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The Marketing of Woodlot Products

By W. I. GILSON

WE ordinarily think of marketing woodlot products as a step in the process of clearing land to make an additional area ready for the plow. In the sense in which we would like to know the term, it means the selling of the amount of wood material which has been produced during a single year, or a few years at most, and not the cutting of the whole crop which is the total volume of many years' growth. Removing only the large mature timber is usually a benefit to the existing stand. Marketing trees, at the present time, interests timber owners more than methods of producing. They have become skeptical as to the financial advantage of preserving woodlots, and in deciding to remove the trees have usually failed to consider the woodlot in any light excepting one which is purely financial.

The farmer's knowledge of the subject of marketing products, and more especially timber products, is rather limited. There are many reasons for this condition for which owners of small timber tracts in farming communities are not at all responsible. The markets, in the first place, excepting the purely local ones, are unknown to them. Their dealings with timber buyers have either never occurred or have been at so infrequent intervals that they have not kept constantly informed regarding current prices. Contrasted to other agricultural crops, timber is marketed at much longer intervals of time, explaining why the owners may have lost intimate knowledge of market conditions. One who is not a specialist in woods work is further handicapped in not knowing how to estimate standing timber or how to scale logs. Both of these operations, for accurate results, require the services of a man who is a specialist in this special line of work.

There are three separate steps in the making and conducting of a sale of timber. The first is, getting an estimate of the amount to be sold; second get-

ting price quotations and finding a buyer; and third, conducting or supervising the cutting and removal of the trees.

Estimating the Timber.

The process would be much simplified if finding the amount of timber in trees was all that an estimator had to contend with. His knowledge, however, should be based upon experience fitting him to determine quality as well as quantity and also the adaptability of trees for certain uses. He is

called upon to estimate the amount of cordwood that can be cut from the tops when the logs have been taken out. Long experience is the best training for a timber estimator, and it should not be only in standing timber but one of this profession should see logs of various degrees of defectiveness go through the mill to observe how they "open up." The hidden defects, such as check, shake, hollow center, etc., are those upon which the amateur, particularly, is deceived. De-

spite these facts it is not impossible for a woodlot owner to make an estimate accurate enough to give to a buyer a general idea of the amount for sale. Buyers who do not visit the stands usually desire an approximation of the amount as the quantity materially affects the price offered. Farmers should not make their estimates the basis of the sale price when the sale is by lump sum for the standing trees. Sound trees require no particular skill to estimate. A very accurate estimate of contents can be made by knowing the diameter inside the bark at stump height and the total length usable for saw logs. No attempt will be made to discuss the methods of estimating woodlot timber here as they were ably discussed in the January 15, 1916, issue of this publication.

There are several sources of assistance upon some of which a timber owner can draw. He can usually find men in the lumber business who are financially disinterested in his particular sale. Some one of these men will, for a reasonable charge give to an owner the benefit of his experience. Another source of assistance is through men who were once in the lumber business but have since taken up other occupations. In some communities, where the cutting of the virgin forest is not too far in the past, this class of men is quite plentiful. There remains the Department of Forestry at the State Agricultural College, and the State Forester. Either may not be able to give personal aid to all inquirers, but may give references to those capable of doing the work. Woodlot owners are inclined to attach too little importance to securing an accurate estimate of their timber before selling on the stump for a lump sum. It should be kept well in mind that the woodlot crop which is harvested in a season has taken several generations to grow.

Getting Quotations and Finding a Buyer.

Entire dependence upon local buyers (Continued on p. 203).



The Portable Mill is a Common Institution in all Farming Communities.



Much Timber is Cut into Cordwood that Should be Sawed into a More Valuable Form of Product.

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DETROIT, FEBRUARY 17, 1917

CURRENT COMMENT.

War and Business. The prospect that the United States may become involved in the world war, caused a brief flurry in our markets, but the disturbance was unimportant, even as compared with the fluctuations following the President's peace note a few weeks ago. The New York stock market quickly rallied from the first effect, as did the grain and live stock markets, the reaction carrying prices to a higher level than prevailed before the break of diplomatic relations with Germany. The value of other food stuffs has also continued to advance, and everywhere there is a feeling of confidence in the situation, so far as the position of the farmer in the world's market is concerned.

With the general feeling of confidence which prevails and looking at the future from any possible angle, the prospect of compensatory prices for farm products during the coming year is exceedingly bright. So far as market demand is concerned Michigan farmers can feel comparatively safe in planning on maximum production all along the line for the coming year. Available labor should, however, be carefully considered in the making of the season's plans. It is better to produce a big yield on a small acreage than to try to grow a large acreage of crops with insufficient labor.

The County Farm Bureau. From the sentiment expressed in several communications recently received from progressive farmers living in counties where county farm bureaus have not yet been established, we believe that there is still a lack of a thorough understanding of this activity by many Michigan Farmer readers. To the end that no occasion may remain for such misunderstanding, we have made plans for a full discussion of county farm bureau work from every angle. In this discussion the views of some of those who do not believe in the valuable possibilities of the work to the agriculture of a county will be presented, as well as facts and opinions which indicate valuable results which have accrued from the work wherever it has been inaugurated.

The first step toward this general discussion was the publication of an address by the County Agricultural Agent of Ottawa county, given before the recent annual meeting of the Michigan State Association of Farmers' Clubs. The first installment of this address which is completed in this issue appeared in the issue of last week. While this address was prepared especially for the audience to which it was delivered and treats more of the relations of the farmers' organizations in a

county and the county agent than of the general subject of county agent work, yet it will prove valuable reading for every member of the Michigan Farmer family who desires to study this question fairly from every angle.

Observation of the results which have accrued from this work in many Michigan counties has convinced us—as we believe it will convince any fair-minded man—that this line of activity is worth to the agriculture of any county many times its cost. At the outset this work was of a somewhat experimental nature, but it has long since passed the experimental stage, and with the standardization of effort and teaching which is to be undertaken for the ensuing year, still greater results will undoubtedly be accomplished than have heretofore been attained. Unfortunately, it is impossible to inaugurate this work in every county at one time, not alone because of the lack of local interest, but as well because of the scarcity of available men who are equipped for the work. The farmers of the counties who show the greatest interest will naturally be the first to receive the benefit of this work, hence the desirability of giving careful consideration to the work which is being done and the results which have attended that work in the counties already organized.

The County Fair. There is a very general feeling among progressive citizens of every class, and particularly among progressive farmers, that a successful county fair is a valuable asset to the community in which it is held and to the agriculture of the surrounding district. There is also a very general acknowledgement of the fact that county fairs are not the general success which they should be or which they might be made.

With a view of determining the cause of the decadence of this important rural institution we sought the opinion of a man who has made a comprehensive study of the county fair problem covering many fairs both successful and otherwise in many states. The result of his observations and conclusions is recorded in the series of three articles, of which the last appears in another column of this issue. These articles should be carefully read by every progressive farmer, whether he has been identified with the management of his local fair or not. The success of the local fair as an institution is dependent upon the interest taken in it by the farmers of the locality, to make it a real success and that interest must go farther than mere attendance, or even the making of exhibits at the fair.

If the local fair is not a success, the farmers of that locality should make it a success. It is not too early to take thought on this subject and plan definitely for the improvement of the local fair next year. Generally the farmers of any community will find a fair organization ready to co-operate with them to that end; if this is not the case, then plans should be made by the progressive farmers of the locality to assume future control of the organization for the purpose of the improvement of this annual community event.

Possibly the analysis made in this series of articles may not fit every individual case where the local fair has not measured up to its possibilities, but the criticisms and suggestions made will prove valuable as a starting point for any reader who is interested in the local phases of this problem. We trust these articles may incite an interest in the improvement of the local fairs of Michigan which will be reflected in the events themselves next fall.

Paternalism. A vigorous propaganda of paternalism in many forms may be expected in this country as a natural result of the European war. The governments

of Europe have found it necessary to supervise most of the activities of their citizens in order to subordinate every energy to the cause involved in this titanic struggle to their military needs.

An evidence of this tendency is to be found in a propaganda for compulsory health insurance so-called, under which it is said that bills will be introduced in the legislatures of many states, including Michigan, providing for such compulsory insurance to be participated in by the commonwealth to the extent of the payment of twenty per cent of the premiums. An inquiry into the forces behind this and most such propositions would very probably reveal a selfish reason of the propaganda, but such inquiry or analysis is scarcely necessary to convince the average American of the undesirability of the adoption of paternalistic policies by our national or state governments. The predicted socialization of Europe through the present war will doubtless, if realized, ultimately have an effect upon the conduct of our own governmental activities, but under present conditions the personal liberties and individual opportunities for which our forefathers fought will not be readily surrendered by an electorate which is at once jealous of its individuality and fearful of exploitation. As a general proposition, it will be a safe course to oppose the entering wedge of paternalism in whatever form it may be recognized.

The Farmer and the Tariff.

An enquiring reader asks if it is a fact, as he has heard stated, that grain is admitted to this country free and flour protected, also if it is a fact that cattle, sheep and hogs may be shipped into the United States free from duty, while there is a protective tariff on beef, pork and mutton, also the question is asked as to whether we export these commodities and manufactured products of same free of duty.

The present tariff law, approved on October 3, 1913, places wheat, wheat flour and other wheat products on the free list, but contains a provision that wheat shall be subject to a duty of ten cents a bushel and wheat flour to a duty of forty-five cents a barrel, and other wheat products to an ad valorem duty of ten per cent when imported from any country which imposes a duty on wheat, flour or other wheat products imported from the United States. Meats and meat products as well as live stock, are also included on the free list with a proviso that foreign meats shall be subject to the same rules of inspection as obtain with domestic meats, and the Secretary of Agriculture is authorized to make rules and regulations for the carrying out of this proviso. No export duties are levied by the United States and no import duties on food stuffs by the foreign countries to which these commodities are exported.

This enquirer suggests the possibility of serious discrimination against the farmers of the country from tariff provisions such as he believed to be embodied in the present law. Under existing conditions the American farmer is more independent of foreign competition and hence of tariff schedules than at any previous time in the history of the country. There was a general fear on the part of farmers that the enlargement of the free list to include a large number of farm products which had heretofore been included in the dutiable list would be reflected in market conditions. The advent of the European war and of unfavorable climatic conditions running over two crop years has, however, so altered conditions that present prices for most products of the farm are higher than have obtained for many years, notwithstanding the fact that previous restrictions upon their importation have been removed. These conditions may, however, be sharply reversed follow-

ing the close of the present war, and these facts constitute the strongest possible argument for the effectual removal of the tariff problem from politics. Properly speaking, the tariff problem is a business problem rather than a political issue, and the sooner it is treated as such by our government, the better for all concerned.

