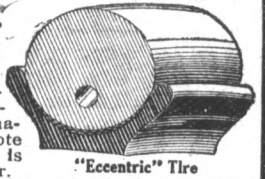
The Goodyear "Wing" Tire

Note this patented wing. How it presses against the channel, thus preventing mud, dirt, grit or water from getting in and quickly rusting the rim and destroying the tire base. This tire remains sound. Won't creep or get loose. Gives utmost wear. Will protect your carriage and greatly lengthen its life. Being of tough, springy rubber, it is exceptionally easy-riding.

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is especially designed for light-er vehicles—runabouts, etc. Note the wire hole is below the center.



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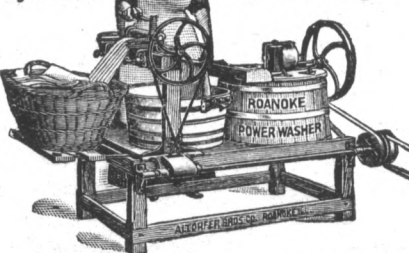
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FLORAL WORK FOR APRIL—By Eva Ryman-Gaillard.

THERE is so much variety in the work that may be done this month that the question of what to do first is hard to decide, though the weather conditions will have much to do with deciding what may or may not be done outside. Unless the soil is unusually wet there will be days in the latter part of the month when the beds can be made ready for seed sowing to the extent of spading under the fertilizers needed and giving them a good raking, leaving only the final smoothing and marking when ready to risk the seeds in the open beds.

If the season is an early one some of the hardiest varieties, or those needing considerable time to germinate, may be sown before the month ends but it will be wiser to wait until sure that frosts or long, cold rains will not undo all that has been done. At any rate, preserve a part of the seed stock for later planting in order to be safe. If the first sowing comes through safely early flowers are assured and a later sowing will insure a longer season of bloom, one following the other.

The work inside will include the duties that belong to every month with the added work of seed-sowing, transplanting and hardening of seedlings.

Most farm homes have, or may have, spacious grounds surrounding the dwelling and can make use of trees, large shrubs, and heavy vines to an extent impossible to the town dweller with but little land, and as this is a good month for planning and planting along these bolder lines a few hints will be given.

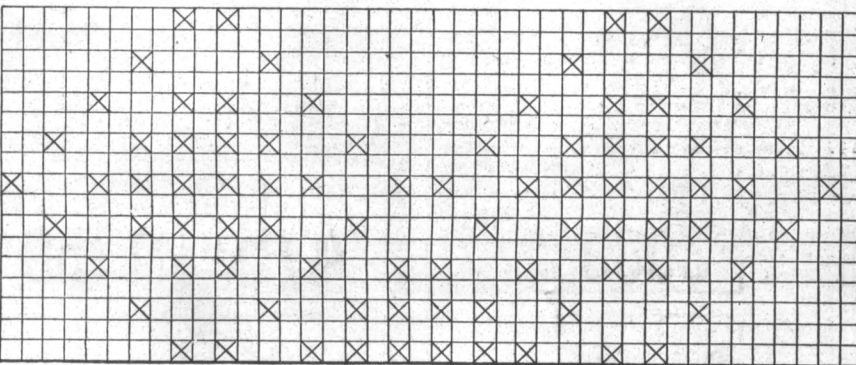
The first one is this: When ready to plant a tree consider its size when fully grown and think what its effect will be when seen from the house or street; whether it will darken a none too light room, or obstruct the view from the up-

the wild grape or the woodbine. As either of these can be found growing wild in many places this is a good time in which to get it.

Any of the native, strong-growing vines are fine for the uses suggested or for covering old fences and buildings but they are not desirable for use on good buildings of any sort because of their habit of working under siding and shingles, or working into bricks and ruining chimneys. For use on the house, or on trellises not strong enough to support a great weight the lighter vines that need some help in their upward climb are more suitable and, fortunately, many of the most beautiful flowering vines belong to the latter class.

The habit of growth must be considered when selecting vines for a given place if the best possible effects are to be secured and, sometimes, the color of flowers and time of blooming will bear strongly on the decision. The flowering season is short and if a mass of all-green foliage is not liked a touch of color, as effective as flowers, can be secured by the use of vines having variegated foliage. Among these, the golden leaved Japanese honeysuckle or the golden hop will give a touch of yellow; the showy Japanese hop with white markings or, best of all, the ampelopsis tricolor showing white and pink markings on the green leaves, followed by grape-like clusters of berries showing every shade of blue will prove very satisfactory.

Shrubs furnish a third class of plants with which it is possible to secure bold effects, but the list of desirable kinds is so long that mentioning varieties is impossible and a few general suggestions must be the limit of this article. The catalog of any firm will describe varieties suited to every need, from the glowing



An Original Cross-stitch Pattern Submitted by Mrs. I. C. Lindley.

per windows. Consider, too, whether its foliage opens early or late; whether it takes on beautiful colors in the fall; whether the bark is beautiful during the winter, or not, and any other characteristics each variety may have.

Large trees are rarely planted solely for floral effect because their majestic proportions and beauty of form and foliage give them a decorative value at all seasons, yet there are many that produce a profusion of gloriously beautiful flowers and the flowering season is as long as that of many shrubs. As examples take the following: The horse chestnut which produces thousands of upstanding racemes of pink or white flowers (each raceme six or eight inches long); the hardy catalpa with equally showy flowers borne in loose panicles; the honey locust with its drooping racemes of creamy white, wondrously fragrant flowers; the tulip tree (yellow poplar), with yellowish-green tulip-shaped flowers; the mountain ash with large flat-topped corymbs of fine white flowers similar to an elder blossom; the dog-wood that in early spring is literally covered with white make-believe flowers; the thornapples and many others.

While this plea for the use of such trees around the home is made because of their beautiful and showy flowers no person seeking for truly decorative plants will overlook the fact that the varieties named provide a wide range of beautiful and strikingly effective foliage throughout the spring and summer as well as showy fruits that give character to the trees, and a touch of color in the dreary landscape view of late fall.

Trees provide for beauty of a stately kind but vines provide for the beauty secured by graceful, twining growths that make homely things beautiful in a short time. Old trees that are dying will take on an appearance of new life and become ornamental again if covered with vines, and for this purpose, or for covering old half-dead hedges, nothing is finer than

scarlet-flowered Japan quince and the golden forsythia that open in the spring before the leaves expand, to the hardy hydrangea whose white flowers turn to pink and then to green in the late fall. All the shrubs are free bloomers and many of them grow in symmetrical shape, making single specimens objects of rare beauty when standing alone on the lawn, while in bloom but not afterward. Unless needed in a certain place to serve as a screen or windbreak any shrub is more effective if massed for borders, and so placed as to leave as broad an expanse of unbroken lawn as possible. Even then the best effects are only secured by careful planning to avoid having some shrub of drooping habit hidden by one of upright growth.

In planning the shrub border it is of the utmost importance to place those that bloom at a given time where they will break the monotony of the all-green mass. Never get all the early bloomers in one spot and all the late ones in another. Next in importance to the color and season of the flowers is that of foliage. A few golden elders scattered along the row will brighten it when no flowers are open and the cut-leaf elder will give an effect of lightness that is very pleasing. A little study of shrubs will lead to those that have bright fruits and hold them nearly all winter, as the barberries do, or to those that have bark so bright in color that it is very attractive when seen against a snow-covered background.

One of the most desirable things about shrubs is that one need not hesitate about cutting them freely, and on long stems, as the wood must be cut back every season in order to keep the bushes in good form and force new wood for another season of bloom. Remember, always, that the cutting back of the end of a branch means forcing lateral branches to start and getting several flowering branches in place of the one cut off.



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(Continued from page 412).

struction of delegates for any particular candidate.

The compilation of the total enrollment made in Michigan on January 27 by the secretary of state, shows a total of 194,823, divided between the different parties as follows: Republican, 142,058; democrats, 38,340; prohibition, 3,086; socialist, 8,855; socialist labor, 65; miscellaneous, 2,418.

The officials having under consideration the evidence in the Maine disaster have confirmed the published story that the vessel was destroyed by an external explosion.

The operation of the Burton law regulating the use of the waters of Niagara Falls has been extended until March 4, 1913, under a compromise agreement between the house and senate.

At the local option election held in Michigan the "drys" won out in 14 counties and the "wets" in 11 counties, according to the preliminary counts.

Floods along the Ohio, Missouri and Mississippi rivers are raising those streams higher than they have yet been known to be. At Cairo the waters raised one foot per hour, reaching the 53-foot level Monday night, the highest level on record. Fully 200 families were rendered homeless in Des Moines, the lower portion of the city being inundated. In Missouri property loss has already run into millions. Aid is being asked of congress to strengthen retaining walls where the breaks would result in greatest damage.

The federal house of representatives passed the wool bill Monday by a vote of 189 to 92.

In order to anticipate the influence of a parcels post the large express companies are planning a zone system of charges that will approximate those of a parcels post under the bills now before the congressional committee.

The Atlantic fleet are at target practice off the Virginia coast.

Foreign.

Mexican rebels attacked a passenger train and killed eight passengers, nearly 50 soldiers and the engineer, while the train was enroute from Mexico City to Cuernavaca. President Madero is firm in his position and insists that he will continue to fight.

It appears to be the sentiment of the Russian press that that country will stand firm against any change of her laws with regards to American or English Jews traveling within her territory, and will in this position directly oppose the demand of the United States. The attitude, if supported by the duma and executive department of the Russian government, will likely bring about strained relations between the two countries.

The ship in which Captain Scott, of England, sailed into the southern seas and which enabled him, according to early reports, to reach the South Pole, has arrived at Akaros, New Zealand. Captain Scott and his expedition did not return with the ship, however, but chose to spend the winter in the polar region. He hopes to cross the ice continent and emerge from the opposite side in the vicinity of Cape Horn.

The wage bill of England has, by the sanction of the King, become a law, and the miners are now voting to determine whether they will go back to work under the conditions as affected by the statute.

The recent elections in British Columbia resulted in the conservatives electing 40 of the 42 members of the provincial parliament. The other two members are socialists. The liberals had one member in the last parliament, now they have none.

Dr. Sun Yat Sen, provisional president of the Republic of China, has resigned to make room for his successor, Yuan Shi Kai.

Prince Edward of Wales is now pursuing his studies in Paris.

CATALOG NOTICES.

An illustrated catalog, published by Farmers' Cement Tile Machine Co., of St. Johns, Mich., in addition to listing the numerous styles of cement tile machines for manufacturing cement tile on the farm, contains valuable information on under-drainage and its effect upon the crop producing power of the soil. Send for a copy today, mentioning the Michigan Farmer.

"Fall Bearing Strawberries and Other Fruit Plants," is the title of a 40-page illustrated catalog sent on application by L. J. Farmer, of Pulaski, N. Y. This 1912 catalog is free for the asking.

The 1912 catalog of The National Incubator Company, of Racine, Wis., contains some interesting poultry hints, in addition to information concerning the National Incubator and other poultry goods.

The Naylor Mfg. Co., of Plano, Ill., will send upon application to readers of this paper, literature illustrating and describing the Naylor Spring and Combination Spike-Tooth Harrow and the Naylor Pulverator, a combination disk and spike-tooth harrow which is made in various styles and sizes, including a giant size for use when farm tractors are the motive power. This line of goods is designed to economize time and labor by fitting the ground thoroughly at a single operation.

The Allmetal Mfg. Co., Grand Rapids, Mich., send a 32-page, illustrated catalog of their oat sprouters, colony houses, brooders and other Allmetal poultry equipment, of which they manufacture a variety of kinds and types.

The 1912 catalog of the Robert Essex Incubator Co., of Buffalo, N. Y., and New York City, in addition to being a catalog of the manufactures of this well-known company, contains five chapters on the different phases of poultry production, as follows: 1. A woman fancier's poultry house. 2. When you start, start right. 3. How money is made from standard bred show birds. 4. A low cost farm poultry house. 5. How to get more profit from farm hens.

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Prestone, Columbus, 1910, 5 pass. touring. This car is one of best equipped on market. Mohair top, glass front, lamps, horn, good tires and tools. Brewster green with cream gear, recently painted. Used only one season. This is our best bargain. Special price.....
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American Moss, 7 passenger touring; fully equipped, overhauled and painted; good tires all around. Special price.....
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Crawford, 1908, 5 pass., 4 cylinder with magneto. Equipped with mohair top, glass front, speedometer, lamps, horn and tools. Fair tires, good mech. condition. Special price.....
Original Price as Equipped \$1750
Special price \$425

BARGAIN No. 13
Stearns, 1907, 50 h. p., 4 cylinder with magneto, double chain drive, ideal for truck purposes. Good mechanical condition; good tires. Special price.....
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Corbin, 4 cylinder, air cooled run about, excellent appearance and good mechanical condition, good tires, top, glass front, lamps, horn and tools. Special price.....
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Great Smith, 1908, 5-pass. touring, 4 cyl. with magneto; completely rebuilt and repainted; equipped with new top and dust cover, wind shield, speedometer, horn, lamps and tools. 34x4 Q. D. Tires. Good condition. Color, dark blue. Special price.....
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PRACTICAL SCIENCE.

LIMING OF SOILS.

BY FLOYD W. ROBISON.

(Continued).

The Virginia Agricultural Experiment Station published, in 1910, a very comprehensive bulletin on the use of lime for Virginia soils. From this bulletin we quote the following as endorsing the position we have taken regarding the conservative use of lime.

"A study of the theory of the practice of liming in England and the United States shows that there have been periods when the practice became quite common, owing to the fact that once the benefits from liming are noticed in a given locality it becomes general; and the tendency is to carry it to excess and in consequence of its beneficial influence, lasting from 10 to 20 years, a succeeding period of disuse naturally follows."

Again, quoting further, the following statement is made, which quotations we are making because we believe that they aptly express the advice which we would give to the farmers in Michigan.

"Lime is not * * * nature's greatest and most uniform enricher of the soil. The maintenance of fertility * * * depends primarily upon the making, careful saving and intelligent application of barnyard manure; the maintenance of the supply of humus in the soil by a proper rotation of crops and especially by the use of grasses and leguminous crops; and upon thorough and judicious tillage. These three practices, not liming, are the main props of soil fertility. In addition to these three, not instead of them, liming is often a benefit. The use of lime is on exactly the same plane as the use of commercial fertilizers. These are profitable in some cases and not profitable in others, depending upon the kind of soil and the kind of crop. Lime is not a universally applicable enricher of the soil but is to be used like commercial fertilizers—with discrimination."

Lime Acts Differently than Commercial Fertilizers.