HAPPENINGS OF THE WEEK.

Foreign.

The European War.—Extreme cold weather has limited actual field operations on most of the frontiers. In the west, however, British troops were successful in capturing a strong trench system on the Somme extending over a front of three-quarters of a mile. Other undertakings of a smaller nature are reported on this front but no important changes in positions have been reported.—Considerable fighting has taken place in the Gorizia sector on the Austro-Italian front. Austrians at this point captured 665 men, inflicted heavy casualties on the defenders, and secured much war materials. The Germans captured Russian trenches near Stanislaw, Galicia, but later were forced to evacuate them, according to Petrograd reports.—In Mesopotamia the British have occupied a new front of more than 6,000 yards, pushing back the Turks for from a half to three-quarters of a mile.

A comprehensive study of the food situation in the British Isles brought forward by the German submarine campaign indicates that the supply of food on hand will last that country for two months without additional importation. There will be needed, however, during the remainder of 1917 food imports aggregating 16,000,000 tons.

In an effort to curtail expenditures, the Japanese government will undertake to cut the annual ship subsidy of \$3,250,000 in half at the beginning of the next fiscal year.

National.

American ships which have been held in harbors here because of the danger of reaching European points, hope to sail as soon as the vessels can be equipped with defense guns to repel attack by submarines. Ways are now being provided whereby these weapons can be secured. The victims of the U-boat campaign have not been so numerous as during the first few days of the undersea war and because of this more favorable situation, shippers on this side are getting anxious to take chances on reaching European ports.

The first practical step to be taken toward the rehabilitation of American maritime commerce is the action of the federal shipping board in requesting the use of old army transports for doing coastwise trade between the Atlantic and Pacific ports through the Panama Canal. The boats sought are certain obsolete foreign transports which the war department has been expecting to sell.

The business of grain dealers has suffered from the tie-up of railroad traffic. Business in cash grain is at a standstill because cars for moving the cereals cannot be furnished. There are said to be 30,000,000 bushels of grain in central western points waiting to be moved to the east for domestic consumption and export and 75,000,000 bushels of corn in Illinois and Iowa are ready to forward in different directions as soon as transportation is provided.

Extreme cold weather has prevailed over practically the entire country, causing a great deal of suffering, particularly in those localities where there is a shortage of fuel. The extreme cold has added to the problem of distributing coal and brings the fuel famine very near in an unusually large number of communities. Unless relief comes soon Michigan will be within the seriously affected zone. Early this week there were only three towns in the state which reported sufficient coal to meet current demands providing the extreme cold weather continues. Railroads are largely blamed for the inadequate supply.

The United States navy has recently added several modern vessels to its equipment. Fifty-seven steel ships having an aggregate tonnage of 395,537 tons displacement have been or soon will be at the disposal of the department. This list does not include fifty-one submarines now under the course of construction.

The Federal Trade Commission and the Department of Agriculture will undertake a comprehensive investigation of the high cost of living without delay.

The military affairs committee of the United States Senate has reported favorably upon a bill providing for universal military training in this country.

THE MARKETING OF WOODLOT PRODUCTS.

(Continued from first page.) makes the marketing field very limited, or it may be that no market exists within team hauling distance. When several species are to be sold, the greatest revenues are usually realized by selling to separate buyers representing the several industries so that each species can be put to the use to which it is best adapted. An example of such a case is where some hickory is found for sale mixed with species used for finishing. If the finishing wood is sold to one buyer and the hickory to a vehicle or handle manufacturer the receipts will be much increased. Hickory has low value as lumber but it brings a good price when sold for the special use to which it is adapted.

There is general prejudice of retailers against lumber sawed from woodlots. It is often poorly sawed and seasoned, it is unplanned, and there is considerable variation in length. These objections can be very largely overcome if care is taken in cutting the logs and operating the sawmill. It is often necessary to haul or ship it to a dry kiln and planer before it will satisfy local markets. Larger manufacturers usually prefer to kiln-dry and plane their own material.

The work of finding a market should be started several weeks or a few months in advance of the intended time of cutting. Buyers usually desire to look over the tract before closing a transaction and the bartering of prospective buyers often takes up considerable time.

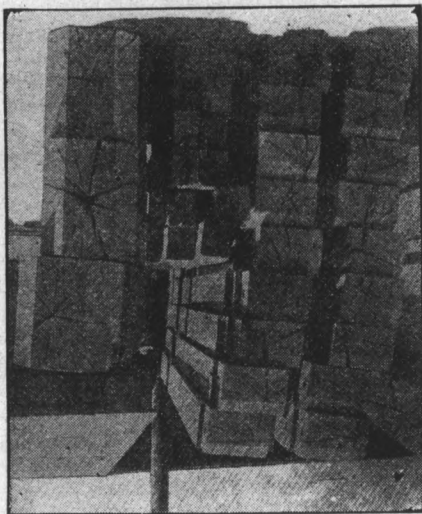
There are several methods of finding the names of prospective buyers. A sale to local dealers saves the cost of a long haul by team, or a freight charge. Men who are in the lumber business but not interested in this particular sale are in position and often glad to give references to various purchasers. If any of the material is adapted for railroad ties, quotations and details regarding delivery can be obtained through the medium of local station agents. Local telephone officials will obtain information regarding prices and demand for poles and cross arms. In close proximity to cities with water fronts, there is considerable demand for oak piling and a good price is paid for timber in this form. There are two excellent publications available for free distribution through the Public Domain Commission at Lansing, Michigan, entitled, "Wood-using Industries of Michigan," and "Selling Woodlot Products on Michigan Farms." Each of these gives complete, and as nearly up-to-date lists as practicable, of users of wood for manufacturing purposes in Michigan. The former also gives considerable information on the uses for which various woods are adapted. The Forestry Department of the Agricultural College attempts to keep an up-to-date list of buyers from the principal farming sections of the state, and has been successful in several cases in bringing buyers and sellers together.

Conducting or Supervising Sale and Removal of Trees.

There are four very distinct methods of disposing of timber, each of which may be adapted in some circumstances. First, by the acre or tract for a lump sum; second, by the thousand board feet in the standing trees as estimated by a timber cruise; third, by the thousand board feet as scaled in the log; and fourth, by cutting and sawing into specified products for a special market. Each of these selling methods has some advantages and disadvantages and it happens that each is adapted for persons having different degrees of skill and experience in handling woods products.

1. Selling for a lump sum for the tract or per acre is by far the simplest and easiest method but allows the greatest chance of getting less than

full value. The middleman or buyer must make a profit on the labor employed in cutting and he must receive something for his services in supervising the operation. This is a profit which should, under most circumstances, be realized by the owner instead of the middleman. Generally speaking, the nearer trees are transformed to the materials in which they are to be used in manufacture or construction, the more profit will be realized by the seller. One distinct advantage



Summer Cut Hardwoods Check Badly if Seasoned too Rapidly.

tage of the method is that log scaling is made unnecessary. Much less often results from the selection of an inaccurate log rule and a dishonest application of the same by the buyer.

2. Selling by the thousand board feet in the standing tree has the same disadvantages as the first method. Either of the first two methods relieves the owner of much responsibility but should not be resorted to unless the sale is based upon an accurate estimate made by a disinterested person.

3. Selling by log scale is very satisfactory if a fair log rule is selected and is honestly applied. The Doyle and Scribner rules are the ones commonly used in Michigan. The Doyle is generally recognized as one which gives too low results for small logs and too much for logs over twenty-eight inches in diameter. As small logs predominate in the woodlots of this state, the resulting total scale is from ten to thirty per cent less than can actually be sawed out at the mill. The small gain in scale of large logs is much more than offset by the low scale of small ones. As the Scribner has been thoroughly tested at the mill, it is a fair rule for both buyer and seller. The figures given below show the scale of sixteen-foot logs by both Doyle and Scribner and are self-evident proof that the Scribner rule should be insisted upon in all sales of logs from the average woodlot:

Diameter in inches.....	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36
Doyle, board feet.....	4	16	36	64	100	144	196	256	324	400	484	576	676	784	900	1024
Scribner, board feet.....	18	32	54	79	114	159	213	280	334	404	500	582	657	736	800	923

In one batch of logs scaled by the writer the difference in scale by using each of the two rules was forty per cent of the total.

4. Hiring a sawmill and cutting to specified dimensions is usually the most satisfactory method, even though more responsibility is required of the seller. It affords the opportunity of making a legitimate profit on each step in the process of preparing for market. The work can be done at odd times and during slack seasons by the farm labor and helps to keep hired men in year-round employment.

Logs cut in summer are liable to check if dried too rapidly and for this reason should be seasoned in the shade of trees or under cover. If the wood is to be used for finish or vehicle stock it is advisable to coat the ends of the logs with paint or creosote to prevent even moderate checking. Another precaution to prevent sap stain is to put the logs on poles or skids to

keep them off the ground. Air seasoning removes from ten to thirty per cent of the total weight and is worthy of consideration if the hauling or shipping is a very great distance. The cutting specifications to be followed are usually quite exacting and must be closely adhered to in order to make all cut pieces saleable. They are usually put in grades one, two, and culls. The grading rules should be well understood by both buyer and seller. Much of the damage to young growth which results from the haphazard methods of lumbermen can be avoided because the owner personally supervises the felling of the trees.

The Value of a Contract.

There are very few sales made where it is not advisable to have a contract fully stating the terms and conditions. Only an unreasonable buyer assumes that a written contract is insisted upon because of mistrust on the part of the seller. A just contract gives protection alike to both parties involved. Its primary object is not only to keep a dishonest person to his word but to serve also as a memorandum of the details of the terms of sale so that misunderstandings cannot arise. In common use it has a value in keeping friends as well as to protect those who are distrustful of each other.

The exact specifications cannot be made to cover all classes of sales. The following items are suggestive only and are such as are usually contained in contracts for the sale of timber.

- Description of the tract by boundaries, or area included in the sale.
- Total price to be paid, unit price, and method and time of payment.
- Kinds, species or sizes of timber sold.
- Life of the contract, or time allowed for the removal of timber.
- Rule by which logs are to be scaled.
- Persons or agents of same to be present at the time of scaling.
- Method of disposal of cordwood material.
- Care to be exercised in preventing injury to trees left uncut.
- Responsibility for damage to young growth, or for fires started as a result of the logging operation.
- Maximum height of stumps allowable, and minimum diameter of trees of each species to be cut.
- Method of settling disputes. (This is often by referring matters of dispute to a third person mentioned in the contract or to one or more disinterested persons to be chosen by the parties.)

Contracts are usually omitted when the parties are well acquainted and familiar with each other's business policies. The value of a written contract cannot be overestimated as lumber sales are less frequent than those

of other farm crops and the methods of sale are less generally understood.

COST OF HANDLING THE FARM MANURE.

I had thought of letting my subscription lapse, but one sentence in Mr. Lillie's farm notes of January 20 pleased me, to-wit: "It cost a lot of money to haul out this manure." I have heard so often in farmers' institutes, and read in farm papers, the assertion that the manure produced should be counted as part of the profits of dairying or stock feeding, that it was refreshing to find someone recognizing the fact that the manure accumulating in the barnyard belonged on the liability side, and not on the asset side of profit and loss.

Washtenaw Co.

Manure is, of course, valuable to a farmer. I don't want anyone to construe my idea in any other way. But neither must they think that it is all profit. It costs a lot of work to haul it out, spread it on the land. Yet it

G. McD.

is well worth the cost, so far as that is concerned. This labor of hauling however, must be deducted from its money value, figured on a basis of the value of the plant food it contains. If a ton of stable manure contains \$2.00 worth of plant food, the farmer must deduct the cost of hauling or he gets nothing for his labor. We farmers are too apt to figure all things in this way and allow nothing for labor. But no other business man thinks of doing this.

We need the manure but it is not all clear gain by any means.

COLON C. LILLIE.

SPRING WHEAT IN MICHIGAN.

I am a constant reader of the Michigan Farmer and sure think it grows better, if not bigger, every year. I have been looking in its columns for the last six months to see something about spring wheat. I could not put in my wheat last fall. Now can I not raise a small amount, say two to five acres? What will the seed cost per bushel, and where can it be obtained?

Ingham Co.

P. V. S.

Of course, you can grow spring wheat in Michigan. Our forefathers used to grow it. But in this state where the winter variety is not winter-killed to any great extent, this



A Healthy Specimen of Burdock.

This plant, having a root more than six feet in length, was pulled from the soil by the plowshare on the farm of Irvin Fritz, of Arenac county. It bore 1,046 burrs, containing an average of 52 seeds each. The reproductive power of such noxious plants points out the importance of preventing them from maturing and scattering their seed.

winter variety has proved the most reliable and hence the most profitable. Sow the spring wheat as early as possible. Give it good rich ground. You may have a good crop, but on the average you can not expect as good a yield as from a winter variety.

You must go to the northwest after your seed wheat. Any seed firm located in Montana or the Dakotas can supply you with seed wheat. Your local dealer can get it for you. Any agricultural paper published in the northwest will give you the name of individual growers who have seed wheat for sale.

COLON C. LILLIE.

W. Brewbaker & Sons, Elsie, Mich., write as follows: "We have sold over 100 head of Big Type P. C. this fall through the Michigan Farmer. Who says The Farmer can't sell hogs? We have advertised in over 60 other papers and never made a sale, only through The Farmer. Hurrah for the Michigan Farmer."

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THERE is no need of guesswork claims or promises on the kerosene burning proposition. Either a tractor burns kerosene in a way that means something or in a purely temporary, expensive and inefficient way.

In selling the Rumely OilPull tractor we don't make word-of-mouth promises, but give you a broad, positive **written guarantee**—the kind that you are entitled to and should demand with the tractor you buy.

Remember, the OilPull is a kerosene tractor from **start to finish**. It isn't a makeshift combination gasoline proposition. The fact is, the OilPull gives **more power** on a gallon of kerosene than competing tractors of the same size on gasoline.

In addition to cutting your operating costs in half, the OilPull has all the qualifications you want in your tractor. It is an all-purpose outfit and will handle **all** your power jobs, draw-bar or belt. It is oil cooled—there's no danger of the radiator freezing and no bother with cooling water.

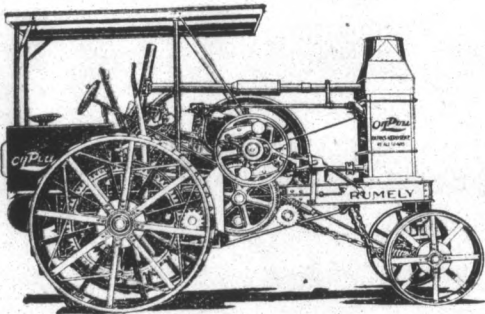
The OilPull is governor controlled—the speed **automatically** regulated to the load—the power always steady and uniform. You can depend absolutely on the OilPull, as you can on **all** Advance-Rumely machines.

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Write our nearest branch for a catalog of this famous cost-cutting tractor.

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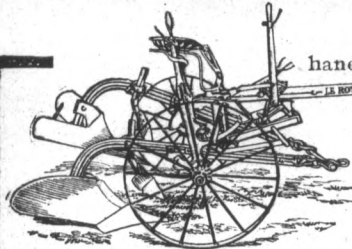
We guarantee the OilPull tractor to operate successfully at all loads under all conditions, not only on all grades of kerosene permitted by law to be sold in the United States and Canada, but on distillates and fuel oils free from earthy matter.

There's Only One
OilPull—
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In Small Fields or Large

The ALL STEEL-FRAME
TWO-WAY SULKY

LE ROY CHILLED PLOWS



handle just as easily and will turn the same size furrow as any other, with much less horse power. They save driving around the ends, leave no dead furrows or back furrows, and permit the driver to drop dead furrows where necessary.

The Le Roy All Steel Frame Two-Way Sulky Plow is so easy to handle that a boy can operate it.

Light draft, steady, durable, reliable, pays for itself quickly, saves 7 miles of walking to the acre.

WORKS PERFECTLY. Frame of best steel and malleable iron; extra wide to prevent tipping on side hills. Pole adjustment simplest of any. Plow beams can quickly be turned to left or right, or to take more or less land.

Any of the thousands of farmers who use the Le Roy Two-Way Sulky Plow will tell you it is one of the best tools they have on the farm.

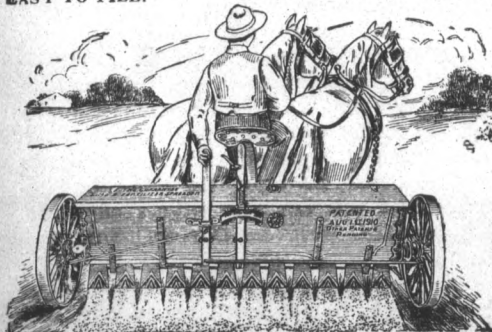
Ask your dealer. Our catalog on request.

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"THE GUARANTEE SPREADER."

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Protect the Farmer's Friend

By J. A. KAISER

IT is indeed strange how, through ignorance, carelessness, or thoughtlessness, or short-sighted selfishness, man has for time out of mind, destroyed natural benefits. In America, perhaps this wholesale destruction of valuable natural gifts has been carried to a point beyond that known elsewhere. Our extensive territory, our superb natural advantages, and the get-rich-quick mania, all have had a tendency to produce such a result. Fields have been robbed of their fertility, forests have been wantonly laid waste, valuable species of wild animals have been slaughtered till they have become extinct, magnificent landscapes of natural scenery have been obliterated. On a smaller scale, even today, this spirit of vandalism still goes on. The aesthetic and the practical are alike ignored for temporary advantage.

In the light of the foregoing conditions which prevail in Michigan as well as elsewhere, the writer wishes to enter a plea in behalf of one of the farmer's friends. While in the main, this plea is made from the standpoint of dollars and cents, yet the question of sentiment can not and ought not to be ignored. It is in defense of the quail, that most inoffensive, most useful, and most beloved of birds, that this article is written.

As the matter now stands, when the year 1918 rolls round, Michigan sportsmen will again be permitted to shoot this bird. Under the protection of recent years, the quail has prospered; its numbers have increased; its cheery, well-known whistle has again become a familiar sound on all farms. Time was, when in southern Michigan the quail was losing out, and its extinction seemed imminent. But, barring man, the quail is able to increase in spite of its enemies. Do more than this, make man the friend of the quail, and its everlasting perpetuity on the farms of Michigan will be assured. And why should not man befriend him? Why should not the farmer befriend his friend? For the sake of a little excitement, for the sake of gratifying the palate with a tender morsel, shall we slay a beneficent and harmless creature which, indirectly, helps the farmer feed the world?

The Economic Factor.

In dealing with this matter let us first see what right, from a practical point of view, the quail has to existence. The two great enemies of the farmer are weeds and insects. Whatever agency destroys these, is beneficial and worth preserving. In this battle against these everlasting pests, the quail certainly does his share. More than half the food of the quail during the year consists of the seeds of harmful weeds and grasses. Among these are the seeds of some very well-known weeds, such as the rag weed, pig weed, sheep sorrel, cockle, smart weed, and a host of others. As the quail is not a migratory bird and remains with us all the year, the amount of these seeds consumed during the autumn and winter months is enormous. As a destroyer of the seeds of objectionable weeds and grasses, then, the quail deserves not only the right to exist, but protection and aid from the farmer.

Turning from the weed pest to the insect pest, we find that here, too, the quail is one of the most beneficial of birds. During the insect months, about thirty-six per cent of the food of the quail is gleaned from this source. Many of the most destructive insects are eaten. Among these are the following: The Colorado beetle, the cucumber beetle, the wireworm, the army worm, the May beetle, the clover leaf weevil, the squash bug, and the chinch bug. This is without exception, a list of undesirables. Fifteen or twenty quails will destroy for the owner of a

farm, during the months of June, July and August, a multitude of these enemies to crops. Two or three good-sized flocks of these birds on an eighty-acre farm, will accomplish wonderful results in keeping in check the weeds and insects. And yet, too often in the past, when driven to the barn or corncrib by ice and deep snows of winter, the quail has received a charge from a shot gun, rather than grain from the corn house or granary.

Sentiment Has its Proper Place.

And this leads us to the question of the grain-eating propensity of the quail. Beyond question, the quail likes grain of all kinds. But beyond question, too, the bird consumes almost no grain that the farmer has an opportunity to gather. It is waste grain almost entirely. In late autumn and in winter, the quail frequents corn fields and buckwheat fields, and consumes the waste grain that is of no account to the farmer. But growing grain is not molested. Neither is desirable fruit eaten in any quantity, by the quail.