We do not quite subscribe to the doctrine that lime is to be used on exactly the same plane as commercial fertilizers. In the first place, because we see the chief function probably in lime is in improving or ameliorating the texture of the soil. We do not believe that commercial fertilizers are used, or should be used mainly for their influence in ameliorating the texture of the soil. That commercial fertilizers do affect the texture of the soil, there is no doubt, but their chief function and the function for which they are generally prescribed is for the purpose of increasing the soluble and available administrative food agents in the soil.

Lime is rarely used for this sole purpose. As we have stated before, there are some Michigan soils on which lime could well fulfill this purpose but in the majority of cases its application results, when favorable, in improving the texture and the physical condition of the soil.

Decay of Organic Matter Promotes Acidity in the Soil.

One of the chief reasons for assuming that the soil under intensive agricultural practice becomes acid is because it is known that in the natural decay of vegetable and other organic matter in the soil organic soil acids are produced. A compound of indefinite composition and called humic acid is supposed to result from the decomposition of humus in the soil. Theoretically, the addition of lime in moderate quantities to such a soil does improve the condition and promote a more vigorous plant growth. It has been assumed that this is because the lime neutralizes the acid and this may be the reason, although it has never been demonstrated that this is exactly the reason.

The Most Acid Soils Are Not the Low Lands.

Under the above assumption we should expect that the soils which are most acid would be the low lands, the mucky soils, and those on which an abundant growth of vegetation has been allowed to decay for several years. Strange as it may seem, this is not necessarily the case. Many, if not most, of the soils which have been construed as acid in this country, are the uplands, and while the acid condition may be primarily caused by the decay of organic matter on these soils, the fact that they remain acid is prob-

ably because, being upland soils, they do not contain free bases which will permit of the neutralization of the acid condition.

Lime Unlocks Potash in the Soil.

On heavy clay soils where perhaps the beneficial effect of lime is more especially noticeable and which beneficial effect we have attributed in a large degree to the improving of the texture of that soil, we do find a considerable quantity of potash locked in such a combination that it seems almost entirely unavailable to plants. Undoubtedly, caustic lime or slaked lime would act quicker in this particular case but we have outlined the dangers incident to the use of quicklime or caustic lime, and on the whole, we are inclined to believe that the use of quicklime or caustic lime is provocative of more harm than real benefit.

Lime Unlocks Phosphoric Acid.

Lime assists again in the unlocking of the phosphoric acid that is in combination with aluminum and iron and which is in an insoluble condition in the soil and would otherwise be unavailable to plants.

Lime Promotes Nitrification.

We have intimated what the effect of lime may be in promoting nitrification in the soil. This condition seems to be promoted by the presence of a considerable quantity of lime in the soil, in much the same way that the growth of the little nodules on the alfalfa and clover plants is encouraged by the presence of lime.

Summary.

Briefly, to recapitulate, we will say that the chief effects of lime are three-fold.

First, the physical or mechanical effect of lime. Under this condition the heavy clay soils are flocculated and rendered more porous, less likely to puddle, easier to work, and more accessible at various times of the year. Ordinary sandy soils, by a similar action securing the opposite effect, that is, by cementing the particles together and thereby increasing the capacity of that soil for holding moisture. In this respect lime appears to be a sort of governor which preserves the optimum balance in the physical condition of the soil.

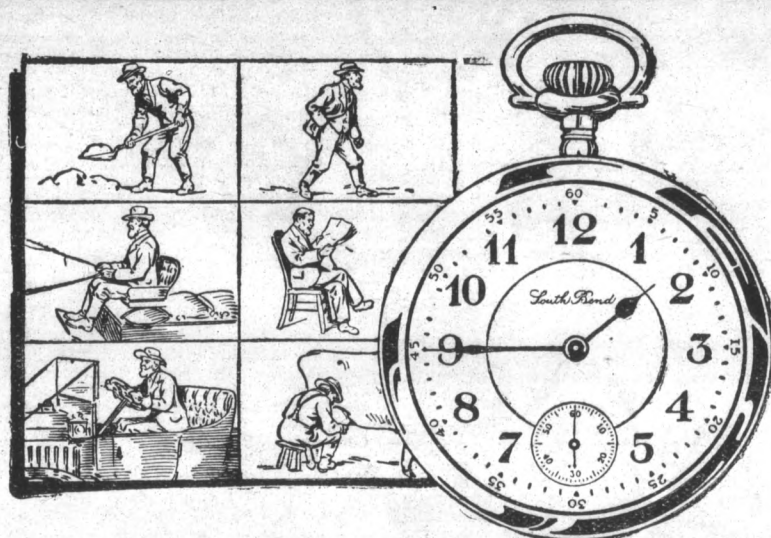
Second, the biological effect of lime. Lime promotes an alkali condition of the soil, which condition is beneficial, yes, necessary for the growth of many soil bacteria, especially those which affix themselves to the roots of the leguminous plants and in this way become foragers for the benefit of the plant. Nitrification is promoted and the nitrogen in this way made available. The biological importance of lime, therefore, should not be neglected.

Third, lime apparently has a well-known effect upon plant diseases. The presence of a considerable quantity of lime is believed to be instrumental in preventing the spread of many plant diseases in the soil. Here again, caution should be used in the application of lime because certain root crops on which fungous diseases are prone to act are not benefited by the direct application of lime. It is quite well known, for example, that lime does not check the growth of scab on potatoes by applying it the same year that the potato crop is planted.

TUBERCULIN TEST ACCURATE.

Some opponents of the tuberculin test bring out an argument in defense of their contention that frequently animals which react to tuberculin fail to show any lesions of tuberculosis when dissected. An official of the Bureau of Animal Industry of the Department of Agriculture, in discussing this phase, said: "In a number of cases lymph glands from cattle of this character have been forwarded to our Bureau for bacteriological examination, and in many instances it is found that the tuberculin reaction was correct, although the tuberculous lesions were not well advanced. In this class of cases the demonstration of living tubercle bacilli within the tissues affords sufficient justification of the tuberculin reaction."

The attempt to make the production of denatured alcohol a self-sustaining feature of American agriculture has thus far not succeeded. In Germany, where the greatest success has been achieved, alcohol production forms rather one feature in a system of diversified agriculture and is not attempted as a separate enterprise.



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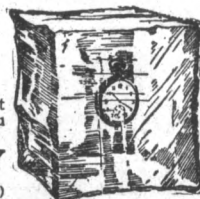
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MARKETS

DETROIT WHOLESALE MARKETS.

April 3, 1912.

Grains and Seeds.

Wheat.—This market has been a little irregular the past week, at times showing strength and then again developing weaknesses. The general trend of the market on Monday was for a reduction of values. Deliveries continued to appear in larger volume than expected, the millers are not finding the usual call for flour, the visible supply is large and the delay in the season is putting off deliveries of American wheat in Europe to the advantage of Argentine. Liverpool, however, is firm, as are also markets in South America. There are many reports of damage to the new crop in this country and the large amount of moisture now on the ground is apt to prove detrimental in many instances. The visible supply shows a decrease of over two million bushels, making the amount of wheat now in sight aggregate a little over fifty million bushels. One year ago the price for No. 2 red wheat was 83½¢ per bu. Quotations are as follows:

	No. 2	No. 1	Red.	White.	May.	July.
Thursday	\$1.00½	.98½	\$1.02	.99½		.99½
Friday	1.00	.98	1.01½	.99½		
Saturday	.99½	.97½	1.01½	.99		
Monday	.99½	.97½	1.01½	.98½		
Tuesday	.99	.97	1.00½	.97½		
Wednesday	.99	.97	1.00½	.97½		

Corn.—The tone of this market keeps growing firmer and every additional day that the opening of spring is delayed the condition of the market will be in a more strongly fortified position. Prices show a general advance of about 3½¢ since a week ago. This grain is lending considerable strength to the wheat market. Feeding has had to be continued longer than in ordinary seasons and is taking corn on the farms that would otherwise have gone into circulation. The visible supply amounts to almost 16,000,000 bushels with a decrease of 287,000 bushels for the week. One year ago No. 3 corn was selling at 46½¢ per bu. Quotations for the week are:

	No. 3	No. 3
	Corn.	Yellow.
Thursday	71½	73½
Friday	72	74
Saturday	73	75
Monday	73½	75½
Tuesday	73½	75½
Wednesday	73½	75½

Oats.—This cereal shows a general advance of 1¢ in quotations. The influence of corn seems to be the chief factor in the advance, although the oat market itself occupies a firm position. The visible supply is over 13,000,000 bushels. One year ago the price for standard oats was 33¢ per bu. Quotations are:

	Standard.	No. 3
		White.
Thursday	57½	57
Friday	57½	57
Saturday	58	57½
Monday	58	57½
Tuesday	58½	58
Wednesday	58½	58

Beans.—Prices are unchanged from a week ago. The trade is firm and there is the ordinary amount of contracting for the season. Quotations are as follows:

	Cash.	May.
Thursday	\$2.42	\$2.47
Friday	2.42	2.47
Saturday	2.42	2.47
Monday	2.42	2.47
Tuesday	2.42	2.47
Wednesday	2.42	2.47

Clover Seed.—There is a fairly good demand for clover seed to supply the later seeding wants of the farmers, but prices have sagged from the high position occupied last week. Alsike has followed the course of the common clover seeds. Quotations are as follows:

	Cash.	April.	Alsike.
Thursday	\$12.75	\$12.10	\$12.75
Friday	12.65	12.00	12.65
Saturday	12.65	11.75	12.50
Monday	12.50	11.75	12.50
Tuesday	12.50	11.75	12.50
Wednesday	12.50	11.75	12.50

Rye.—Cash No. 2 rye is quoted at 93¢ per bushel, which was the price of a week ago. The market is dull.

Timothy Seed.—There is much activity in this deal at present with the price for prime spot ruling at \$6.90 per bushel, which is the figure quoted a week ago.

Flour, Feed, Potatoes, Etc.

Flour.—Market rules steady with trading dull.

Feed.—Corn and oat chop is higher other grades rule steady. The carlot prices on track are: Bran, \$30 per ton; coarse middlings, \$30; fine middlings, \$30; cracked corn, \$30; coarse corn meal, \$30; corn and oat chop, \$30 per ton.

Hay and Straw.—All kinds of roughage steady and scarce, and the quotations are: No. 1 timothy, \$22.50@23; No. 2 timothy, \$21.50@22; clover, mixed, \$20.50@22.50; rye straw, \$11.50@12; wheat and straw, \$11@11.50 per ton.

Potatoes.—Unusual strength is shown in this deal and values are marked up 20¢ since a week ago with a feeling that the position will be maintained for some time. Michigan stock is largely going to the south and not to eastern points where receipts from abroad are holding values down. Many dealers believe that tubers will advance above present high figures. Car lots on track are quoted at \$1.25@1.30 per bu; new potatoes, \$3 per bu.

Provisions.—Family pork, \$19@20; mess pork, \$18; clear, backs, \$18.50@19.50; picnic hams, 10½¢; bacon, 14@15¢; pure lard

in tierces, 10½¢; kettle rendered lard, 11½¢ per lb.

Dairy and Poultry Products.

Butter.—Prices remain steady with last week. The demand and supply continue about normal. Quotations are: Extra creamery, 30¢; first creamery, 29¢; dairy, 22¢; packing stock, 21¢ per lb.

Eggs.—This trade has been characterized by fluctuations in values the past week, the price on Tuesday being slightly advanced over the price of the preceding days, but being 1¼¢ below the quotation given one week ago. The price for fresh receipts, cases included, is now 20½¢ per dozen.

Poultry.—There is some improvement in the demand for poultry. Hens show an advance of 1¢ per lb. Other grades and kinds are steady. Quotations are as follows: Spring chickens, 14@15¢; No. 2 chickens, 11@12¢; hens, 15@16¢; No. 2 hens, 11@12¢; turkeys, 16@17¢; geese, 11@12¢; ducks, 14¢; young ducks, 15¢ per lb.

Cheese.—All grades of cheese remain steady: Michigan, September, 18½@19¢; Michigan, late made, 17½@18¢; York state, 19@20¢; limburger, 17@19¢; domestic Swiss, 20@23¢; brick cream, 20@22¢ per lb.

Fruits and Vegetables.

Cabbage.—Steady; now selling at 3½¢ 4¢ per lb.

Onions.—Steady; \$2@2.15 per bu; Spanish, \$2.25 per small crate.

Apples.—The apple deal is firmer and a tendency toward better values is apparent. Baldwins are selling at \$3.25@3.75; Greenings, \$3.25@3.50; Spies, \$3.50@4; Ben Davis, \$2@2.50 per barrel.

OTHER MARKETS.

Grand Rapids.

The egg market remains steady at 19¢ for Tuesday, and dairy butter is unchanged at 24¢. Bean dealers report a quiet market, with \$2.10 as basis for both white and red. The potato market is higher, the price paid at loading stations ranging from \$1.05 to \$1.25 per bu. The higher price prevails in Montcalm county, but \$1.20 has been paid at Manton and it is rather expected that good stock will soon reach close to \$1.50. Shippers are reporting that cars are still scarce. Live poultry is quoted as follows: Chickens, 12½¢; geese, 10¢; ducks, 14¢; turkeys, 18¢; capons, 18@20¢. Grain prices at the mills are as follows: Wheat, 95¢; corn, 74¢; oats, 57¢; rye, 83¢.

Chicago.

Wheat.—No. 2 red, \$1.01½@1.03; May, \$1.02½; July, 97½¢.

Corn.—No. 3, 73½¢; May, 75½¢; July, 75½¢ per bu.

Oats.—No. 2 white, 55½@56½¢; May, 55½¢; July, 50½¢ per bu.

Barley.—Malting grades, \$1.10@1.38 per bu; feeding, 75@80¢.

Butter.—This market remains steady, with quotations unchanged, although receipts show a considerable increase and the demand on shipping account is light. Creameries, 27@30¢; dairies, 23@27¢.

Eggs.—The week's opening saw the heaviest receipts of the season and prices declined a full cent. An excellent local demand, however, is maintaining a firm undertone. Quotations: Firsts, 19½¢; ordinary firsts, 19@19½¢ per dozen; at market, cases included, 19¢.

Potatoes.—A strong demand both locally and at outside points, together with inability to secure cars, are said to explain the big advance since last week. Market has a strong undertone. Michigan and Minnesota stock now quoted at \$1.24@1.45 per bu; Wisconsin, \$1.40@1.45.

Beans.—Firm without material change in values. Quotations are: Pea beans, choice hand-picked, \$2.65 per bu; prime, \$2.50; red kidneys, \$2.50.