We find, then, that the quail is indeed, the farmer's friend. He destroys the enemies of the farmer, and asks naught in return save waste products. When an exceptionally hard winter prevails, the farmer often has an opportunity to befriend and succor his little feathered benefactors. Next to man, severe winters are, in Michigan, the worst enemy of the quail. If every farmer would feed the quails about his place, at such a time, the mortality among the birds would fall off, and but few would perish from cold and hunger. The small amount of grain eaten by the birds at such a time would dwindle into insignificance, in comparison to the good it does.

And now that the benefits of the quail have been noted, it will not be out of place to speak, briefly, of other reasons for its preservation. Linked with the life of every man or woman who grew up on a farm, is this cheery, modest inhabitant of the fields and woods. It is associated with the old days, with the old familiar faces and the old familiar scenes now forever vanished. The man who turns from the noisy city after years of striving, for a look at the old place and country scenes, expects to see again and hear again, the feathered friend of his boyhood rambles. Through the dreams of the farmer boy and girl in life's morning, runs the whistle of the quail. Through the memories and reminiscences of the man and woman whose locks are silvered, runs the whistling of the quail. Take this bird from the farms, and you have lost something that can not be replaced. For the sake of the old days, for the sake of the boys and girls of today and days to come, protect the quail. Sentiment plays its big part in all human existence. First, from the practical, if you please, but after that, from the sentimental viewpoint, befriend the farmer's friend.

And in conclusion, let us make an effort to protect the quail for all time, from the hands of the spoiler. In southern Michigan the quail will never become too plentiful. The bird will flourish without large wooded areas. Thickets, tall grasses, fence-rows, small swamps—these are sufficient, and afford adequate cover. Natural enemies of the bird will always reduce somewhat, the natural increase. Let the farmers of Michigan unite in procuring protection through all the future, for the quail. Let sportsmen exercise their skill and desire to slay on less beloved, less beneficial creatures.

Needed new implements and repairs should be ordered as soon as possible, so as to insure their delivery. Shortage of materials and congested transportations make this imperative.

The County Fair

By H. L. ALLEN

(Continued from last week).

Cause number six is of vital importance to every fair association. Publicity is everything when a live management and capable officers have provided the elements for a successful fair and it is a big factor in making one that lacks those elements a success in a financial way. In almost every locality there is a person who is qualified to take over the publicity work of a fair. It is up to the directors to find that person and then give him a free hand in his work so long as he keeps within the bounds of the money appropriated for the work, and the appropriation should not be small.

Publicity.

Some of the men who have succeeded strikingly in fair publicity work were not farmers; some of them were, too. To be successful in this position a person must know the people to whom he is going to appeal. Methods which would succeed in one part of the country will fail in another.

A western fair association put a young newspaper man in charge of its publicity work, after having failed to get the desired support for a few years. This young fellow used a large part of his first year's appropriation to print and circulate a miniature newspaper. It was a four-page affair, issued monthly and each issue was filled with news about the fair, crisp little articles of interest to the probable exhibitors regarding the prize list, well written, brief stories about the special attractions, interspersed with condensed reports from the state experiment stations about feeding cattle, sheep, hogs, fowls, etc., or dealing with crop production, in nearly every case connecting the subject in some way with the county fair. This little paper went into the home of about every family in the county every month. The attendance the first year after its publication commenced, went up with a jump that made the conservative members of the directorate gasp and it has been steadily going up ever since. "The County Fair News," as the little paper is called, is an established feature of the work of making that fair a success and its appearance is eagerly looked for throughout the county each month. It has made the people of the county acquainted with the fair managers and their plans for making the fair bigger and better; and its influence has been almost as great in the direction of recruiting exhibitors as it has been in swelling the attendance.

If it is deemed inadvisable to follow the example of the association above mentioned it will be found quite satisfactory to use space in the local papers, provided the copy is written by someone who knows how to interest their readers. If any agricultural publication has a large circulation in the county, space in it may be used profitably at least once shortly before the fair.

Money spent for printing dodgers and throwing them indiscriminately throughout the country is almost a dead loss. They fail to carry any appreciable weight and many of them are blown away or trampled in the dirt before they have been read. It is similarly a waste of money to put up posters about the county unless they are printed on card or linen, for they are destroyed by the first storm. An exception may be made if the appropriation will permit the use of posters of bill board size which may be securely pasted to the surface of the bill board. Such posters should, however, be printed in colors, illustrated sufficiently to make them attract the attention of the most unobservant passerby. Publicity men for state fairs have found these highly-colored, illustrated bill board posters an exceptionally good form of advertising, but their cost is too great

to justify their use by the average county fair association.

The publicity man for a county fair in one of the middle states secured excellent results by getting out a folder in which the fair, its aims and its special features were quite fully set forth and got it into the hands of the people of the county by getting the merchants in the villages throughout the county to place one in the purchases of their customers when wrapping them up. It is quite probable that this method of getting advertising matter into the hands of the persons whose attendance is desired might be made use of in many localities. But in any case, publicity work, in order to accomplish any permanent good, will have to be backed up by a fair, the features of which will bear out the statements of the publicity man.

Seek the Reasons.

When the managers of the county fair find that their fair is enlisting such a small amount of support from the people of the county as to make it a loser in a financial way—in which case it will also have failed to fill its principal mission—that of becoming a potent factor in the community life of the county, it will in nine cases out of ten, be found that some or all the causes mentioned are responsible. On first thought, some of those who are searching for reasons for the failure of a fair to enlist the support of the people of the county, may not be able to reach this conclusion; but if they will study all the conditions touching upon the conduct of their enterprise, with an open mind they will, in the majority of cases, be able to see where one or more of these causes has a vital bearing on its failure to accomplish its mission.

It is not difficult for the management of any fair association to overcome these causes for failure, if the work is undertaken earnestly and systematically. It will take study, time and some personal fitness on the part of those undertaking the work, but in every county persons competent to undertake it and carry it to a successful conclusion may be found if the directors will cease to play petty politics and select the dominant factors in the management of their fair just as they would when engaging a person to take charge of their personal business enterprises, and it is unnecessary to state that, in such cases, the possession of marked ability along certain lines and personal fitness for the work in view, come first in the qualifications they demand.

Innovations.

Apart from the causes mentioned as contributing to the failure of county fairs to properly accomplish their mission there is another noticeable feature of the average board of fair directors. This is the opposition which they show towards any suggested innovations, and the determination to keep on year after year in the same old rut. If there is anything the average county fair needs, more than another, it is innovations, when practical men are intrusted with their introduction.

Everyone who has looked into methods of increasing interest in the county fair knows the importance of enlisting the support of the young persons of the county. After much argument with his board of directors, one progressive secretary got permission to announce a stock judging contest for boys who were attending the high schools in the county. For this contest he selected, the first year, the boys who were in the graduating class of the different schools, each class to select a team of three to judge the cows constituting the largest class shown in the division for dairy breeds.

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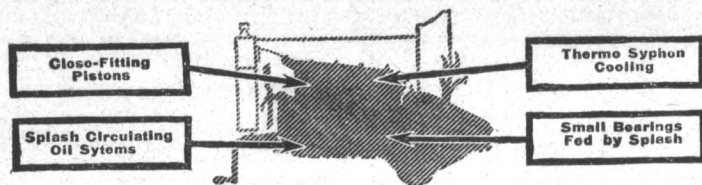
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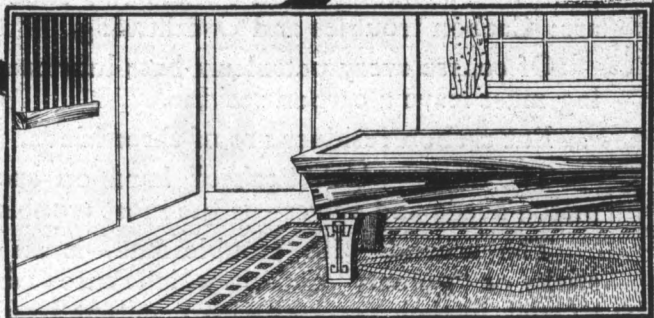
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With printed matter and personal letters he got the principals of the high schools interested. His plan was to award three prizes to the three teams whose judgment came nearest to that of the regular judge, or judges in the same class, with a medal to the one boy whose markings were highest. The boys were permitted to judge the class before it was judged by the regular judge and then they were allowed to watch the awards placed and the judge upon request, told them why they were so placed. The increase of interest in that fair which this boys' judging class initiated is still growing. Now the boys judge in three or four classes each year and their work attracts as much interest on the part of the grown-ups as it does among the youngsters and, better still, it is giving the county a lot of new material to put in charge of the fair later on; material made up of young men whose interest in stock breeding and the exhibition of stock has been sharpened by their work in these contests; well educated young farmers are ready to do their part in promoting the agricultural life of the community.

Novice Classes.

In another county, remote from industrial centers, where exhibits were far too few, the secretary decided to make some novice classes in the live stock classification; classes open to residents of the county who had never exhibited at the fair. In his campaign for exhibits in the live stock classes the secretary found many owners who said something like this:

"I never showed anything; wouldn't stand a ghost of a show beside So-and-So," naming a prominent breeder and exhibitor of the county.

To all such persons all arguments showing why they should exhibit, proved unavailing. It was to show the fallacy of this view that the novice classes were instituted. The experiment was a success. A number of new exhibitors were secured who watched the work of the judges, got interested and the next year made entries in the open classes when they found that their stock was not, as they had thought, greatly outclassed by that of the more prominent owners. In this instance the novice classes were continued for only about three years as at the end of that period the farmers throughout the county were quite generally exhibiting in the open classes.

Special Features.

There are other innovations which many fairs could adopt to increase support and deepen public interest. The Grange exhibits, which have become features of many fairs do much in this direction. If a county is greatly interested in horse breeding a horse show will prove a real drawing card. But it should be made a horse show in all that the term implies. The show ring should be where it may be seen from the grandstand. There should be a regular program for each day and it should be adhered to; also there should be a bugler to announce the classes and the winners.

If the fair covers four days and there are four bands of music in different parts of the county, it will be found to add appreciably to the attendance if each one of those bands is engaged for one day. Each band will bring to the fair a lot of people who perhaps would not come otherwise, for there is an immense amount of local pride in a band in any community.

And about judges: Engage no one for this important work not known to be competent, even though more money is required to get such men. Then, if possible, have some competent man connected with the association keep a general run of their work. Any judge who cannot, or will not, tell the reason for placing his awards should not be engaged again. There will, of course, be some dissatisfaction with the work of the most competent judge, from those who are unable to see the differ-

ence between good and poor work. Dissatisfaction with judging, however, will be reduced to a minimum if the judge is able—and willing, to clearly state the reasons for his decisions; moreover, such a course adds an educational feature to the fair that should not be overlooked.