Hay and Straw.—Steady with quotations well maintained. Timothy, choice, \$24.50@25.50; No. 1, \$22.50@23.50; No. 2 and No. 1 mixed, \$21@22; No. 3 and No. 2 mixed, \$16.50@20; clover, \$19.50@21.50; alfalfa, choice, \$22.50@23; No. 1, \$21@22; No. 2, \$19@20.50. Straw—Rye, \$8.50@9.50; oat, \$9@10; wheat, \$7.50@8.50.

New York.

Butter.—Values are generally a shade lower with receipts normal and demand ordinary. Creamery special, 31½@32¢; extras, 31¢; firsts, 30@30½¢; packing stock current make, 23¢ per lb.

Eggs.—Market is fidgety with prices on Tuesday below the quotations one week earlier. Quotations are: Fresh gathered extras, 22@22½¢; firsts do., 20@21½¢; seconds do., 20@20½¢; western gathered whites, 22@23½¢ per dozen.

Poultry.—Alive.—Market is easy. Western chickens, 13¢; fowls, 14@14½¢; turkeys, 15@26¢ per lb. Dressed—trade is quiet. Fresh killed fowls, 14@16½¢; turkeys, 14@22¢ per lb.

Boston.

Wool.—Nothing new occurred in the wool market the past week. Buying in the producing states is continuing and the local market remains dull, except for a slight revival in some of the lower grades of fleeces. Prices, however, are steady with those of former weeks. The leading domestic quotations for fleeces range as follows: Ohio and Pennsylvania fleeces—Delaine washed, 31@32¢; XX, 28¢; fine unmerchable, 23¢; ½-blood combings, 26½@27¢; ¾-blood combings, 28¢; ¼-blood combings, 27@28¢; delaine unwashed, 25@26¢; fine unwashed, 20½@21¢. Michigan, Wisconsin and New York fleeces—Fine unwashed, 19¢; delaine unwashed, 23¢; ½-blood unwashed, 26¢. Kentucky, Indiana and Missouri—¾-blood

Butter.—Market firm at 30¢ per lb., the price of the previous week. The output for the week was 775,000 lbs., compared with 775,000 lbs. a week ago.

THE LIVE STOCK MARKETS.

Buffalo.

April 1, 1912.

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

Receipts of stock here today as follows: Cattle, 185 cars; hogs, 75 double decks; sheep and lambs, 95 double decks; calves, 2,000 head.

With 185 cars of cattle on our market here today, and this being the last week in Lent, and also a week of Jewish holidays, our market was slow and from 15@25¢ per cwt. lower on all classes of cattle, and in many instances cattle weighing from 1,150 lbs. up sold fully 35¢ per cwt. lower than last week; however, at the close about everything was sold, with prospects only fair for the remainder of the week.

We quote: Best 1,400 to 1,600-lb. steers \$7.50@8; good prime 1,300 to 1,400-lb. do., \$7.25@7.65; do. 1,200 to 1,300-lb. do., \$6.50@7.25; best 1,100 to 1,200-lb. shipping steers, \$6.50@6.75; medium butcher steers 1,000 to 1,100, \$5.50@6.10; light butcher steers, \$5.25@5.60; best fat cows, \$5@5.50; fair to good do., \$4@4.25; common to medium do., \$3.25@3.75; trimmers, \$2.25@2.75; best fat heifers, \$5.75@6.25; good do. \$4.75@5.25; fair to good do., \$4.50@4.85; stock heifers, \$3.75@4.25; best feeding steers, dehorned, \$5@5.25; common feeding steers, \$4@4.25; stockers, all grades, \$3.50@4; prime export bulls, \$5.50@6; best butcher bulls, \$4.75@5.25; bologna bulls, \$4@4.50; stock bulls, \$3.25@4; best milkers and springers, \$4@5.00; common to good do., \$2.50@3.00.

The milker and springer trade was from \$3@5 lower than last week and the common kind very hard sellers.

The supply of hogs today was moderate, and with light runs all over the east, our market opened 5@10¢ higher on all grades, but closed weak and late sales were at the low point of the day. The general sales of the yorkers and mixed was from \$8.30@8.35; few fancy good weight hogs at \$8.40; lights, \$7.90@8.10; pigs, \$7.50@7.75; roughs, \$7@7.40; stags, \$5@6. Prices are plenty high here today, and being the last week of Lent, will no doubt have some effect on the trade, and do not look for any red hot market this week.

The lamb market was slow today; most of the choice lambs selling from \$8.20@8.25. We sold two loads of choice at \$8.40. Look for steady to shade higher prices the balance of the week with moderate receipts. The sheep market was active; prices about a quarter higher than last week. Prospects steady.

We quote: Best lambs, \$8.20@8.25; cull to common do., \$6.50@7.50; wethers, \$6.25@6.40; bucks, \$3.25@4.50; yearlings, \$6.75@7.25; handy ewes, \$6@6.15; heavy ewes, \$5.85@6.10; cull sheep, \$3.50@4.50; veals, choice to extra, \$9@9.25; fair to good do., \$8@8.50; heavy calves, \$4.50@5.50.

Chicago.

April 1, 1912.

Cattle. Hogs. Sheep.
Received today 17,000 30,000 27,000
Same day last year .. 21,705 44,159 19,368
Received last week .. 48,588 141,006 110,616
Same week last year .. 46,595 153,628 73,263

Holy Week begins today, and this doubtless accounts for the limited call for cattle. Fortunately for sellers, the receipts are unusually small for a Monday, and prices are well maintained, with some of the better class of cattle bringing advances of 5@10¢, a sale at \$8.70 being reported. Hogs are in lively demand at further advances of 5@10¢ the run being uncommonly small to begin a week with. Sales are made at \$7.50@8, and early there were rumors that \$8.05 had been paid. Hogs received last week averaged 218 lbs., compared with 240 lbs. a year ago and 227 lbs. two years ago. Sheep and yearlings are so few that prices are generally maintained, and fat lambs are going at former figures, with no excessive offerings, but buyers are bidding lower for other kinds. A strengthening factor is found in the meager receipts at Missouri river markets owing to the floods.

Cattle supplies last week could not be termed especially large, yet the market developed weakness by Wednesday so far as the medium and plain grades were concerned, followed by a further decline the following day in most beef cattle, despite a small Thursday run. The Monday market was the best of the week, with receipts of 20,248 head and a rise of a dime in attractive steers, cows and heifers, but later in the week buyers did not need many cattle, as they had secured nearly enough at the start to meet the wants of their customers. The nearness of Holy Week was unfavorable for a normal consumption of beef and other meats, and furthermore, the abundance and cheapness of eggs caused their large substitution for meats. There was the customary scarcity of prime beefs of heavy weight, these selling at \$8@8.65, with the bulk of the beef steers finding buyers at a range of \$6.25@8.10, and the poorer light-weight steers going at \$5.25@6.50. Fair to medium steers were purchased around \$6.60@6.75, and medium to good lots went for \$6.80@7.45, a good class bringing \$7.50@7.95. Yearling steers of a desirable kind were obtained at \$6.75@8.10, and cows and heifers had a very good outlet on the whole at \$4.25@7.40, a car load of 28 head of Hereford yearling heifers and steers that averaged 711 lbs., largely heifers, selling at \$7.60. A few prime cows were picked up for \$6.40@7, and sales were made of cutters at \$3.60@4.20, canners at \$2.25@3.55 and bulls at \$3.65@6.40. It will be seen from these sales of various descriptions of cattle that values were much higher than in most former years. The stocker and feeder market also ruled extremely high, although sales were relatively low when compared with finished beef cattle. Stockers found buyers at \$4.25@6.25, feeders at \$5.50@6.60 and stock and feeder heifers at \$3.85@4.60. Calves were in improved

demand at higher prices, sales being at \$3.50@9. Milch cows were active and advancing, with sales at \$35@70 each. The market closed Saturday largely 10@15¢ lower for beef cattle than a week earlier, choice lots excepted.

Hogs made further high records in prices last week, going at much the highest values of the year, with prime barrows fetching the highest prices since last August. Local packers were evidently hungry for hogs, and so were eastern shippers, a liberal share of the daily offerings being shipped east, as eastern hogs were mostly marketed weeks ago. The choicest droves were sold chiefly to shippers, with heavy and medium weights largely taken, but prime light hogs that averaged somewhat under 200 lbs. sold nearly as high as the heavier lots of prime grade. The packers own, it is generally understood, the great bulk of the unusually heavy accumulations of provisions stored here and in other western packing points and are willing to keep hogs at high prices in order to make high prices for cured products. Hogs are coming to market good in average quality and are selling largely near highest quotations daily. The combined hog receipts at all western markets so far this year are greatly in excess of those for the like period last year. The market late in the week ruled firm at \$7.50@7.95, compared with \$7.20@7.62½ a week earlier, with pigs bringing \$5.30@7.45 and stags \$7.80@8.15, while boars sold at \$3.50@4 and government throwouts at \$2.25@6.20.

Sheep and lambs made further sensational advances last week, prime lambs leading off, as usual, and bringing the highest prices recorded in a year and a half. The upward movement was brought about by an urgent demand for high-class Colorado lambs and utterly inadequate offerings. Sheep and yearlings were extremely scarce and active at further advances, receipts running chiefly to lambs. The week started off with an unusually large Monday supply, but smaller runs took place on subsequent days. A very large share of the receipts consisted of Colorado and Nebraska-fed lambs, with Mexican stock predominating. Although the aggregate receipts for the week showed large gains, prices for the better class of live muttons were advanced 10@25¢, the poorer lots remaining about steady. Woolled stock sold as follows: Lambs, \$7@8.25; feeding and shearing lambs, \$5.50@7.15; yearlings, \$6.40@7.25; wethers, \$5.30@6.50; ewes, \$3.25@6.50; bucks, \$4@5.25. Clipped flocks sold at a discount of about \$1.

Horses were active last week, but buyers were particular and discriminated severely against all inferior animals, these ruling slow and weak, some horses going around \$85 per head. Farm workers weighing 1,100 to 1,450 lbs. are in large demand at \$100@200, with much the best demand for breeding mares. Chunks weighing 1,250 to 1,450 lbs. are taken at \$150@200, and light drafters sell for \$175@225, with a high-class heavy description in big demand for eastern shipment at \$250@325 and not many offered. Wagon horses sell on a basis of \$160@250, not very many selling above \$200.

LIVE STOCK NOTES.

The wool situation is very strong at the present time, and sheepmen are not disposed to sell as a general rule except at considerably better prices than were paid a year ago. Sales at the large feed lots near Chicago have been made within a short time at 20@21¢ per pound for lamb wool and at 17½@19¢ for wether wool, while as far west as Montana buyers who are offering from 17@18¢ find few owners who will accept less than 20¢ or higher. Oregon and Washington shearing began sometime ago, and an advance of two cents over last spring's prices is asked. Eighteen cents has been paid in Utah, and some clips were sold recently at 17¢ in Idaho. Manufacturers are known to have less wool than usual, and the mills of Lawrence, Mass., have been reopened, with supplies much below their necessities.

Immediately after the acquittal by the federal jury, of the Chicago packers charged with violating the Sherman law, shares of Swift & Company stock jumped from \$103 to \$109. The stock has been a regular dividend payer at the rate of seven per cent per annum for years, and there are 18,000 stockholders in the company. The recent buying of the stock came from miscellaneous sources, though a good part of the orders were credited to the New England states, where the holdings of the stock of the corporation are very large.

Many stockmen who make it part of their business to prepare beef cattle for the market are shy about finishing off their holdings, and as this has been the prevailing rule all the past winter season, the last fall's purchases of feeders have been sent back to market unusually deficient in both weight and quality. In various places a scarcity of rough feed has hurried cattle to market prematurely, and of late lack of help on many farms and the nearness of the muddy period of the year have combined to hasten sales of cattle that should have been kept back several months longer to place them in the class of fat stock, such as buyers are clamoring for. It is true that the market requirements do not call for liberal supplies of such cattle, but the unusual lack of them makes a good outlet. Never before at this season of the year has there been such a marked deficiency of choice beefs and such a large marketing of common and medium grades of light-weight steers, and many well-informed men believe that supplies for May, June and July will prove to be the smallest volume ever known since the establishment of the packing industry in the west. The conditions above enumerated are general and extend to such states as Illinois, Iowa, Indiana, Ohio, Wisconsin, Minnesota, the Dakotas, Missouri, Nebraska and Kansas.

THIS IS THE LAST EDITION.

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

DETROIT LIVE STOCK MARKETS.

Thursday's Market.

April 4, 1912.

Receipts, 1,260. Bulls 25c lower; all other grades steady.

We quote: Extra dry-fed steers and heifers, \$7@7.25; steers, and heifers, 1,000 to 1,200, \$6@6.75; do. 800 to 1,000, \$5.25@6; do. that are fat, 500 to 700, \$4@5; choice fat cows, \$5@5.25; good do., \$4.25@4.75; common cows, \$3.25@3.50; canners, \$2@3; choice heavy bulls, \$5; fair to good bolognas, bulls, \$4@4.75; stock bulls, \$3.50@4.25; milkers, large, young, medium age, \$40@50; common milkers, \$20@30.

Roe Com. Co. sold Newton B. Co. 18 steers av 1,204 at \$7, 3 do av 1,087 at \$7, 2 do av 1,045 at \$6.50, 1 cow weighing 740 at \$2.25, 1 do weighing 1,210 at \$4.50, 15 steers av 987 at \$6.25, 15 do av 1,020 at \$6.25, 3 do av 1,150 at \$6.75, 10 do av 720 at \$5.50, 11 butchers av 815 at \$5.50, 2 cows av 810 at \$4; to Sullivan P. Co. 1 canner weighing 780 at \$3; to Thompson Bros. 3 butchers av 757 at \$4.50.

Bishop, B. & H. sold Bresnahan 3 butchers av 666 at \$5.35, 3 do av 647 at \$4.25, 2 do av 635 at \$4.50; to Hammond, S. & Co. 5 cows av 776 at \$3.25, 1 do weighing 830 at \$4.50, 1 bull weighing 890 at \$4.50, 1 cow weighing 740 at \$3, 5 do av 1,044 at \$4.60, 2 steers av 690 at \$5.50, 3 butchers av 900 at \$4.80, 3 cows av 1,110 at \$4.20, 10 butchers av 906 at \$4.50, 3 cows av 920 at \$3.50; to Newton B. Co. 19 steers av 813 at \$6.25, 2 do av 1,210 at \$7, 4 do av 1,265 at \$8, 4 do av 970 at \$6.25, 14 do av 980 at \$6.25, 12 do av 903 at \$6.20, 5 canners av 926 at \$3, 1 cow weighing 1,060 at \$4.50, 1 do weighing 1,000 at \$5, 1 bull weighing 1,320 at \$5.50, 2 cows av 1,010 at \$3, 2 do av 970 at \$4.25, 5 canners av 840 at \$3; to Parker, W. & Co. 2 canners av 975 at \$3.25, 3 cows av 1,083 at \$4.25, 2 bulls av 1,325 at \$4.75, 4 cows av 735 at \$3.25, 11 do av 958 at \$4.50, 20 steers av 1,057 at \$7.15, 1 bull weighing 1,300 at \$5, 1 do weighing 1,190 at \$4.75, 5 cows av 948 at \$4, 3 bulls av 1,320 at \$4.75, 10 steers av 628 at \$5, 3 butchers av 883 at \$4.

Spicer & R. sold Kamman 2 cows av 1,210 at \$4.75, 1 steer weighing 880 at \$5.75, 1 cow weighing 1,110 at \$4, 7 steers av 831 at \$5.75, 8 butchers av 820 at \$4.75, 1 bull weighing 930 at \$4.75, 4 cows av 1,042 at \$3.65; to Hammond, S. & Co. 1 cow weighing 740 at \$3.10, 4 do av 1,950 at \$4.10, 1 do weighing 790 at \$3.10, 8 do av 1,020 at \$4.10, 6 steers av 986 at \$6.15; to Patterson 1 cow weighing 770 at \$3.60, 1 do weighing 700 at \$3.35, 2 do av 725 at \$3.50; to Fry 2 butchers av 830 at \$5.50, 2 cows av 965 at \$4.25; to Parker, W. & Co. 21 butchers av 856 at \$5.50; to Kull 9 do av 800 at \$5; to Nagle P. Co. 22 steers av 1,160 at \$6.55; to Fry 1 cow weighing 1,060 at \$4.50, 3 heifers av 573 at \$5; to Kull 7 butchers av 664 at \$4; to Sullivan P. Co. 1 cow weighing 1,060 at \$3.25; to Mich. B. Co. 10 butchers av 818 at \$4.75; to Newton B. Co. 5 do av 840 at \$5.65, 1 cow weighing 900 at \$4.50.

Haley & M. sold Parker, W. & Co. 5 butchers av 628 at \$5; to Breitenbeck 17 do av 825 at \$5.50, 2 cow and bull av 1,085 at \$4.50; to Kamman 11 steers av 870 at \$6.25, 6 do av 753 at \$5.25; to Nagle P. Co. 4 do av 1,097 at \$6.65; to Mich. B. Co. 2 cows av 1,000 at \$4.60, 4 do av 952 at \$3.50, 1 do weighing 1,330 at \$5, 1 heifer weighing 710 at \$5, 1 do weighing 600 at \$4.

Adams sold Mich. B. Co. 15 butchers av 756 at \$5.25.

Merritt sold Parker, W. & Co. 2 cows av 900 at \$3.50, 2 bulls av 1,245 at \$4.75, 4 cows av 822 at \$3.75, 1 steer weighing 1,090 at \$6.50.

Weeks sold Sullivan P. Co. 4 butchers av 882 at \$5.80, 1 cow weighing 830 at \$3.

Veal Calves.

Receipts, 884. Market active at last week's prices. Best, \$8.75@9.50; others, \$4@8; milch cows and springers, common grades, very dull.

Bishop, B. & H. sold Goose 5 av 125 at \$6, 11 av 120 at \$6; to Hammond, S. & Co. 10 av 146 at \$9, 20 av 120 at \$8.75, 3 av 109 at \$6, 9 av 140 at \$9, 1 weighing 130 at \$9.50; to Parker, W. & Co. 13 av 135 at \$9, 2 av 145 at \$6, 14 av 135 at \$7.75, 5 av 125 at \$9.50, 13 av 130 at \$9, 20 av 145 at \$9, 9 av 150 at \$9; to Sullivan P. Co. 7 av 110 at \$6, 9 av 150 at \$9, 14 av 155 at \$9; to Newton B. Co. 9 av 140 at \$9; to Goose 5 av 125 at \$8.50; to Goose 13 av 140 at \$7; to Thompson Bros. 26 av 120 at \$6.75; to Burnstine 24 av 135 at \$9; to Hammond, S. & Co. 10 av 183 at \$9, 2 av 140 at \$9; to Parker, W. & Co. 31 av 145 at \$7, 3 av 165 at \$4.

Spicer & R. sold Newton B. Co. 3 av 275 at \$5, 14 av 120 at \$6.50; to Mich. B. Co. 3 av 110 at \$8.25, 3 av 110 at \$7, 13 av 140 at \$9, 2 av 105 at \$7, 23 av 130 at \$8.75, 7 av 145 at \$9; to Thompson Bros. 1 weighing 170 at \$6.50, 6 av 155 at \$8.50. Chase sold Parker, W. & Co. 9 av 138 at \$9.25.

Haley & M. sold Parker, W. & Co. 7 av 180 at \$7.50, 11 av 130 at \$8.75. Sandell & T. sold Mich. B. Co. 23 av 140 at \$7.75.

Lovewell sold Burnstine 8 av 200 at \$6, 18 av 140 at \$8.

Sheep and Lambs.

Receipts, 3,316. Market slow at Wednesday's prices; about 10c lower than last week. Best lambs, \$8; fair to good lambs \$6.50@7.25; light to common lambs, \$5.50@6; yearlings, \$8.50@6.75; fair to good

sheep, \$5@5.50; culls and common, \$3@4. Spicer & R. sold Thompson Bros. 2 sheep av 105 at \$5; to Kull 30 lambs av 55 at \$6.50; to Newton B. Co. 12 do av 70 at \$7.50, 124 do av 70 at \$7.50.

Kalaher sold Mich. B. Co. 42 spring lambs av 62 at \$12.50.

Bishop, B. & H. sold Parker, W. & Co. 69 lambs av 75 at \$7.75; to Thompson Bros. 12 sheep av 85 at \$5, 3 do av 80 at \$3; to Sullivan P. Co. 15 lambs av 55 at \$5.75, 18 do av 50 at \$5.75; to Gauss 438 do av 88 at \$8; to Breitenbeck 76 do av 65 at \$7.50; to Barlage 10 do av 74 at \$7.50, 19 do av 58 at \$7, 8 do av 55 at \$6, 20 do av 60 at \$7, 17 do av 60 at \$6; to Young 25 do av 80 at \$7.75, 67 do av 80 at \$7.75, 50 do av 85 at \$7.75; to Mich. B. Co. 23 do av 75 at \$7.50, 23 do av 77 at \$7.40, 48 sheep av 100 at \$3.50, 18 lambs av 75 at \$7, 53 do av 60 at \$6.65; to Hammond, S. & Co. 31 do av 70 at \$5.75; to Fitzpatrick Bros. 16 sheep av 105 at \$5.25, 21 do av 100 at \$5.40.

Hogs.

Receipts, 3,672. None sold up to noon; look 10c lower than Wednesday, or about steady with last week's close.

Range of prices: Light to good butchers, \$7.80@7.85; pigs, \$6.75@7; light yorkers, \$7.60@7.75; stags one-third off.

Bishop, B. & H. sold Parker, W. & Co. 210 av 180 at \$7.85, 35 av 165 at \$7.55, 540 av 170 at \$7.80, 215 av 130 at \$7.50.

Spicer & R. sold Hammond, S. & Co. 245 av 195 at \$7.85, 210 av 150 at \$7.80, 140 av 165 at \$7.55.

Haley & M. sold same 250 av 190 at \$7.85, 254 av 175 at \$7.80, 165 av 160 at \$7.75.

Roe Com. Co. sold Sullivan P. Co. 155 av 190 at \$7.85, 160 av 175 at \$7.80, 85 av 160 at \$7.75.

Friday's Market.

March 29, 1912.

Cattle.

Receipts this week, 1,522; last week, 1,621. Market strong at Thursday's prices.

We quote: Extra dry-fed steers and heifers, \$6.75@7; steers and heifers, 1,000 to 1,200, \$6@6.75; do. 800 to 1,000, \$5.25@6; do. that are fat, 500 to 700, \$4.50@5.25; choice fat cows, \$5@5.25; good do., \$4.25@4.75; common cows, \$3.25@3.75; canners, \$2@3; choice heavy bulls, \$5@5.25; fair to good bolognas, bulls, \$4@4.75; stock bulls, \$3.50@4.25; milkers, large, young, medium age, \$40@50; common milkers, \$20@30.

Receipts this week, 1,268; last week, 1,225. Market steady at Thursday's prices. Best, \$8.75@9.50; others, \$4@8; milch cows and springers, common very dull.

Sheep and Lambs.

Receipts this week, 5,758; last week, 6,417. Market 15@20c lower; quality not so good. Best lambs, \$7.75@7.85; fair to good lambs, \$6.75@7.50; light to common lambs, \$5@5.75; yearlings, \$6.50@6.75; fair to good sheep, \$4.75@5.35; culls and common, \$2.50@3.25.

Hogs.

Receipts this week, 5,825; last week, 5,989. Market 5@10c higher than Thursday. Range of prices: Light to good butchers, \$7.75@7.85; pigs, \$6.75@7; light yorkers, \$7.40@7.60; stags one-third off.

As the season advances the receipts of prime heavy beef cattle at western markets continue to form a meager proportion of the aggregate offerings, and the percentage is now smaller than at any previous time this year. Consequently extremely liberal premiums are paid readily for the few fancy consignments of steers of good weights, and the same is true of prime heifers and cows, fancy spayed heifers having sold within a short time as high as \$7 per 100 pounds in the Chicago market.

Clay, Robinson & Co., of Chicago, report constantly increasing evidence of the scarcity of stock cattle everywhere, and an inquiry even came from as far off as Maine not long ago, while several days ago an order was filled for feeder heifers for shipment to South Carolina. "Several loads of steers have been sent to West Virginia and Pennsylvania. A load of feeders was bought for a Missouri man who lived in Kansas City territory. He did not get them cheaper here, but he could not find what he wanted at that point. Urgent request for both she and steer stuff was made by Wichita, Kan., stockmen. If there is an acute scarcity of young cattle now, what will it mean to prices when grass shows up and the demand from all quarters becomes insistent? Those who have the feed are filling their orders now and intend to avoid the crowd in later weeks and the resultant higher prices."

R. F. Bicknell, of the prominent firm of Bicknell & Gemmell, with headquarters at Idaho, says: "As compared with recent years, all of the range states have a shortage of sheep and it will be especially noticed in the 1912 crop of wool. If spring weather conditions are favorable and drought does not hit the range states again next summer and fall, I look for liberal supplies of range sheep and lambs to be sent to market next season, as forced liquidation will not have ceased by that time. There is a marked shortage of young breeder ewes in most of the northwestern range states and prices are ruling 25 to 50 cents per head higher than a year ago, with the demand increasing as the news of this shortage spreads."

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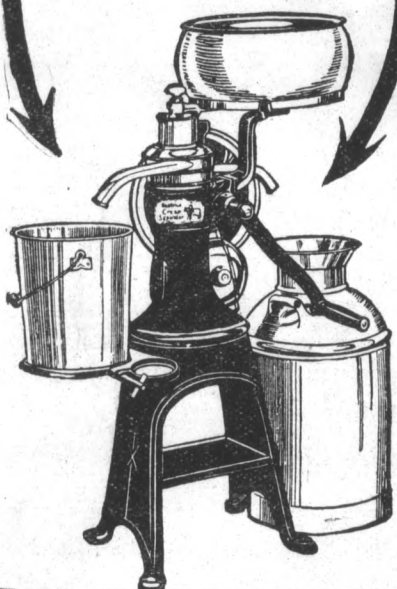
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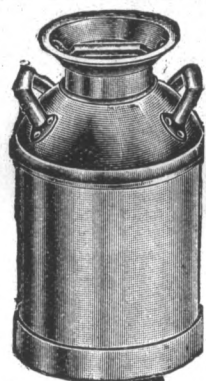
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THE DAIRY

CONDUCTED BY COLON C. LILLIE.

FEEDS AND THEIR ECONOMIC USE.

Address by Colon C. Lillie before the last meeting of the Michigan State Dairymen's Association.

Mr. President, Members of the Michigan Dairymen's Association, Ladies and Gentlemen:—I wish I had something new to tell you about feeds; but this subject has been studied pretty thoroughly for the last number of years, and if anything along this line has developed that is absolutely new it has not been brought to my notice. So I can simply tell you, perhaps in a little different way, some of the old things about feeds and their economic use.

The more experience I have with feeds and feeding, especially in feeding the dairy cow, the more I believe that the most important factor, if I may be permitted to say that one factor is more important than another, is palatability. You cannot get animals to do their best unless the food is palatable; that is, unless they like it. We can reason this out with ourselves. It matters not whether someone tells us that this product or that product is an excellent food—if it is not satisfactory to our individual palates we don't consume very much of it; and that is the way it is with the dairy cow. You may

for a succulent food and substitute silage, but when Professor Henry, down at the Wisconsin Experiment Station, secured such satisfactory and almost remarkable results from corn silage we planted our beet patch to corn, and we have not grown any beets for this purpose since. One of the great arguments for the silo is that it furnishes a succulent food in the ration which has a value over and above its chemical analysis, and it aids the cow in getting more economic digestion and assimilation of the dry food in the ration.