FARM NOTES.

Fertilizer for Beans.

I have a five-acre piece of clay loam that was knee high with mammoth clover a year ago last fall. I plowed this under and last spring thought I would try beans on it, but the beans did not do well. I would like to put this to beans. I have manure to cover most of it, I think. Could I use commercial fertilizer instead of manure, and what kind would be best, and how would I apply same to ground? (I have a fertilizer grain drill). Should I apply lime, and if so how much per acre and how apply same?

Gratiot Co.

C. G. M.

Bean growers on average clay loam soils are quite uniformly of the opinion that it is profitable to use an application of say 200 pounds per acre of commercial fertilizer, which is preferably distributed through the drill hoes on each side of the row instead of putting all in with the seed, to prevent any possible injury to its germinating quality. A standard grain fertilizer is ordinarily used, since phosphorus is the element most generally needed for the production of seed crops on average Michigan soils.

In the writer's opinion it would be better to use the stable manure on sod land intended for spring crops than to apply on the bean ground, unless there is plenty available for both uses, in which case an application of manure would of course be beneficial.

The amount of lime to use per acre, or in fact, the necessity of using lime at all, depends upon the condition of the soil. Lime is a soil corrective or amendment rather than a fertilizer. It has been found necessary in many cases to place the soil in a condition to grow alfalfa satisfactorily, and is likewise beneficial as a preparation for clover and some other crops, especially legumes. Lime would probably be beneficial to the bean crop if the soil is at all acid, which could be determined by using the litmus paper test. Place a piece of blue litmus paper in contact with the moist soil for half an hour. If an acid condition prevails, it will be indicated by changing the color of the paper to red. In this case it will be found profitable to apply ground limestone as a soil corrective. Usually from one to two tons per acre are used on slightly acid soils, and heavier applications are required where the acid condition is pronounced.

Beans on Sod Ground.

Have a field manured for corn last year. Thought of applying manure again this year and sowing rye and vetch in corn at last cultivation for green manure the following year. Is this practical? Will beans do well on sod ground?

SUBSCRIBER.

The plan suggested of sowing rye and vetch in the corn on this sandy land as a green manure crop for the following year is a good one, provided sufficient manure has been applied to assure a profitable crop. Beans will do well on sod ground which is given the right sort of preparation, in fact, a good clover sod is the best possible place to plant beans. The land should be plowed as early in the spring as possible and thoroughly fitted before the beans are planted.

"We would not know how to get along without the Michigan Farmer. It is a great help to the farmers who read it and follow its teachings. Its timely advice, hints and suggestions duly appreciated by us all. We thank you for the same. Your advice on the bean situation has been timely and square to the point. Everybody likes the Lillie-Farmstead Notes, as they appear in The Farmer from time to time. The market page quotations are O. K. Long live the Michigan Farmer!"—W. A. Crawford, Attica, Mich.



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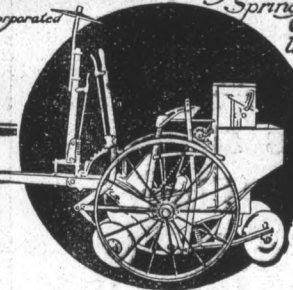
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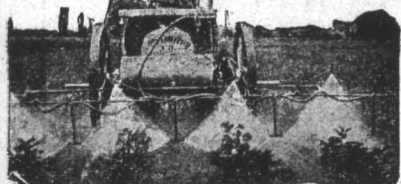
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Value of Bud Selection to Fruit-Growers

YOU will agree with me when I say that much of the progress which has been made in agriculture within the last quarter century has been due to scientific breeding and selection. Efforts to eliminate the unprofitable dairy cow were seen to be necessary and great improvement had been made as early as 1889; considerable progress has been made in increasing the productivity of grains, cotton and tobacco. Still the possibility of applying this plastic science to horticulture was not seen until a much later time.

It was by accident that the idea was finally brought to the attention of those interested in fruit growing. An orange grower in the state of California, in securing some stocks from a nurseryman of that state, found that when they came into bearing some of the trees were bigger yielders of a higher grade of fruit than the rest. These trees attracted a great deal of attention, and netted in actual dollars and cents nearly as much as the remainder of the orchard. Naturally he was desirous of securing a whole grove of them. He decided that there was a possibility that this might be done by selecting buds from the seedless orange trees, and grafting them onto stocks to be used in the new orchard. This method was used and when the trees came into bearing he had a whole grove of excellent quality seedless fruit trees as he had hoped.

Investigational Work.

The immediate result is now known to everybody, but the particular way by which it was secured attracted the attention of the Bureau of Plant Industry. They saw at once the possibility that this method of bud selection might be of value in bettering the quality and increasing the quantity of oranges grown. So in 1909 Mr. A. D. Shammel and Mr. W. G. Powell were sent out under the direction of the bureau, to look into this matter and to determine further if there was a difference in productivity of the individual trees growing side by side subject to the same conditions of soil, drainage, care, etc.

"If it was found that there was great variation in the quantity, quality, and

value of the fruit borne by different trees of the same variety under like conditions it could then be experimentally determined whether these crop characteristics were transmissible, and whether the progeny of these trees behaved as their parents. Then if it could be found that one tree of a given variety yielded consistently larger crops of more valuable fruit than other trees of the same variety under comparative conditions; and that trees propagated from this tree inherited this tendency," it would be possible to breed out an improved type.

These investigations begun by Shammel and Powell were carried on through a term of five years. The Cal-



Select Buds from Bearing Trees.

ifornia growers co-operated with them in every possible way, allowing them free use of their orchards and equipment. The work was done with the greatest accuracy and care; in fact, the system they used can hardly be improved upon.

Many Trees Unprofitable.

At first some of the growers felt that they had no trees in their orchards that were not profitable, but displayed a characteristic willingness to be shown, and were soon convinced by the data secured. Many groves were studied scattered through a wide range of territory, and by the end of the first season it was estimated that not over fifty per cent of the bearing trees were productive, although all of the groves under the investigation were profitable ones.

They found that a tree with a large amount of foliage was nearly always a scant producer of inferior fruit. The short-legged, little puppy which was nearly always at their heels as they worked never failed to select this type when looking for a tree under which to rest. This was the reason for the discovery of the definite type called the "shade tree." Some trees produced nearly all outside fruit on others the fruit was borne largely on inside branches. Both of these cases represent heavy-producing types; they are distinct and may be noted by the untrained observer, once they are pointed out to him. The investigators were able to distinguish seven distinct types of the same variety.

Similar experiments were conducted by Mr. Shammel in Florida, and like results were obtained there, and in the very beginning of the work the growers of both states were brought to see

the probable soundness of the assumption that variations did exist.

Only a Small Per Cent Productive.

It but remained to be proven that these variations persisted distinctly on each individual tree year after year and the result was rather startling. Sixty per cent of all the trees in all the plots were found to be unprofitable, not paying for their care and space, while only ten per cent were found to be of the most productive type. During the five-year period it was also proven that these characteristics which went to make a tree profitable (or unprofitable) could be passed on to the next generation. This was done by selecting buds from them and budding them onto the natural stocks in the usual way. These budded stocks then grew to be trees having the same desirable (or undesirable) characteristics which their parents had.

The growers of California have accepted the value of these results as thoroughly as the dairymen of this state recognize the value of careful breeding in cattle. They recognize the value of careful breeding in cattle. They feel that they have a part in this discovery and have adopted it absolutely. As a result of the application of bud-selection methods it is estimated that the output per acre, of first-class fruit, of both oranges and lemons, will be doubled within the next few years.

Work with Apples.

The result of the investigations with bud selection on citrus fruits correspond almost exactly with the assumption made at the start. It occurred to the Bureau of Plant Industry that the same principle might be applied to other fruits. When it proves out so fully with oranges and lemons, is there any apparent reason why it might fail with apples, for instance? We will see how it is working out.

Mr. L. B. Scott was sent to this state two years ago by the above bureau to conduct experiments along this line with Baldwin apples. The investigation has the same object in view relative to apples that those completed in California and Florida had to citrus fruits. The investigators are determining first if variations exist between trees of the same variety growing side by side subject to the same care and culture. These variations are being found to be present, and it is being ascertained in the second place, if the same differences or peculiarities persist on the same tree year after year. These questions being answered, the third and final object of the investigation is to find if these individual characteristics can be passed on from one generation to the next by bud selection. It should be noted that the time required to settle this last point may be somewhat longer than was the case with citrus fruits. This is due to our shorter seasons and the slowness with which the apple wood matures. At any rate it will be several years before the bureau is able to declare any specific results in this respect.

Wide Variation Found.

The first year Mr. Scott and his assistants discovered that many and wide variations of one kind and another did exist. There were great differences in shape, size, color, and in the quality of the fruit, no mistake about that. While the experiment has been carried through a period of only two years, it has already been proven to the satisfaction of the bureau that these variations persist year after year. So far the behaviour of individual trees seems to be relatively the same each season. From additional information not backed by statistics it has been shown to be true for a much longer period.

It will be several years before the investigators will be able to show in actual figures whether bud characteristics are transmissible or not. By looking into the histories, gathered from witnesses, of individual trees



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The exact effect of sediment on metal surfaces

If you look at the inner surfaces of your automobile engine with your naked eye you will say that they are perfectly smooth, but if you examine them under a microscope you will find they are actually covered with thousands of sharp points and depressions. It is these points and depressions that require efficient lubrication. These metal surfaces will slide easily against each other only when covered with a substantial film of liquid lubricant.

Oil that contains sediment causes metal to metal friction because the sediment crowds out a large part of the liquid oil and the metal surfaces are pressed together. Then the microscopic teeth grab and cut in. That means friction, wear and expense.