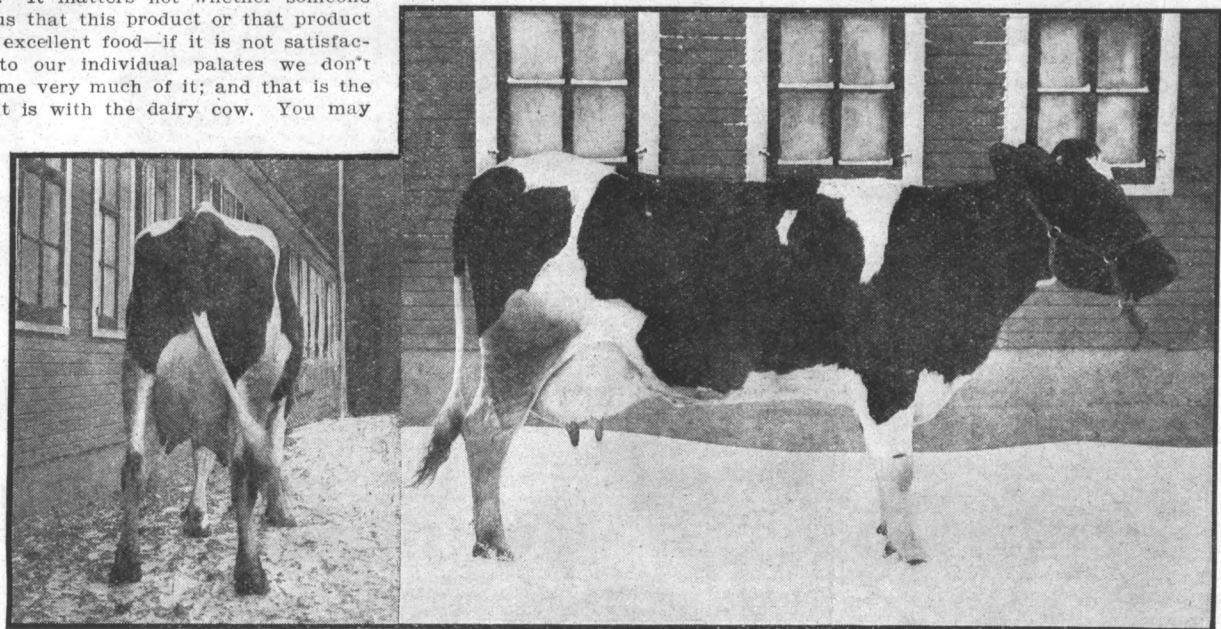
Now we want a food that is digestible, too. I was told once, by a very prominent man, that the reason why the cow got more good out of corn silage than she did out of the dry corn plant was because it was more palatable. He disregarded the fact that the corn silage at a certain stage of the growth of the corn plant is more digestible than when dead ripe. I am satisfied that he is wrong in this theory. My argument is that you get more out of silage, first, because it is palatable, and second, because of its digestibility. You put the corn into the silo when it contains the largest percentage of digestible nutrients.

We have filled a silo with beet-tops and dry cornstalks. We husked the corn this

corn plant is a very digestible food. The co-efficient of digestibility is large in the by-products from the corn plant which we purchase, like gluten feed, gluten meal, etc., after the part needed in the manufacture of alcohol and human food is removed. I say these by-products have a large co-efficient of digestibility and are used with great profit in the feeding of live stock. I would not, however, choose a food of high digestibility if it lacks in palatability, and that might be the case.

There are other things to consider in compounding a ration for the dairy cow. One of the most important is the one that Dr. Robison spoke about—the balancing of the ingredients of the food so that the animal will have about the right proportion of protein to the carbohydrates. This is the whole meat of the question, and lots of us haven't got hold of this side of the question as we should. As the cost of foods increase we will more and more use our lead pencils in figuring out the money side of this question.

Even if carbohydrates are cheap we cannot afford to waste them in the ration, and when we determine what proportion of carbohydrates are required, and taking that into account, feed only that amount, and do not feed either too much or too little of that which is required to



Two Views of Pontiac DeNijlander, who Holds Michigan's Three-year-old Milk and Butter Record. (See page 428).

prepare a ration, either a single food ration or a combination of foods, and unless the cow likes it she will not consume enough of it so that she will do her best.

Some people sometimes have an economical streak in the purchase of foods—they buy feed a little bit off in flavor, salvage grain for instance. I have done this myself but I don't think, my friends, that it is the best thing to do. I doubt if it pays for even feeding to hogs, for if you want to make a gain with hogs this very same thing enters into the proposition—palatability. A hog responds to palatable food as well as a dairy cow.

I realize that sometimes we have foods that are a little bit off in flavor from some cause or other. I do not say that we should destroy these foods, but I do say that if you want your herd of cows to do their very best, such feeds are not the ones to use. You should study to see that your animals relish what you are offering them.

Again, we want a succulent food in the ration. You cannot get the best results in feeding animals unless the food has succulency. I think there is a distinction between palatability and succulency. Some people think that it makes no difference if it is only palatable. You can have a palatable food from dry foods, but it will not give the results that a succulent food will. When you come to feed your animals for a long period of time and compare the results obtained from feeding dry feed with those where the ration contains succulency you will quickly and positively conclude that succulency has a beneficial effect on digestion. It stimulates the flow of the digestive fluids, and the animals can eat more of the dry foods in the ration and get better assimilation from them when one food in the ration is of a succulent nature.

Of course, the practical man has known this for a long time. The old Scotch farmer raised turnips to feed his animals, because he could not give them the finish that he wanted if he did not have succulent foods. The English farmer used rutabagas, and the New England farmer used mangel wurzels. For some time I hesitated to give up the growing of beets

fall by hand because it was such an unfavorable fall. The weather conditions were so bad, and the cornstalks were so saturated with moisture that if we shredded them and put them into the mow they would mold, and we would lose a large part of them. I conceived the idea of husking the corn by hand and running it through the cutter together with the beet tops, so now we have a silo of sugar beet tops and dry cornstalks. We mixed them together and they were cut up by the ensilage cutter and blown into the silo. The beet tops contained a large amount of moisture, not only in themselves, but there was a lot of external moisture. Some of the tops were frozen solid when run through the cutter. The cornstalks contained more than the usual amount of moisture, owing to weather conditions, and if we had put them into the mow in that condition dry mold would have developed, and we would certainly have lost them. We knew that the beet tops contained an excess of moisture and that the cornstalks would absorb some of this and thus enable the whole mass to pack close together, with heat enough to drive off the oxygen between the particles of cornstalks and beet tops, and thus make a fine succulent food.

I am not foolish enough to believe that the cows are going to get as much food out of this as if I had put the corn plant into the silo when it was just right, because a part of it has turned to cellulose and woody fibre and has become less digestible; and yet I do believe that I am going to get a larger feeding value out of them than if fed without mixing them with beet tops. A lot of it, however, will be a filler, it will be indigestible crude fibre and it will not produce a good flow of milk.

So we have these three essentials in a food or ration: palatability, succulency, digestibility. We must figure on these when we figure on a ration for the dairy cow. We know from our experience that when we get results from feeding a cow it is because a large part of that food is digestible, and the cows manufacture milk out of it, but if it was not digestible they could not manufacture it into milk. The

enable the animal to perform her functions to the highest degree of efficiency, then you will have solved one of the cost problems in this proposition. There must be present in the ration all that she can utilize of these ingredients, but any more will be wasted.

When the cow is dry, is not giving milk, it is not economical to feed her the same ration that she would have on a full flow of milk. The same rule applies to horses. A great many farmers feed their horses the same ration when idle in the winter as in the summer when they are working hard. That is not an economical thing to do because when the horse is performing labor he is breaking down the muscular tissues which are composed largely of nitrogen, and it takes protein to build these muscular tissues up. So, when you are working the horses at severe labor there should be more protein in their ration than when they are standing in the barn, idle. You can feed more corn and hay and less oats and other feeds rich in protein in the winter than you do in the summer, and if you do it both you and your horses will be much better off.

So, when the dairy cow is dry she need not consume as much of the protein as she needs when producing a flow of milk, because in order to produce casein in the milk she must have nitrogen or protein in her food. You cannot manufacture casein out of starch or sugar. It is said that it is a poor rule that won't work both ways, but here is one that does not work both ways. An animal may live on protein alone. The animal economy seems to have the power of taking protein to build up the muscular tissues and also can burn it in the body to keep up the temperature and produce energy. But, on the other hand, it cannot take starch and sugar and build up the muscular tissue.

It is a foolish thing from a business standpoint to feed a dairy cow an unbalanced ration. She wants enough protein to build up the vital parts of her body and supply the nervous energy and produce the nitrogenous part of the dairy product, and she wants enough of carbohydrates to keep her warm and to furnish

the energy necessary to enable her to do her work. And, when you give an excess of any of these you are feeding an extravagant ration, you are wasting food. I take it that those cows of the upper peninsula, referred to by the chairman, would consume a large amount of carbohydrates if they were kept out in the cold zero weather. You must burn fuel somewhere to keep the temperature of the body up to where it should be. On the other hand, in a warm dairy barn the cow does not need so much fuel to keep up this body heat to its normal temperature. All these things must be considered in compounding an economical ration.

Another principle should be considered. We must not attempt to get the most economical results out of an entirely bulky ration. At the Nebraska Experiment Station, I think it was, cows were fed entirely on alfalfa hay and corn silage. They did very well for a time but gradually lost flesh and it became necessary to give them grain in connection with the bulky food. We all know that common clover hay contains carbohydrates and protein in about the right proportion for feeding as a balanced ration, so far as it goes, for a milch cow. But, you cannot get results from feeding entirely on clover hay because it is too bulky, there is too much fiber, and the cow has not the capacity to get enough nutriment out of it to produce a maximum flow of milk. So, you must have some concentrated food in the ration if you want the cow to do her best.

I think that every farmer in the state of Michigan who keeps dairy cows should make provision to have all the alfalfa or clover hay and corn silage that the cow will eat up clean 365 days of the year. Those foods are the basis of the economical ration. We want clover hay because we want to grow the clover plant. We cannot maintain a permanent agriculture in this country unless we grow clover or alfalfa. And, right here I want to put an interrogation mark after alfalfa. We don't know enough about alfalfa to talk of it as we do red clover. We cannot maintain a permanent agriculture in this country without the use of red clover, hence we must grow it on the farm. It is not necessary to turn under the first crop. We can cut that for hay if we put the manure back on the farm. We also want the clover plant because it is a splendid dairy food.

We need corn silage because we can grow the greater number of tons of cow feed from this plant than any other plant that grows in this latitude. We cannot make as great a success without it as with it. And, right here I want to ask, who knows the limit of production of Indian corn? The average yield is between 30 and 40 bushels to the acre. Lots of people do not raise 20 bushels of shelled corn, and yet a boy down in South Carolina raised more than 200 bushels on an acre, and a man on the barren soil of a New England farm raised 126 bushels to the acre, containing only ten per cent of moisture. But about corn silage. What is a good crop of corn silage? How much can we raise to the acre? They will tell you that ten tons is a fair crop. I have on my farm filled a silo 16½ feet in diameter and 40 feet deep, from 12 acres, and that is a good deal more than ten tons to the acre—it is nearly 20 tons. I hope to be able to make my entire area in the future average 20 tons to the acre. But, friends, that is not the limit. We had an example set for us by a woman down in Lenawee county. A seed company down east offered a prize of \$50 for the greatest number of tons of silage raised to the acre with their seed, and Mrs. Harris competed for this prize. The corn is a large variety raised in Virginia. Out of the four acres planted she selected one acre to compete for the prize. The seed firm had the officials of Adrian, sealers of weights and measures, determine the yield of this acre of ground. It was too far to haul all of it to Adrian, so four square rods were selected and the corn cut and drawn and weighed, and it was found that there were 3,500 pounds on that four square rods. Forty of these to the acre would make 70 tons of green forage on the acre. Mrs. Harris got the prize.

Now the corn plant, the giant of the grass family, a plant that will take enough food from the soil and atmosphere to produce 70 tons to the acre, is certainly a wonderful plant if you will feed it and give it a chance.

I think I ought to make a little explanation about this crop and the acre on which it was grown. Part of the land was an old hog pasture, and another portion of it had previously been used as a

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This is the good advice one of the big and long experienced Western cream buying concerns gives to its farm separator patrons, being taken from a letter to one of them:

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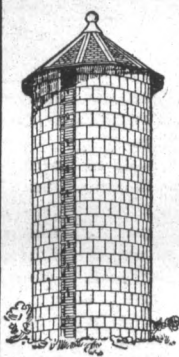
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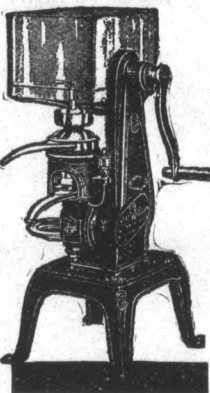
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The Great Western bowl follows nature's laws by delivering the cream from the top and the skim milk from the bottom. There is no chance of their mixing—so you get the utmost in quantity and quality of cream—even when skimming COLD milk.

The bowl of the Great Western is self-draining and self-flushing. There are no long tubes, no minute slots, nooks, corners, crevices or ragged edges to hold milk and collect dirt.

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ever offered in a cream separator. We will arrange to give you any kind of a trial you want on any size Great Western.

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Let us send you our big book on more dairy profits. See how you can make from \$10.00 to \$15.00 more each year from every cow you milk. See the only separator that follows natural laws. The only separator cleaned in a jiffy. Skims warm or cold milk to a trace.

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For dairy use, Worcester Salt is put up in 28 and 56 pound bags. The bags are made of the best quality Irish linen. Good grocers everywhere sell Worcester Salt. Get a bag.

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Six Years' Continuous Service.

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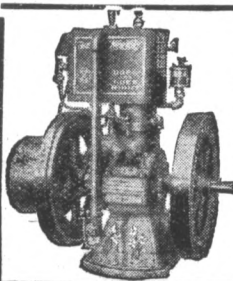
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hen park for years. Mrs. Harris is a wise farmer. She knows something of the nature of the Indian corn plant, and while this land naturally under these conditions would be quite rich, she had it all covered over with good stable manure and plowed down. Besides, she used 350 pounds of commercial fertilizer to the acre. She knew how to cultivate and take care of it. And there must have been a fairly good distribution of moisture to have ever got the yield of ensilage corn that she did.

Yes, we must have this wonderful corn plant to feed the dairy cow so that we can make the greatest profit from her. We want it because we can get succulency with it, and because we can get so much feed to the acre. The Indian corn plant, however, is far from being a balanced food. While red clover contains one pound of protein to five and one-half to six pounds of carbohydrates, Indian corn contains only one pound of protein to 14 pounds of carbohydrates, which makes what we call a wide ration—too much carbohydrates to the protein. The cow could hardly eat enough of the entire corn plant to live on, let alone supplying the demand for milk production; so if you feed corn silage or ensilage you must have a concentrated food with it, because there must be a balancing up of the food nutrients and also less bulk.

And now comes the question, what feed will be used to balance these carbohydrates? The American farmer is wonderfully favored with feeding stuffs for balancing up the food which he produces on his own farm. In the manufacture of human food products and products for use in the industrial world from agricultural products the manufacturer has by-products which are useless to him but which contain a high per cent of protein. For instance, when we make flour out of wheat the by-product is wheat bran, and it is rich in protein. When alcohol is made out of corn, only the starch in the corn, the carbohydrates, are used, and the chit of the corn, which is rich in protein, is only a by-product, and this is manufactured into a food rich in protein. When you make glucose sugar out of corn, you take the starch and by a chemical process change it into sugar, and the by-product is rich in protein, and that is called gluten feed. When we crush flaxseed and extract the oil for commercial purposes to paint our houses, the residue is known as oil cake—oil meal when ground. When crushed, the cottonseed yields cottonseed oil, which is a commercial product used in various forms for culinary and other purposes, and some of it I have heard is bottled up and sold as olive oil. The residues, which are known as cottonseed meal, oil cake, etc., is very rich in protein and we can purchase it at an economical price to feed in connection with clover hay and corn silage to balance up the ration and to also furnish a concentrated food in the ration.