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Veedol is unlike ordinary oil. It is made by the Faulkner Process. This is a new discovery used exclusively by this company, which gives Veedol its remarkable heat-resisting and wear-resisting

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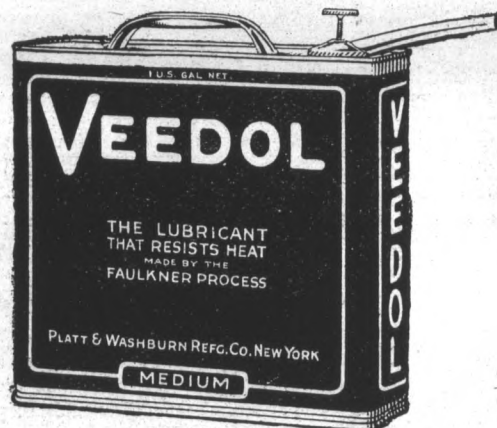
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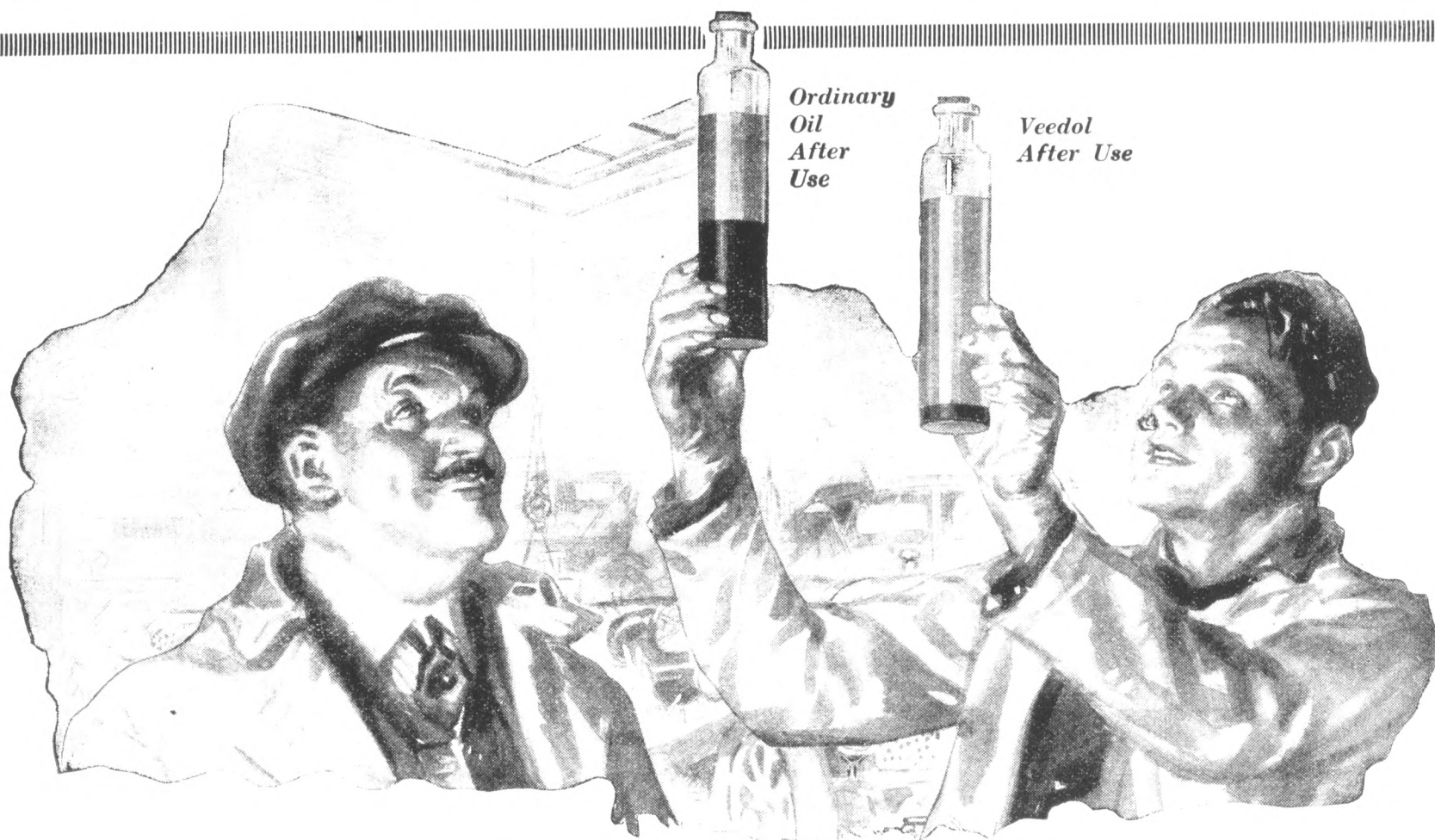
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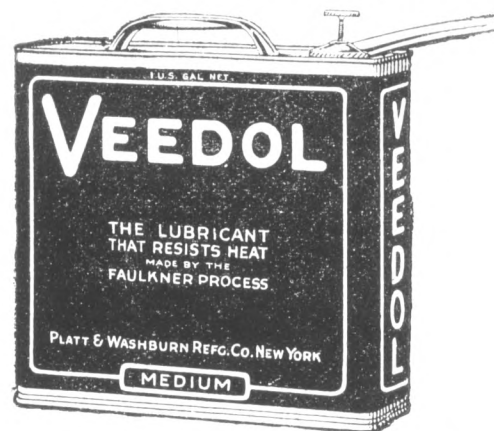
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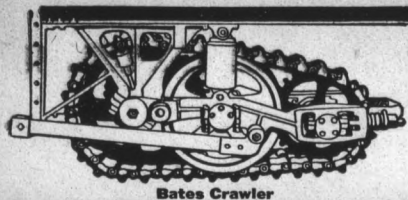
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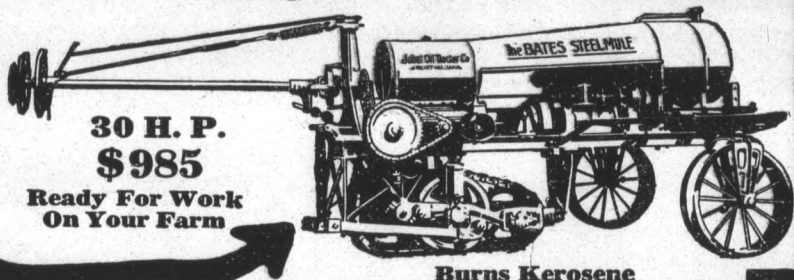
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they find that bud traits have been passed on from one generation to the next. They are in fact satisfied that the outcome of the experiment will be the same in all respects as that for citrus fruits. In other words, the Bureau of Plant Industry feels that this important investigation will terminate favorably. However, it is understood that a scientific branch of the Department of Agriculture will not publish its results until it has all the data which can possibly bear on the subject. Consequently the fruit growers of this state will be at a loss for leadership from this source, in adopting this principle, for some time yet. By the adoption of bud selection methods, citrus growers are doubling their incomes. Then from the evidence brought out above, failure to put this theory into operation means many dollars in an accumulating loss to Michigan producers of fruit. Michigan may be losing her chance to become the greatest fruit producing state in the Union.

Bud Selection and Disease Resistance.

A point which should be brought out right here is the fact that bud selection may be a very efficient way of overcoming diseases. That is, a nurseryman may go into an orchard which he knows to once have been a good bearer, but which is nearly extinct with diseases. He knows of particularly heavy-bearing, some of which he happily finds to have been resistant to the diseases. Is it not easy to see that sound buds from those trees are of great value in propagation work? The trees which will develop from those buds will be heavy producers of the same kind of desirable fruit, and will also be resistant to diseases.

The Nursery Practice.

Now, nurserymen will tell you that they have recognized this principle for years and have been following it out in their nurseries. I think that I can say with positiveness that if they have made any selection at all, it has only been toward a leafy, strongwooded, vigorous tree. It was shown in the citrus investigations that a bushy, woody tree was not a heavy producer. (It must be remembered that we are discussing the difference which exist within the same variety). As for diseases the nurserymen have propagated from disease-protected and not disease resistant trees, thus tending to give us weakling, molly-coddle trees. They have missed the point in their bud selection in merely producing a tree of a variety name which is healthy and vigorous as a result of their watchful care. They have not selected buds from trees with a known pedigree for productivity. They have not taken them from trees necessarily hardy, as the trees had little need for this characteristic due to the tender care given them. In fact, I think you will agree with me when I say that they, for the most part, followed selection in no way conducive to the best production of the fruit. The nurserymen hold the key to the future of this principle, and it is through them that the adoption of bud selection must be worked out. This will be done only by the insistence of the fruit organizations that the idea is a good one. Then the sellers of stocks will see the possible advantages to themselves and provide the growers with the best stocks.

Other Advantages of Bud Selection.

Some varieties tend to bear every other year, but there are many exceptional trees which bear annually. Buds from them would produce annual-bearing trees. There are other points of this nature which might be brought out, but I will leave them for you to sum up among the advantages of this somewhat new idea. When you weigh the matter carefully, I think you will see the working out of this common-sense method is liable to few setbacks. I believe that in this way the fruit growers of this state can most easily place themselves at the very front as

prosperous agriculturists of the United States.

Now the bureau feels sure of the outcome of the experiment with apples; nurserymen recognize its value and claim to be following the principle, and a slight knowledge of plant breeding shows it to be highly reasonable. On these bases, then, there can be nothing to lose in insisting that our nurserymen adopt this method and follow it more closely. If this adds somewhat to the cost of fruit stocks we must remember that there is no economy in cheap stocks of any kind. Then when we buy trees for setting we will be able to get, not only those of a certain variety, but trees which if given average care will produce a desirable type of fruit in large quantities.

Bud Selection Work of Practical.

In this article it has been my object to try to forecast the value of a great fundamental change in the production of our nursery stocks. Owing to the fact that it is impossible to build an agitation on an assumption, I have brought out the advantages of adopting the general principles of bud selection for practical purposes, regardless of our belief in the theory. I shall have accomplished my purpose if I have attracted the attention of one enthusiastic grower. It will be enough if he is willing to take the matter up and show his fellow-horticulturists the value of this, the greatest possibility to fruit growers ever worked out.

The value of discussing this subject lies in showing the readers of the Michigan Farmer just how far the bureau of Plant Industry has carried this matter. The proper course of procedure is the evident, and a great benefit can be gained for the fruit-growers of this state by the adoption of bud-selection methods. I believe that if Michigan adopts this method in advance of other states she will in that way more easily than in any other, become the leading fruit-producing section in the Union. Why should we hesitate?

Ingham Co.

F. M. BIRD.

EARLY CUCUMBERS.

Cucumbers may be had ready for the table three or four weeks earlier than is possible from outside sowings, if seeds are started about the middle of April. For those who have hot-beds the matter is a simple one. Prepare the bed in the usual manner, and on top of the soil place squares of thick sod with the grass side down. When the temperature of the soil has become stable, sow a few seeds on each square of sod. The plants will soon be seen and if a degree of heat, adequate to their needs, is maintained they will grow rapidly.