If the farmer does not wish to go outside of his own farm to get concentrated food rich in protein, which he needs, he can get it here in Michigan by raising Canada peas. Peas are almost as rich in protein as gluten feed, and it is a most elegant grain ration for dairy cows. It complies with all the requirements. It is palatable, digestible, and rich enough in protein to balance up the corn silage in your ration. The old Scotchman who took care of Mary Ann of St. Lambert, when she produced 36 pounds of butter in a week, when someone said something to him in regard to this wonderful yield, said: "The wonder is not that her yield is so large, but that the cow could eat so much pea meal."

You can hardly coax cows to eat bean meal but you don't have to coax them to eat pea meal. If the Michigan farmer will raise Canada field peas and grind them into meal and mix them with corn silage and clover hay, he can produce a balanced dairy ration on his own farm. We usually talk about raising peas with oats. The peas have a reclining stem, but when mixed with oats which have quite a stiff straw, hold them up so that they can be harvested with the ordinary modern harvesting machinery. If you cut them before they get dead ripe, the pea and oat straw makes a very good forage.

We have many by-products on the farm, like corn stover, straw, etc., but I would not advise you to feed too much of these by-products if you are thinking of trying to place your cows in the Mary Ann class. You must adhere to the principles which I have expressed here if you want your cows to make records. If she makes a record she has got to be not only a good cow but she must be well cared for, and well fed. She must have food that is

palatable and digestible and succulent, and there must be concentrates as well as bulky foods in the ration. Every man who has attempted to develop his dairy cows to the limit knows this. Don't make up your mind that you can feed the dairy cow straw, timothy hay, and other bulky indigestible foods, and get her to produce a maximum yield, for she cannot do it.

From a practical standpoint we must not waste those by-products on the farm. I think that all the straw should go through the manger and allow the animals to pick out the best part of it. When fed on a balanced ration they can consume part of this to good advantage. That, however, should be only a secondary consideration. The by-products or coarser parts of the food can be fed to your growing animals to develop their digestive apparatus. The mature dairy cow you want to feed to the limit and get the greatest production.

HE LEARNED THE VALUE OF HIS COWS.

I read with interest the criticism of Professor Fraser, by F. M. Ellsworth. I agree with Mr. Ellsworth that there are not many cows, (in Michigan), which give on an average, of not more than two or three quarts a day. But I think there are a good many that do not give over eight quarts for the simple reason that their owners are like Mr. Ellsworth: they measure their milk in a 14-quart pail, (often holding not over 13 quarts), and four quarts looks (with the foam on), like about seven. I believe that if he will weigh that 14-quart pail of milk, he will find that he has about 21 lbs., or 10 1/2 quarts of milk. At least that was my experience.

Two years ago after reading and hearing so much about "robber cows," I decided to test mine and see what they were actually doing. I did so and learned a great many things. In the first place, I had no "robber cows;" my poorest gave 6,541 lbs. of milk in 44 weeks, and my best (a Shortcorn cow 12 years old), gave 8,460 lbs. in 43 weeks.

Now I knew this cow gave a large mess, as I often had to empty that 14-quart pail before finishing milking her, but had thought that some of the other cows, which were part Jersey and gave very yellow milk, were really better. I was surprised at the slight difference there was in the average test for the year, and it gave me a better appreciation of my old Shorthorn. Naturally I will give her better care.

She is now 14 years of age and is giving (on dry feed), 40 lbs. a day. If I had appreciated her worth when she was young, before her constitution was weakened by milk fever, by giving her succulent food and a balanced ration, I could easily have made her produce 12,000 lbs. of milk a year.

Ionia Co.

ROY NORMINGTON.

TWO MICHIGAN RECORDS.

The following records (official) made this winter at Ypsiland Farms, of Washtenaw county are, according to our information, the highest in their class ever made in Michigan.

Pontiac DeNijlander at 3 years, 8 mos. and 14 days, made:

Butter in 7 days, lbs.	30.10
Milk, in 7 days, lbs.	588.6
Average fat, per cent	4.09
Butter in 30 days, lbs.	123.88
Milk in 30 days, lbs.	2522.2
Average fat, per cent	3.93

She gave 90.9 lbs. milk her best day and averaged over 84 lbs. milk daily for the 30 consecutive days. This is the largest 30-day record for both milk and butter ever made by any cow of any breed or age in Michigan. The illustration on page 426 shows this splendid animal and indicates by her type something of the cow she is.

Pontiac Ino, at 2 years, 6 mos. and 13 days, made:

Butter, in 7 days, lbs.	23.226
Milk, in 7 days, lbs.	447.8
Average fat, per cent	4.10

This is the largest two-year-old record for milk and butter in seven days ever made in Michigan.

These two heifers are grand-daughters of Hengerveld DeKol, the greatest Holstein sire that ever lived.

BOOK NOTICE.

"Soil Culture and Modern Farm Methods," is the title of a very interesting and instructive 132-page book issued by the soil culture department of Deere & Co., of Moline, Ill., manufacturers of the well-known Deere line of agricultural implements. This book is a compendium of the most up-to-date information regarding soil culture and modern farm methods, as its title implies. The book contains no advertising, but is filled with useful information, and will be a handy text book for every farmer. It will be sent to interested readers of the Michigan Farmer who send five cents in stamps to the above firm to pay the actual postage on the book. Mention the Michigan Farmer when writing.

GRANGE

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

THE APRIL PROGRAMS.

Suggestions for Second Meeting.

Roll call responded to by each naming a poverty pleasure.
Progress of public events, five-minute reports by a man and woman.
Duet.

What shall we raise: 1. If the fruit crop fails? 2. If the hay crop fails?
A charade or two.

Does your experience lead you to favor papered, painted, or calcimined walls? What points do you consider in selecting either?

The country dooryard: 1. Its front.
2. Its back.

HOW TO SPRAY FRUIT TREES.

The suggestion, by the State Lecturer, of the above very practical topic for the first April meeting is most timely, and it is hoped that lecturers generally will recognize the fact that great good may result from the study of this subject for even one evening. A program devoted chiefly, or wholly, to the subject of spraying is therefore recommended, and with a view to helping the good work along I desire to supplement the general directions given in Mr. Farrand's excellent article of last week by offering the following, relative to the spraying of the apple orchard:

Spraying for scale must be done very thoroughly. Every part of the surface of the tree must be well covered with the mixture. In order to do this, the tops must be thinned out; otherwise we cannot cover all the limbs with our spray, and the work we have done will amount to little. Remember that proper pruning must precede correct spraying.

We use lime and sulphur mixture to kill scale and its worth depends upon the amount of dissolved sulphur it contains. The content of sulphur is indicated by the figures on the head of the barrel, which indicate the test. The amount of dissolved sulphur in the mixture is determined by the specific gravity, and this is measured by a Baume hydrometer. The figures on the barrel represent the test. A mixture which tests 33 or 34 degrees should be in the proportion of 1 to 8 of water if scale is bad, or 1 to 10 of water if there is not much scale.

Lime and sulphur will control scab very perfectly, even better than bordeaux mixture. The first spraying for this purpose should be given when the color is in the buds, and just before the blossoms open. Much depends upon this spraying for, if it is neglected, the scab fungi may form on the blossoms and ruin the crop at the very time when the trees are covered with bloom. A gallon and a half of the mixture to 50 gallons of spraying material is sufficient for use at this time. Some insects might be killed by adding 2½ lbs. of arsenate of lead to 50 gallons of spray.

The codling moth deposits her eggs on the leaves, and they hatch in a short time. The tiny worms soon begin to move about and each surviving one finds a home in the calyx of a little apple. Therefore, as soon as the blossoms fall, we must spray with 1½ gals. of lime and sulphur and 2½ lbs. of arsenate of lead to 50 gals. of water. This application should be repeated in ten days or two weeks.

A second brood of codling moth will appear late in the summer, and the little worms will eat into the sides of the apples. They make only a tiny opening, scarcely as large as a pin-head, when they go in, but they grow rapidly, eating their way inside the apple, and in due time come out, leaving a large opening that makes the apple a cull. If we cover the apple with spray before the little worm gets there, he will eat it and die, and the apple will not be a cull. The proper time to make this last spray is, in a normal season, about ten weeks after the first spraying after the blossoms fall.

A Few Things to Remember.

1. The scale can not eat the mixture, therefore it must be strong enough to kill by contact.
2. A mixture strong enough to kill scale must be applied when the trees are dormant.
3. Do not fail to spray just before the blossoms open as, upon this application may depend the entire crop.
4. Be sure to add 2½ lbs. of arsenate of lead to 50 gallons of spray, for each application after the blossoms fall, and 3 lbs. would be better for the last spray, as it will strike the smooth surface of the

apple and less will adhere to it than to the leaves.

5. The last application should be made to the late fall and winter varieties only.

6. Success depends more upon thoroughness than upon any other one thing.

7. Let no one tell you that your orchard is worthless for, while trees live and stand up, they will bear.

W. F. TAYLOR.

AMONG THE LIVE GRANGES.

Capital Grange, of Ingham Co., listened to several very able local option talks at a recent meeting. In discussing the results from local option, Mr. H. R. Patten-gill contended that the two years' trial is too short to be regarded as a true test of the workings of the law in the county. He asserted that the conditions prevailing in the county at the time of the adoption of local option were the outgrowth of many years of liquor traffic and that it is unreasonable to expect that the law would prove all that its friends had hoped for in the short time that it has been in force. He compared conditions in Lansing at the present time with those of two years ago when saloons were in existence, and also denied the assertion that as much liquor is being consumed in the county as during the old regime. Rev. F. W. Corbett followed with statistics as to the amount of workingmen's money sent from the county for liquor at the present time as compared with that sent out during the same time under wet conditions. His estimate was that eight times as much was sent out of the county while license was in force.

A Grange Home-coming.—The members of Alpine Grange No. 348, of Kent county, celebrated the thirty-eighth anniversary of the organization of their Grange with a Home-coming at their hall, Saturday, March 16. Although the roads were so drifted as to be impassable in places, more than 125 friends and patrons were present. Alpine Grange has one of the finest Grange homes in the state, and while it has only about 50 members, this meeting was a great success. A short program consisting of music and recitations was given in the forenoon. T. H. McNaughton, Master of Kent Pomona, was present and gave a talk on the good points of the Grange. State Land Commissioner Russel, was also present and entertained with songs and stories. At noon a bountiful dinner was served and after dinner the program was resumed. State Master Hull was to have given the address, but as he was detained in Washington on account of the hearing on the oleomargarine bill, J. C. Ketcham acted as substitute. Bro. Ketcham was so unfortunate as to miss his train, but his determination to be present led him to walk from the terminal of the car line to the Grange hall, a distance of more than six miles. He reached the hall at noon and later on delivered his address, "Problems of the Michigan Farmer." Bro. Ketcham is a fluent talker and handled the subject very ably, inspiring all with his enthusiasm and imparting many good ideas. After the address Mr. Huntley Russel, by request, sang "The Sword of Bunker Hill" and "Memories of the U. S. A." This meeting will long remain a pleasant memory with all in attendance.—Lect.

A Successful All-day Meeting.—Sparta Grange, No. 340, held an all-day meeting Saturday, March 16, with 92 members present. With the regular business of the meeting out of the way, Bro. W. F. Taylor instructed the Grange in the secret work, after which our lecturer, Sister Spangenburg, conducted a White Elephant Exchange. Dinner was then served and an open meeting held in the afternoon. The feature of this session was a very interesting as well as instructive address by Bro. Taylor, on "The Farmer of the Future." He spoke of the great subjects of soil fertility and stock breeding, of the wonderful things that have been accomplished along these lines and what great possibilities lie just ahead. He then talked of our boys, the need we have for them in Grange work and the benefits they might receive through the Grange; also our duty to them in bringing them into the Grange. He said the farmer of the future will have greater problems to solve, as well as greater competition to meet, and must therefore be better educated and trained. He then spoke of our great need of the church and our duty to our children in regard to it. We should develop all their talents, that each one may be strong spiritually as well as morally and physically, and thus be better fitted to take their places in the world's work and do their part well. He thought "A Sanitary Home" would be a fine topic for Grange discussion, and he would have us furnish the children with better books and get them interested in the garden and lawn, for the farmer of the future will build the country home of the future. He would have us instill the spirit of love and reverence for home and native land in the inmates of our homes. He felt that it was a blessed day when the old liberty bell rang out our freedom, and spoke of the trying times when our nation was so nearly divided, of the blessed reunion and all it meant to us to have one country and one constitution. He said the cities could not exist without the country; that they depend upon us for food, and that the greatest men they have in all professions are from the farm. The Grange helps to build strong, pure, patriotic manhood and womanhood so much needed in these times. He then closed with a beautiful poem describing the wonderful possibilities of our land and our responsibility not only to each other but to our neighbors of foreign birth as well. The choir then sang "America," and Bro. Taylor favored us with that beautiful song, "Star of the East," while a number of the members prepared to give in pantomime "Occupations of the Farm and Farm Home," which closed our program.—M. E. L.

FARMERS' CLUBS

OFFICERS OF THE STATE ASSOCIATION OF FARMERS' CLUBS.

President—J. D. Leland, Corunna.
Vice-President—D. M. Morrison, St. Johns.

Secretary-Treasurer—Mrs. C. P. Johnson, Metamora.

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

Associational Motto.—

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

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

Associational Sentiment.—

YEARLY PROGRAMS.

The Ingham County Farmers' Club.—

The program of the Ingham County Farmers' Club for 1912 is a little booklet of vest pocket size, the title page of which contains the name of the Club, the year for which it serves, together with the date of organization, which, for this Club, was 1872, and the announcement that the regular meetings are held on the second Saturday in each month. The title page contains a list of officers and directors for the current year. The succeeding page contains a list of the standing committees of the Club, while each of the following pages is devoted to the program proper, two dates appearing on each page. The farms of the members are named and the farm name appears in connection with that of the host in nearly every case. The programs are practically complete, except the musical numbers, which are provided for by a program committee for each meeting. The special feature meetings of the Club include for the current year a fortieth anniversary meeting, which was held in January at the M. A. C., a temperance meeting in March, an orchard meeting in May, a picnic in July, young people's day in August, and women's day in November. The last two pages of the booklet are devoted to a list of active and honorary members of the Club, it being the policy of this Club to maintain a list of honorary members who at some time by invitation, have met with the Club and assisted at Club meetings. On the back is the Club motto: "Growth is better than permanence and permanent growth is better than all." Altogether, it is an attractive program from a standpoint of both convenience and usefulness.