Where no hot-bed is available, the seeds may be started on sods placed in boxes in a sunny window. Another good method is to sow them in bottomless tin cans, set closely together in a window-box. All plants of the cucumber class are very sensitive to root-disturbance, and for this reason it is necessary to plant the seeds in some way that will avoid arresting growth of the tender seedlings when they are set in the open ground. One or two plants may be allowed to grow in each can and at the proper time set in the hills without retarding their growth.

Plants should be set in the ground about the time seeds are usually planted outside. These started plants will not be much molested by the cucumber beetle as the second leaves will be growing. The only pests to guard against are the cutworms. These will do no damage if plants are raised in the bottomless cans and set in the ground without removal. Plants, whether started in the hot-bed or within doors, should be carefully hardened off and accustomed to the outside air before setting in the ground.

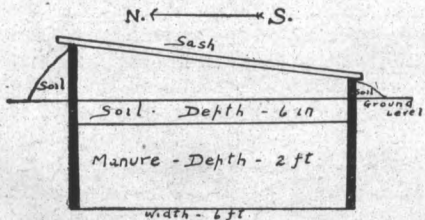
New Hampshire. C. H. CHESLEY.

USING THE HOT-BED.

A well made hot-bed is an asset on the farm and whether it is made on the farm or the frames are ordered direct from the manufacturer, the expense is small and the investment pays. The use of the hot-bed enables the farmer to make the summer garden more successful by raising strong vigorous plants ready to transplant to the garden when the right temperature arrives. Muskmelons may be started to advantage in hot-beds. It is the ideal manner for starting the tomato plants. Lettuce and radishes may be matured in the hot-bed several weeks before it would be possible to raise them in the open soil and their growing season may be prolonged several weeks after it would be possible to mature such plants under conditions in the outside air.

Fresh horse manure which has been well composed with plenty of straw or leaves should be packed in the hot-bed to form the "heating plant" for the soil which will produce the plants. Pack down about two feet of the manure in the bottom of the hot-bed and allow it to stand two or three days. Then place six inches of rich mellow garden soil on top of the manure and allow the hot-bed to stand for about four days when the soil will be warm and the seeds planted will find the soil conditions right for a rapid germination.

Locate the hot-bed on a southern slope, preferably behind some building



Cross Section of Hot-bed.

where the bed will receive the full benefit of the sun's warmth and avoid cold northern winds. The south side of a barn or shed where the drainage is good will be an excellent location for the hot-bed. The outside of the hot-bed should be banked with manure or heavy soil that will not be blown away as it is necessary to run a hot-bed on the fireless cooker system, the heat must stay inside and the cold outside.

Ventilation is necessary to grow strong vigorous plants. On warm days the sashes should be raised all day, in fact, they should be raised a few inches every day. At night they must be closed to keep in the warmth and prevent chilling of the young plants.

Cement hot-beds are practical and can be constructed in permanent locations at a small expense. Six feet long by six wide seems to be a standard width for hot-beds and they are covered by three by six sashes. By extending the cement foundation or by increasing the length of the boards new sections may be added to the hot-bed as the occasion demands. Rough boards may be used for the work and scrap lumber is good enough for the job and perfectly satisfactory. Make the back of the hot-bed higher on the north so that it will slope toward the south and the sun will have a chance to penetrate the glass and touch the plants at some period of the day. A good quality of glass in the sashes will pay and it is also a good investment to purchase the sashes of manufacturers who make a specialty of that work. Well-made hot-beds will last for several years and the expense in no way compares with the profit gained by their use.

Ingham Co. R. G. KIRBY.

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Do not forget to attend the mid-winter meeting of the State Horticultural Society at Benton Harbor, February 20-21. Every state horticultural meeting at Benton Harbor has been a success; this one will eclipse all others. Don't miss it.

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Don't Be Misled—It Is a Hudson Invention

Sixes have come into renewed popularity since the Super-Six won the top place. But the Super-Six invention—controlled by our patents—added 80 per cent to the six-type efficiency. And that 80 per cent is what gave it supremacy, when the V-types threatened to displace the Six.

Late in 1915, remember, the Six was a waning type. Even the Light Six, which Hudson gave first rank, had revealed some vital engineering limitations.

It had not solved the problem of motor vibration. It had not minimized friction and wear. Its endurance had proved disappointing.

Sixes at that time held hardly a single record. They were mostly held by Fours.

And leading engineers, including the Hudson, were seeking a remedy in Eights and Twelves. At that time the Six, for high-grade cars, seemed verging on displacement.

What Saved the Day

It was the Super-Six invention, remember, which then saved the day for the Six.

Hudson engineers discovered the shortcoming. By a basic invention they corrected the fault. They ended nearly all the vibration. They doubled the motor's endurance. Thus they created a motor which has since won all the worth-while records.

But that doesn't mean that the old-type Six is any better than it was.

'Twas the Super-Six That Won

The Super-Six, in a hundred tests, has out-performed all other motor types. It has not merely broken records. It has made new records which, a year ago, no man considered possible.

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ing car went from San Francisco to New York and back in 10 days and 21 hours.

It beat twenty famous rivals up Pike's Peak. It broke all stock-car speed records, and all for quick acceleration.

Then, after 7,000 record-breaking miles, it showed itself in new condition. Not a part or bearing showed evidence of wear.

No other motor ever built has shown anywhere near such endurance.

All By Saving Waste

The Super-Six develops no more power than other like-size motors. It simply delivers more. It almost eliminates motor friction and wear by ending nearly all the vibration.

That vibration, which wasted power, was the great fault of the Six. It is that which led to the Eight and Twelve as a possible solution. Any motor in which that fault remains can't compare with the Super-Six.

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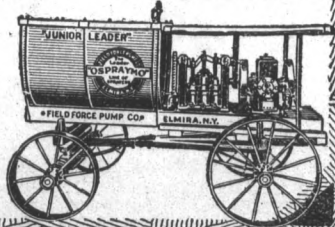
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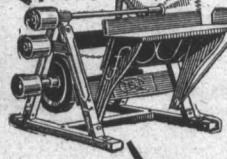
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The Brood Sow In Winter

By N. A. CLAPP

A VERY large percentage of the hogs raised on the farms are farrowed in the spring of the year. On account of mismanagement the percentage of losses at time of birth, and soon after, are heavy. Many a well-meaning man makes serious mistakes in caring for his sows during the winter and has to suffer the consequences. In many cases the losses are charged up to bad luck, when in fact, it is the result of bad management of the sows during the period of gestation and at farrowing time.

During the winter months when the cold weather is constant and severe, there is often a mistake made in keeping the sows too closely confined to a small yard and pen. The inexperienced man may be trying to do well by his brood sows, when, in fact, he is managing in a way that invites disaster. He is taking extra pains, he thinks, to keep the sows warm and comfortable all the time. The fact is well understood that the pigs in the spring will have a high value. It may cost a little less to keep the sows closely confined, but by so doing they are deprived of the exercise which is necessary to make them healthy, nimble, strong and vigorous and capable of imparting to their progeny life and strength at time of birth.

While exercise each and every pleasant day in winter is necessary, I would not overlook the importance of making the sows comfortable. They should have a warm, dry and comfortable nest in which to sleep at night, and remain in during stormy days. It is cruel and an injury to the sows to compel them to sleep in a cold, damp nest. A comfortable place in which to sleep and otherwise kind treatment improves the disposition and has a favorable influence on the disposition and thriftiness of the coming litter of pigs.

The Food.

In these days of extremely high prices for all kinds of feeds, it does not, at first, seem necessary to offer many words of caution in regard to feeding the pregnant sows. I will suggest, however, that it is not a good plan to feed pregnant sows much heavy feed, like peas and corn or meal of either kind, during the first two months after breeding them. It is better to have the feed bulky rather than heavy. As small potatoes and other vegetables are out of the question to feed this year to keep the system relaxed, other feeds may be used. I think pregnant sows should have sloppy feed at least once a day in severely cold weather, and twice per day during the moderately cold weather. If they have to walk several rods to the feed every time they are fed, all the better. If the grain with which the slop is made is made up of wheat bran, wheat middlings, ground oats and corn it is a good combination if about equal parts of each are used.

It is a good plan to educate the sows to eating some forage feeds, like clover hay, alfalfa and some corn stalks to chew on. A little ensilage may serve a good purpose. It is a mistake to expect them to eat the forage like sheep or cattle. A little thrown in a clean place where they can eat it, or held in a small rack, to enable them to take what they want, will serve the purpose. The forage furnishes the system with mineral substances which they require to do their best, not only for themselves, but for the litter of pigs which they are carrying.

After the end of the second month of the period of gestation, gradually increase the amount of grain feed given, because the sows have a triple duty to perform; they must maintain

themselves, nourish the pigs which they are carrying, and prepare to feed the pigs after they are farrowed.

I do not wish to be understood as urging that pregnant sows should be fattened, but should be in a strong, healthy condition at farrowing time. Such sows will give the pigs a better start and transmit to them the thrifty habit in a more pronounced manner than is possible for a sow thin in flesh to do.

Feeders' Problems

Summer Pasture Crops.

What is best to sow for a temporary pasture for next summer? How much grain and what kind should I feed to a medium-sized draft colt nine months old to get the most growth on same. Muskegon Co. A. C. K.

The best crop to grow for summer pasture depends altogether upon the conditions which obtain; the kind of stock to be pastured is, of course, the first consideration. The number of head to be carried, the other available pasture and the season of the year when same will need to be supplemented, are all factors to be considered.

Peas and oats sown early in the season make excellent spring and early summer pasture for other live stock as well as for hogs. For sheep the results would be better if Dwarf Essex rape were added to the mixture where same is to be sown in the early spring. If later pasture is required, then rape sown alone or perhaps with millet if the sowing is delayed until hot weather, will give best results.

Cowpeas and soy beans also offer advantages under some conditions. The problem of supplementary pasture crops is an individual one in practically every case and difficult to settle on a broad general basis. Sweet clover will not make a large amount of pasture the year it is sown, although it can be pastured lightly and will make a very heavy growth the following year, in which it completes its life cycle.

Ration for Growing Colt.

Theoretically, a growing colt over six months of age should receive about 18 to 20 pounds of dry matter per day per 1000 pounds of live weight. This should contain 1000 pounds of live weight, from 1.6 to 1.8 pounds of protein and a total of 11 to 13 pounds of digestible nutrients having a nutritive ratio of from 1:6 to 1:7.

Good clover or mixed hay and oats with a little bran or a small portion of oil meal added will make an ideal ration for the growing colt.