WHAT THE LOCAL CLUBS ARE DOING.

The Lincoln Township Club, of Isabella county, has a widely scattered membership, the extreme distances between homes being 16 to 17 miles, yet the Club is a progressive one. One trouble encountered by the Club is the fact that the hostess is inclined to give too elaborate dinners. Twelve meetings are held during the year with a picnic and a fair which was held for the first time last year and which was a very successful event. One lady delegate stated that it might help the members of this Club to know that in her organization the same difficulty had been experienced with regard to the menu, and that the plan of limiting the dinner to ten articles had been successful in correcting this difficulty.

The Saline Farmers' Club is a helpful factor to good farming in the community, as viewed by the delegate. This Club used yearly programs for the first time last season, and while not well satisfied with the way the plan worked out, the same will be continued for another year.

The East Otisco Farmers' Club, of Ionia county, was organized seven years ago and now has a membership of 80. Programs are printed for one year ahead but are not complete in character. They show where a meeting is held and give the main features of the program. Twelve meetings are held during the year, with a picnic on Labor Day in which the city of Belding and the country round about unite, with a large attendance. This Club has held a Club fair for four years. A business meeting is held in the forenoon and a program in the afternoon.

The Henrietta Center Farmers' Club, of Jackson county, holds nine meetings during the year. Several special feature

meetings are held, including a Thanksgiving meeting, Easter dinner, strawberry festival in June, and Farmers' picnic in August. A question box and the Club paper are two important features of the meetings. Flowers are sent to sick members. Young people attend the meetings very generally and are given places on the committees to interest them. The papers and literary features of the program are largely given by the young men. An oyster dinner is held in December. Mention was made of the fact that three old members had died during the past year, among them Hon. Patrick Hankerd, who was a director of the State Association.

CLUB DISCUSSIONS.

The Hired Help Question.—The regular March meeting of Charleston Township Farmers' Club was held at the new, modern residence of Mr. and Mrs. A. P. Simpson. The meeting was notable for two important decisions. 1. To join the State Association of Farmers' Clubs. 2. That the secretary be instructed to write our senators in regard to parcels post and mail it March 18, signing the names of Club members. The topic, "How may we solve the hired help question?" was discussed at some length and in connection with this, Mrs. Theron Palmeter read a poem, "Winter on the Farm," which expressed the hired man's side of the question. It seemed to be the general conclusion that the country would have to grow out of the conditions in regard to this topic, and that the change would be brought about by improving social and educational conditions, thus making rural life more attractive. In April the Club will meet with Mr. and Mrs. Floyd Coville and the topic for discussion will be, "How may we improve social and educational conditions in the country." There was a contest arranged for next meeting and judges will be called on to decide "which man can make the best cake." Two prizes will be offered.

Discuss School Law.—The East Cambria Farmers' Club met at the pleasant home of Mr. and Mrs. Fred Schovill, March 6. After a sumptuous dinner was served to 65 members and visitors, the meeting was called to order by the president. After singing and prayer, roll call was responded to with "Facts About Poultry Raising." Then came a very interesting paper by Manley Brown, subject, "Tuberculosis of Cattle and Treatment of Disease." The subject was very ably handled, giving us much information on a subject of much interest to the dairy farmer. Among other things Mr. Brown said: "The disease is more prevalent among dairy cattle than others for the reason of closer confinement and heavy feeding for the high tests," and that "the tuberculin test in the hands of a competent veterinarian is a reliable test." A discussion followed. Following this were select readings, music, singing and discussion of the question, "Is the new school law giving the school board full power, a wise law?" While there was a difference of opinion the prevailing thought was that it was a wise law, for more people would attend the school meetings and more thought be given as to who were elected school officers. Last came the question box, which was very interesting.—Mrs. A. J. Franks, secretary.

Two Successful Meetings.—On March 12 Clover Leaf Club met with Mr. and Mrs. Brigham. The meeting was called to order by the president and opened with prayer by Rev. Potter, of Otsego. We then had a recitation by Mrs. Walter Wheeler, of Kalamazoo, and Edna Wheeler. Rev. Potter gave a splendid talk on the farmer and the consumer, and the nature of farm products compared with city products, and also on farm conditions in general. We all enjoyed his talks and would like to have him attend all our meetings. On March 26, Clover Leaf Club met at the home of Mr. and Mrs. Frank Ayars. After a bountiful dinner was served, the meeting was called to order by the president. After the usual opening exercises Mrs. Canfield gave a talk on "butter-making." Mr. Shafer was asked to speak on "Does it pay for the average farmer to buy commercial fertilizer?" Mr. Shafer thought it did, but the farmers as a rule, do not like to advance so much money for fertilizer before they are sure they get better results. Mr. Earl Granger furnished some choice instrumental music. We then all joined in singing some gospel hymns, and closing with "God be with You Till We Meet Again," we started for home. Our next meeting will be April 9, with Mr. and Mrs. Boaz Canfield.—Mrs. H. Wabeke, Cor. Sec.

Hold Temperance Meeting.—Mr. and Mrs. H. E. Curtis entertained the Odessa Farmers' Club in March. The members being late in arriving dinner was first on the program, nearly 60 being served. President Foght gave the call to order and the meeting was opened by singing "I'll go Where You Want Me to go Dear Lord." The roll call was answered by "Do I favor state-wide prohibition, and why." It was answered in the affirmative with but one exception. The leaders of the debate not being present Mrs. Fellows was asked to open the subject, which she did in an able manner. Giving a short outline of the life work of Miss Frances Willard. This was well discussed although not in the form of a debate as was intended by the committee. Mr. P. A. Wachs, a charter member of the Club, was voted a life member without payment of dues. The executive committee were directed to draft a new by-law to the constitution. The music committee was directed to order one dozen copies of the "Song Wonder," to be used in the Club.

HORTICULTURE

PRUNING THE ORCHARD.

The pruning time of the year is here and there is much of it to be done in most Michigan orchards, but the weather has been so disagreeable for such outdoor work, that few men have had courage or the will to venture out and tackle this job, which should, in most cases, be done at this season, when other orchard and farm work is not so pressing and more pains can be taken with it. It is well to do most of our pruning at this time of year, also, because it ought to be out of the way before spraying comes on. All dead and dying branches should be removed because they not only are of no use to the trees whatever, but may be breeding places for many injurious insects and diseases, and because they are an absolutely unnecessary annoyance in spraying, thinning and harvesting. All crossing and interlacing and rubbing branches should be taken out so that the tops of the trees will be open and permit

and readily. In cutting off large limbs, a cut should first be made from the under side up then from the upper side downward to meet the lower cut or else it should be cut off out a foot or so and then cut off again closely so that the danger of the limb splitting down and making a long, rough, ugly wound is avoided. When a limb is to be cut off in the top, the cut should be made just above a lateral branching growing toward the outside of the tree. This is to prevent the leaving of a stub and to make the growth of the tree continue outward instead of upward. In three or four days after limbs are cut off, wounds over an inch and a half in diameter should be painted with white lead paint to prevent decay and encourage healing. If the wounds are painted immediately after they are made, they check just the same and then air, water, and decaying germs get in in spite of the effort made.

If a severe job of pruning is done, an abundance of water sprouts is sure to grow up. These are best removed in July or August. New sprouts will not come up at their base like they will if cut out the next winter or spring. Some water sprouts can be left if there are vacant



Apple Trees Affected by Prevailing Winds. When Planting, Firm Soil About Roots, and in Case of Extreme Exposure Lean Trees in Direction of Winds.

a free circulation of air and sunlight. We are apt to forget that the leaves of all trees, large and small, apple or pear, are the stomach and lungs of those trees and that they must be healthy and vigorous if the trees are to be healthy and vigorous and produce good crops of fruit. If the tops are thick, the air cannot circulate through them nor the sunlight can penetrate them and consequently the inner branches of the trees are smothered and starved, become weak and soon die.

If the apple trees are too high, so high that many apples cannot be reached with a twenty-five foot ladder the tops had better be cut back until all the apples can be easily reached with such a ladder. There doubtless would be an advantage in having them even lower. A thorough job of spraying for scale, codling moth or scab cannot possibly be done if the trees are too high. An operator cannot and should not attempt to spray limbs over twenty-five feet high. He cannot readily see when the limbs, fruit and leaves are covered and consequently must either waste a great deal of time and spraying material or else run the risk of leaving some spots uncovered.

When thinning and harvest time come it is a much more difficult and expensive job to get those fruits high in the air than those that are hanging nearer the ground. Sometimes it costs nearly as much to get the apples as they are worth, even though they are the best apples on the tree. If the hired man happens to be left alone when high apples are picked, they are often not picked at all but shaken to the ground and those best apples become cider apples, selling for 40 cents a hundred weight instead of two dollars a bushel.

It may not always be best to do the "topping off" the first year of the renovation of a neglected apple orchard, because the trees will be given too bad a "shock" and an unnecessary number of water sprouts stimulated. There is no objection to doing it the second year however.

It ought not to be necessary to caution pruners about "making cuts" properly but there is so much carelessness and thoughtlessness evident in so many Michigan orchards that the writer cannot refrain. All cuts should be made short and smooth. Pruning saws and shears should always be kept sharp. If cuts are made short, even though the wound is slightly larger, it will heal much more quickly

spots in the trees or the lower limbs have been cut off. Such water sprouts should be cut back so they will branch out and not grow straight up through the tree. If they are bent over by a weight of some kind they will make the tree have a lower top and they will also bear fruit sooner.

Some thinning out of the tops can be done in the late spring or early summer months if necessary, and if done in late June or before the middle of July, on trees which have come to bearing age and refuse to bear because they are growing too vigorously it may cause them to set fruit buds for next year's crop. Summer pruning is more difficult, however, and is not to be encouraged unless there is special need for it.

Fire-blighted or cankered limbs should always be cut out or cleaned out whenever found, the diseased parts burned and the wounds disinfected with a 50 per cent carbolic acid solution or some other equally good material.

Mich. Agri. Col. O. K. WHITE.

SUGGESTIONS ON SPRAYING.

Be ready to spray when the weather is ready, if you are not you are certain to waste much valuable time later. Be sure to have plenty of material so you will neither run short, nor be compelled to economize. This caution may seem needless, but I have seen so many cases where men intended spraying and when it came to buying material they purchased scarcely enough, then "made it do." The results were just what might have been expected, a large per cent of poor fruit. Whereas, if they had spent a few more dollars in the beginning they would have saved the larger portion of fruit to the best grades.

This spring there will be more power outfits started for the first time than ever before and perhaps a few words in the way of what the writer has learned in the last few years may be of advantage to some beginners with power outfits. There are at least three kinds of power sprayers that have been tried out more or less successfully, viz: Gas pressure, traction power, and gas engine, and perhaps to these may be added the steam engine and boiler.

To those starting gas engine sprayers this spring for the first time, I will advise them to disconnect the engine from the pump and practice starting the en-

gine, getting just as familiar with it as you possibly can so you will not need the services of an expert after you begin spraying. If you do not, much valuable time will be lost gaining experience.

A word in the way of placing the outfit on wheels, when purchased unmounted, may be helpful to many. In the first place do not make the mistake of mounting on too low wheels. Much spraying has to be done on soft ground, especially early in the spring when the frost is coming out and low wheels at that time causes an almost endless amount of trouble. My experience has taught me that a farm wagon with 40 and 44-in. wheels, with a 3-in. tire is best. Of course, this makes the outfit pretty high and top heavy for uneven ground; but if the tank is set just as near the bolster of the wagon as possible it will not be found inconvenient. Also have the engine and pump mounted as low as possible. This may be accomplished by having a skeleton rack on the wagon (without a bottom). The sills of this rack should come in toward each other in front so as to allow the wagon to turn in as small a space as it could before the rack was on. The sills can be fastened in front by a false bolster bolted to the bottom of the sills and notched to fit the bolster stakes—a good strong piece of 2x4 will serve for this. The tank can be fastened to these sills by iron rods threaded at each end for a nut and passing from a strip across the top of the tank to a strip beneath the sills. The tank should be about balanced over the front axle. Now the engine can be slipped on to the rack behind, as close to the tank as possible. On the outsides of the sills of the rack may be bolted stake irons for the canopy. This canopy should be as light as practicable and yet strong enough to bear a heavy man. The framework built of white pine 2x4 scantling with cross rods between the rear stakes and a flooring of matched lumber completes the canopy, with the exception of the side curtains, which can be made of any heavy cloth; canvasses from a worn-out grain binder are excellent. The outlet from the pump should be extended to the top of the canopy by a pipe cut and threaded to fit. The canopy should be a step higher than the tank so as to make more convenient the reaching of different levels. These directions are only general because of so many styles of engines, pumps, and tanks.

The strainer on the intake hose must be well looked after as this is of vital importance. Examine it every few hours when working to see that it is not broken. The tank should be washed out every few days during the spraying season. This can be done by having a plug near the bottom in one end or side and driving the wagon on an incline, permitting the tank to slush out.

I use a strainer to work up the lead in and as I have never seen another like mine I will describe it. I had it made by a tinner. It is about 12 inches in diameter and about 24 inches deep with the lower end funnel shaped, with a 3-in. opening. The screen is set near the lower opening at a slant. The sides of the strainer are parallel for about 16 inches. With a large basting spoon the working up of the lead is made comparatively easy, providing, of course, that water is flowing through the strainer during the operation.

Berrien Co. R. G. THOMAS.

ODD PARAGRAPHS.

Among the desirable qualities of a shade tree are a dense foliage which remains on till late in the season and the immunity from the depredation of insect pests. Shade trees should also be clean, that is, any waste resulting from the shedding of temporary growth should not cover the ground with litter.

Because the currant is a hardy plant it has been subjected to much hardship and given so little care that the average plant produces little good fruit. The plant does well where it is a little shaded and responds quickly to cultivation and improvement in soil conditions. Spray with Paris green when the first brood of worms begin to eat holes through the leaves. For the second brood of worms spray with white hellebore. Cut out canes affected with borers and burn.

Plant the gooseberries in rows from five to seven feet apart and place the plants about four feet apart in the rows. This fruit does well in a soil that is rich in plant food and it likes moist land better than some of the other bush fruits. For the control of the powdery mildew on gooseberries use a spray made by the mixture of one ounce of potassium sul-

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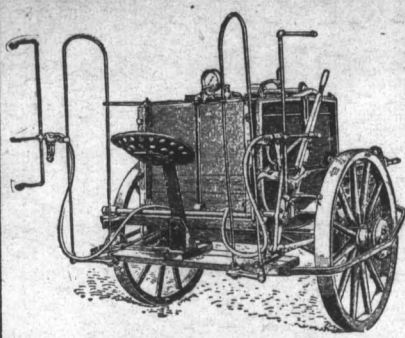
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THE ONTARIO NURSERIES, Rochester, N. Y.

phide to two gallons of water. The first spray is made when the buds are breaking and is followed by successive sprays every week or ten days thereafter till the fruit is ready to gather.

FRUIT TREES SHOULD BE KEPT FROM THE GARDEN.

In my garden of half an acre, I had on the north and east sides, 14 peach trees; on the south side three cherry trees, and two plum trees; on the west side, one quince, one plum, and two dwarf pear trees, and through the middle of the garden a row of grape vines on a trellis. The consequence was that when the trees grew large I had to cut down the peach trees or move my vegetable garden to some other place—not only did the trees shade my vegetables, but their roots extending far out under them, robbed them of moisture and fertility. In a dry time the trees would seize upon the moisture and the vegetables suffered. It has been stated that the roots of trees extend from the trunk about as far out in the ground as the limbs extend over it. The fact is, they extend much farther than that. I have seen many trees along the river and creek that were washed out by floods, and some of their roots looked like ropes and were four times longer than any of their limbs.

It is said that nature abhors a vacuum, and has provided weeds and grasses that will grow well in a shade. I have seen celandine growing in moist situations where it never saw the light of the sun; but I never saw any garden vegetables that would come to perfection in a shade. Some things will bear a permanent eclipse of the sun better than others, and some will stand drouth better than others, but none will do their best when robbed of the sunlight and their share of the moisture in the soil.

Even apples and other fruits will not color well and have their luscious taste when too much shaded by the limbs and leaves of the tree.

I have found that potatoes will bear a partial shade better than corn, and is therefore a more appropriate crop than corn to be grown in an orchard.

Pennsylvania. J. W. INGHAM.

HANDLING THE HYACINTH BULBS AFTER FLOWERING.

Will you kindly tell me how to care for my hyacinth bulbs now that they have finished blooming, and whether they will ever blossom again?

Manistee Co. Mrs. H. W. P.

Hyacinth bulbs that have been forced to flower during the winter are not valuable for forcing again, but they can be used for planting in the border of the flower garden or lawn. To prepare them for this change in life, gradually withhold water from them after they have finished flowering until the leaves die, when they may be planted in the border where they will flower annually for several seasons. The purpose of withholding the water from the bulbs is to give them a resting period after which they will take on a new lease of life.

WHEN TO SPRAY FOR CANCER-WORMS.

When should one spray for cankerworm as I understand it is against the law to spray when trees are in full bloom, on account of killing honey bees?

Clinton Co. E. M.

Where this pest troubles, spray with a solution containing one pound of Paris Green to each 100 gallons of liquid, or four pounds of arsenate of lead to the same amount of liquid, just before the blossoms open and again after the blossoms have fallen. Sometimes the second application is not required but to insure the best results it should be given. It is also a wise precaution to band the trees with some sticky material to prevent the wingless females from ascending the trees for the purpose of laying their eggs. These applications of poison will also be effective in keeping the bud-moth under control, although to more thoroughly discourage the latter insect a previous spraying with the same poisons should be made just as the tips of the leaves begin to show. These sprayings are required for these pests even though an application of strong lime-sulphur has been made for controlling the San Jose scale. When the sprayings are made as indicated above then there is no conflict with the statutes requiring that no spraying be done while the trees are in bloom.

Pyrox fills the barrel with apples that used to go on top. Write Bowker Insecticide Co., Boston, for book.

PLANT TREES WITH

DU PONT

Red Cross Dynamite

Stops First Year Losses.

Speeds Up Development One to Two Years.

Improves Quantity, Color and Quality of Fruit.

Planted in Dynamited hole Photographed from life

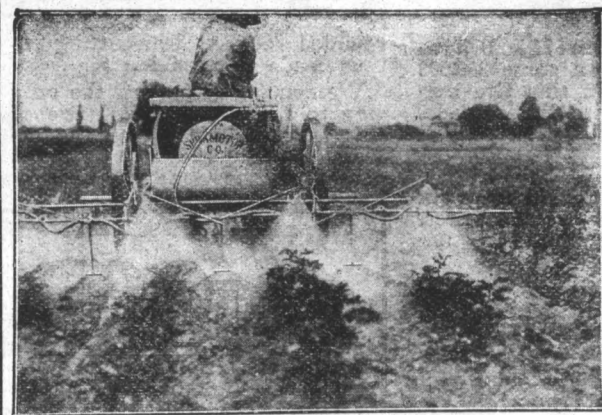
Planted in Spade-dug hole Photographed from life

The illustrations herewith are correct reproductions of photos of two-year old Bing Cherry trees planted same day out of same shipment. Similar results have been obtained all over the country. The root diagrams show the reason. You can't afford to plant trees in spaded holes.

Write for Free Booklet

To learn how progressive farmers are using dynamite for removing stumps and boulders, planting and cultivating fruit trees, regenerating barren soil, ditching, draining, excavating and road-making, ask for "Tree Planting Booklet, No. 100"

DU PONT POWDER CO.
Pioneer Powder Makers of America WILMINGTON, DEL.



POTATO PROTECTION

is best given by the Horse Power **SPARAMOTOR**, as the illustration shows. The work is thoroughly done at 15 minutes to an acre. Four rows, three nozzles to a row, adjustable in height, width and direction. Nozzles will not clog. Air-tank, 12 gals. gives guaranteed 125 pounds pressure with all 12 nozzles working. Automatic and hand-controlled. Agitator clean-out; pressure relief into tank, and nozzle protector under driver's seat.

The **SPARAMOTOR** is made for 1 or 2 horses or to be operated by hand. Equally efficient for field or orchard. Saves time and labor. **Saves crops, too!**

Send for free treatise on crop diseases. **AGENTS WANTED.**

HEARD SPARAMOTOR CO., 1305 Erie Street, BUFFALO, N. Y.

SWIFT'S ARSENATE OF LEAD HIGHEST QUALITY

Insect Pest Destroyer!

Easy to mix—sure to kill. Death to all leaf-eating insects. Save your trees, fruits and vegetables. Put up in paste or dry form.

(Conforms to the National Insecticide Act of 1910.)

Be Sure and Ask for SWIFT'S

and thus always secure **GUARANTEED HIGHEST QUALITY.**

FOR SALE BY LEADING DEALERS EVERYWHERE

MERRIMAC CHEMICAL CO.

Send for Circular.

36 Broad Street, Boston, Mass.

WANTED!

I want 10 men or more in every township to write me quick for a special offer on the sized engine they need. When you get this offer you'll buy. I make it practically irresistible. Then everybody in your neighborhood will know the truth about Galloway—his quality and savings—and all will understand the foolish tales the dealer tells in order to get his big price and personal profit.

10 OR MORE MEN

Write Now to Galloway

You'll soon see the reason for the really funny things that dealers say of Galloway

—"Galloway has no factory"—"Galloway's pretty near broke"—Galloway's stuff

is poor quality"—those are a few of their stories. But

I'm going to call their bluff and make such prices to 10 or more

men in every township that will bring the orders and show up

the dealers' "jokes" in their true light. In the meantime

I'm getting hundreds of letters like this: A. L. Westphal,

St. Francis, Minn., writes: Last winter I investigated 5 or 6

different engines on the market, but I bought the Galloway,

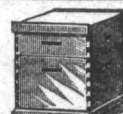
and I am very well satisfied with it. I have saved at least \$100.00 on it.

Write quick for Big Engine Catalog and special prices. I'll

also send my fine new General Line Catalog in five colors.

WM. GALLOWAY, President

THE WM. GALLOWAY CO 645 A J Galloway Station, WATERLOO, IA.



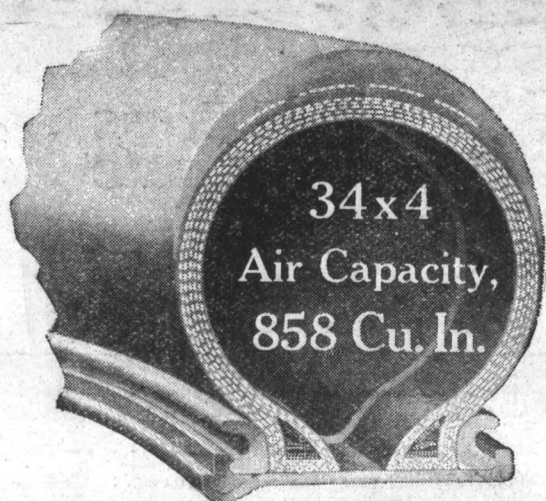
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Bee hives, Sections, Foundation, Smokers etc. Send for 64-page catalog of bee supplies, BERRY BASKETS and CRATES. Send for special Berry Basket catalog.

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Soy Beans—Best varieties of soys for grain, ensilage and hay for sale. Will furnish our customers instructions for growing a big crop of soys. Wm. Mc D. Stone, Atwater, Portage Co., O.

2 year No. 1 Concord Grape Vines \$15 per 1000; Strawberry Plants \$3 per 1000; Peach Trees 3 cents and up; 20000 Apple, Plum, Cherry and Pear. Catalog free
W. A. ALLEN & SONS, Geneva, Ohio.



No-Rim-Cut Tire 10% Oversize

This is the Goodyear No-Rim-Cut tire—the hookless tire—the oversize tire.

The tire that cuts tire bills in two.

More than one million have been tested out, on some 200,000 cars. As a result, this tire outsells any other tire that's made.

Our Patent Type

In the base of this tire run six flat bands of 126 braided wires. These make the tire base un-stretchable.

The tire can't come off, because nothing can force it over the rim flange. Yet it removes, by removing a rim flange, like any quick-detachable tire.

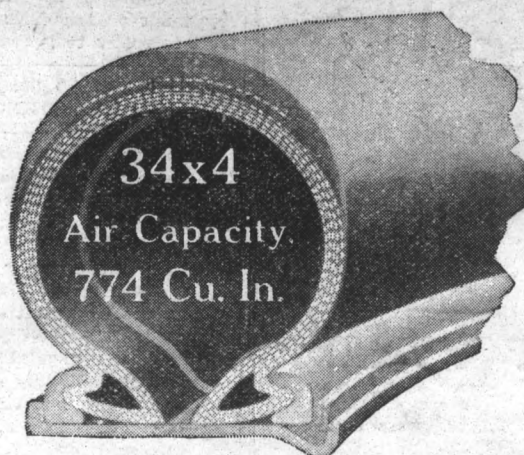
This tire doesn't hook to the rim flanges. So your removable flanges are simply reversed—

slipped to the opposite sides. They curve outward then, not inward.

Should the tire become wholly or partly deflated it rests on a rounded edge. Rim-cutting is thus made impossible.

We control by patents the only way to make a practical tire of this type. That is why the demand for tires that can't rim-cut centers on the Goodyear tire.

Which Tire?



The Passing Type No Oversize

This is the old type—the hooked-base tire—which No-Rim-Cut tires are displacing.

It is on the same rim as the No-Rim-Cut tire, but the flanges must be set to curve inward.

23 per cent of these tires become rim-cut by these curved-in flanges.

Yet these tires—wasteful and worrisome, and of lesser capacity—cost the same as Goodyear No-Rim-Cut tires.

Save 48 Per Cent

No-Rim-Cut tires are 10 per cent larger than these old-type tires. And that 10 per cent oversize, under average conditions, adds 25 per cent to the tire mileage.

They save in addition the ruin of rim-cutting, which is 23 per cent.

Tens of thousands of motorists have proved that these tires cut their tire bills right in two. And the demand for these tires, in the past 24 months, has increased by 500 per cent.

Our 1912 Tire Book—based on 13 years of tire making—is filled with facts you should know. Ask us to mail it to you.

GOODYEAR
No-Rim-Cut Tires
With or Without Non-Skid Treads

THE GOODYEAR TIRE & RUBBER COMPANY, AKRON, OHIO

Branches and Agencies in 103 Principal Cities

We Make All Kinds of Rubber Tires, Tire Accessories and Repair Outfits.

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EARN \$50

When You Buy a Manure Spreader



Fred Hansen of Tremonton, Utah, writes: My neighbor borrowed my Galloway spreader to try against his neighbor's new spreader which cost \$60 more, but he sent you his order. Get your spreader direct from Galloway's Great factory at factory price and make the middlemen's commission yourself. No easier way to make money—no such sure way of getting quality. I'll quote a price \$20 to \$50 below the dealer of equal quality, style and capacity. I give you a free trial, a binding, personally signed guarantee, longer and stronger than anybody. Prices From \$39.50 Up.

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We Make a Full Line of Hay Presses—Motor presses—horse-power presses—steel frame or wood frame presses—big and small presses. Balers make \$10 to \$15 a day net profit.



GREAT FOR WINDROW BALING. Handles 2½ to 3½ tons per hour. Steel roller chain drive—no belts to slip. Friction clutch sprocket on press. Can start or stop press instantly.

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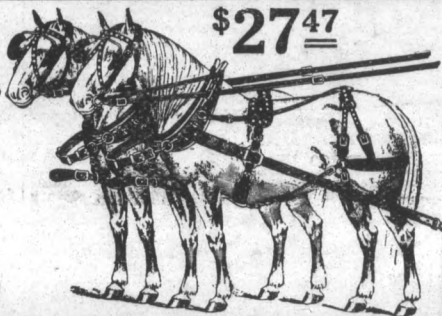
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SPECIAL HARNESS BARGAINS



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Act quickly! For a short time only we are offering the most amazingly low prices ever quoted on Williams' Guaranteed Quality Harness, made from bark tanned leather, so write for full particulars at once. We have always given the greatest harness bargains of any concern in the world, but never before have we quoted such low prices as these.

Remember, these special prices are not quoted in our catalogs. We simply couldn't afford to make such prices regularly. We have prepared some special circulars describing these amazing bargains in complete detail. Rush your request for these particulars at once or order direct from this advertisement if you wish.

Now look at this bargain. We show just this one to prove what we actually are doing. And bear in mind, this is Williams' Quality Harness, protected by Sears, Roebuck and Co.'s guarantee.

¾-inch bridles; 1-inch by 18-foot lines; oiled Concord bolt hames; flat harness leather pads; 1½-inch breast straps and martingales; 1½ or 1¾-inch traces and hame tugs; folded breeching body with layer; 1-inch side straps; 1-inch double back straps; 1-inch double hip straps. XC buckles, nickel spots. Weight, boxed for shipment, about 75 pounds.

No. 10X1146 With 1½-inch traces, without collars. Will be listed in our Fall Catalog at \$29.85. SPECIAL MARCH AND APRIL SALE PRICE TO YOU..... \$27.47

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