The quantity to be fed will depend on how rapidly you desire to force growth. It pays to feed the draft colt liberally, as size can be obtained only by liberal feeding while the animals are young, since a colt makes more than half of its total growth during the first year of its life, and if stunted during this time it will never fully recover. The average colt will require from 10 to 12 pounds of clover hay, and six to seven pounds of grain per day during its first winter, to make a fair growth without crowding. If extreme growth is required, then grain should be fed more liberally.

At the Wisconsin station where it was desired to force draft colts to extreme weights during their first year they were fed on a mixture of 60 per cent ground oats, 15 per cent corn meal, 10 per cent bran and 15 per cent of cut alfalfa hay. The colts were given all they would eat clean and consumed 16½ pounds of the feed per day, making an average gain on same of 2.1 pounds per day and reaching weights ranging from 1000 to 1200 pounds at one year of age.

Controlling Contagious Diseases

Address by H. H. Halladay, President of the State Live Stock Sanitary Commission, at the recent meeting of the Michigan Improved Live Stock Breeders' and Feeders' Association, held at Michigan Agricultural College.

(Concluded from last week).

During the last year, we have had many outbreaks of rabies, and quarantines have been placed in the following counties: Sanilac, Saginaw, Gratiot, Gladwin, Midland, Kent, Allegan, Clinton, Ottawa, Van Buren, Muskegon and Ionia. This is not only a serious menace to our live stock industry, but has made it necessary for many people who have been bitten by rabid dogs to take the Pasteur treatment. There is recorded two cases where two people lost their lives by being bitten by a rabid dog within the last year. We are of the opinion that we will still have this menace until some radical steps are taken to rid the country of worthless curs and compel the owners to keep their dogs under proper restraint. It is usually considered a disease which only occurs in the hot weather, but some of the severest outbreaks that we have had have been during the winter months, and more territory is now under quarantine on account of rabies than has ever been known in the history of the state.

Glanders.

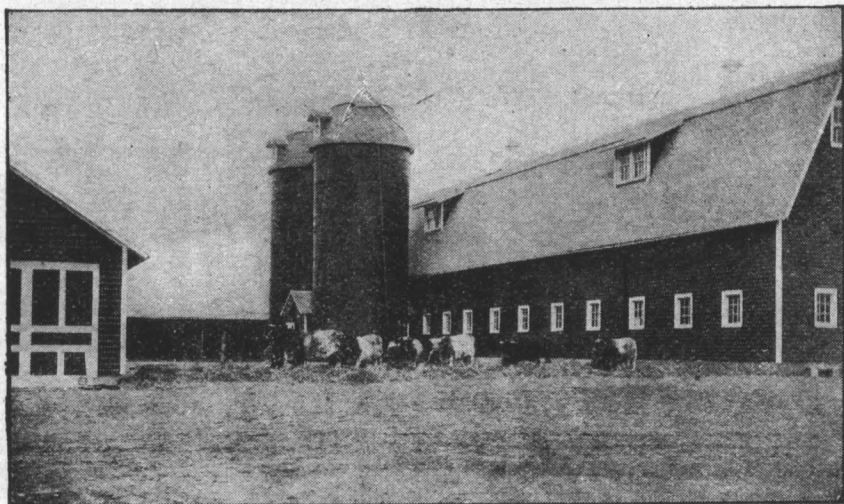
At the 1915 session of the legislature, a bill was presented and passed, requiring that all horses coming into the state of Michigan be accompanied

able for grazing purposes not only in the Upper Peninsula of Michigan, but in the northern part of the Lower Peninsula as well. Those who have tried out this project are meeting with unbounded success and are reaping a reward for their efforts.

Other Diseases.

There are some new diseases coming into the state at all times, those which perhaps baffle the skill of our best veterinarians. One of these is known as Hemorrhagic Septicaemia, and has given considerable trouble, principally among the young stock. We are trusting that this disease will not gain a foothold, as it is very active and attacks and kills almost before any precautionary measures can be taken.

In conclusion, I would not feel that I would be doing you justice unless you knew just what expenditures of this department have been during the year just passed. It is true that the expenses of our department have been increased, due partly by increased facilities which are occasioned by legislative enactments, and also by the demands which the public have made upon us. Therefore, in closing, I give you the following summary of expen-



Main Barns on the Bidwell Stock Farm, Lenawee County.

Bidwell Stock Farm is one of the most modern and thoroughly equipped Shorthorn breeding establishments in Michigan. The main barn is 38x174 feet in size, built on deep concrete foundations. A concrete driveway extends its entire length, with a row of box stalls on both sides. The feed rooms have concrete floors and the stalls are paved with creosoted blocks. The equipment is all of the most modern type, providing for the comfort and health of the herd and the convenience of the caretakers.

by a certificate of health, including the mallein test for glanders. This law has been quite well enforced, and we find that the railroads are refusing shipments which are not accompanied by these certificates. It is a noticeable fact that all the outbreaks of glanders which we have had in the state, have been directly traced to horses which have been shipped in principally from the western ranges, and we believe this law will be very valuable in protecting us against any serious outbreaks of glanders in the future.

Diseases of Sheep.

During the last year, few cases of infectious diseases have occurred in the state among the sheep. The most destructive disease, however, is that of intestinal parasites, which can be eradicated if proper treatment is applied, and the old pastures which have been used for grazing purposes for years past are broken up and new pastures used for grazing flocks, so that they will not become infected from this source. There are many shipments of western sheep coming into the state for feeding purposes, and the usual amount of losses occur from the long journeys and exposures which are occasioned by this shipment. I cannot help but feel that this is one branch of our agriculture which should be encouraged, as we have lands suit-

ditures with the assurance that the money which we have expended has been carefully, and I hope profitably dispensed:

Salaries of clerks and extra veterinarians	\$ 3,118.29
Salaries of state veterinarian and three commissioners..	6,125.94
Traveling expenses	4,914.82
Telephone and telegraph....	263.78
Printing	187.52
Office supplies	210.62
Express and cartage....	11.91
Freight on cholera-infected hogs	66.48
Disinfectants and spraying outfits	99.37

Total expense\$14,998.73
Appraisements on tuberculosis cattle 30,562.50

Total\$45,561.23

In conclusion, I might say that we would be pleased to have the budget system enacted into law, so that we might know what the people of the state desire us to do in our work. Other states are expending many times what we have spent, but I can say to you, with all sincerity, that I believe, taking everything into consideration, Michigan's live stock is in as healthy a condition as in any other state in the Union.

Editor's Note.—Farmers everywhere should aid in preventing the spread of contagious diseases in live stock by promptly reporting suspicious cases to State Live Stock Sanitary Commission.

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Tuberculosis of Hogs

To rid the country of tuberculosis of hogs, a disease which is costing millions of dollars annually, is practicable and relatively easy. Extinction should be attained without delay before the disease, which appears to be increasing, has gained too much headway, is the advice of the specialists of the United States Department of Agriculture. The official figures show that nine per cent of the hogs slaughtered during the fiscal year 1916 at establishments under federal meat inspection were affected with tuberculosis in some degree. In the case of hogs from certain localities, especially some of the dairying sections, however, over 25 per cent, or one out of four hogs slaughtered, had the disease. The following information regarding the control of this disease is taken from Farmers' Bulletin 781, Tuberculosis of Hogs, by John R. Mohler and Henry J. Washburn.

Means of Prevention.

The two principal ways of preventing hogs from becoming tubercular are by keeping them away from tubercular cattle, and by cooking or pasteurizing all skim-milk and cooking all garbage before it is fed to the hogs.

On dairy farms, unless the cattle have been tuberculin tested and are known to be free from disease, hogs should never be allowed to follow the dairy cattle or to drink raw milk. In any event, it is safer to cook skim-milk or buttermilk or to pasteurize it, by holding it at 145 degrees for thirty minutes, or at 176 degrees for one minute. That raw milk from tubercular cows will convey the disease to hogs is fully established by adequate tests. Raw milk of any kind from a creamery is particularly dangerous for hogs, because if there is but one tubercular herd on the creamery route the milk from this herd may affect all the skim-milk collected at the factory. This explains why tuberculosis is most common in hogs in dairy regions where milk is taken to a central creamery and raw skim-milk brought back to the farm from the general stock.

The droppings of tubercular cattle also convey the germs to hogs which are allowed to follow them. For this reason hogs should be kept out of cow lots. On the other hand, hogs can follow steers with comparatively little danger. Steers are not kept indoors as much as dairy cattle and commonly are sold before they are old enough for the disease to develop to the point where it spreads germs through droppings.

No hog should be allowed to eat carrion, such as dead chickens or other animals, or to eat raw offal from the slaughter houses or farm butchering. All slaughter house waste, before being fed, should be thoroughly cooked, as this will kill the germs of tuberculosis and other diseases. Careful investigation shows that slaughter house tankage does not spread the disease, as the preparation of this tankage involves thorough sterilization by heat.

Eradication.

Where reports from slaughter houses or other tests indicate that a herd is tubercular, the owner should at once get rid of his entire herd and, after thoroughly disinfecting the premises introduce new breeding animals. On the other hand, newly purchased hogs should not be introduced into a herd which is free from disease until they have been tuberculin tested. Unfortunately, few hogs with the disease ever show the presence of tuberculosis by outward symptoms. In fact, in slaughter houses many hogs which were found on post-mortem examination to be tubercular, seemed to be the finest animals in the droves. As tuberculosis frequently attacks the hogs on a farm where there are tubercular cattle, the tuberculin test should be applied to all the cattle on the place and all tubercu-

lous animals among them should be isolated or destroyed at the time of disposing of the hogs.

A farm may be stocked rapidly with healthy swine after the total slaughter of a tubercular lot. The early age at which the sow may be bred, her capacity for breeding twice a year, and the plural number of her offspring are forceful arguments for the total destruction of every diseased drove of hogs and the breeding up in clean, healthy quarters of a sound, healthy drove in its stead.

Community Action.

It behooves hog raisers to see that their skim-milk has been properly heated before they feed it. Legislation making such heating by creameries compulsory affords a simple and easy way of greatly reducing hog tuberculosis.

A serious outbreak of tuberculosis among hogs in Switzerland was overcome by boiling all of the separated milk before feeding it to the subsequent litters of young pigs.

The Bureau of Animal Industry is endeavoring to locate infected farms, or at least infected localities, and to ascertain the direct cause of the spread of the disease in these districts. Owing to the number of hands through which hogs go before reaching the abattoirs this is not easy, but it can be and is being accomplished. Already, through co-operation with the state authorities, a large number of infected farms have been definitely located. The conditions on these farms have been investigated, the source of the disease determined, and methods for its suppression recommended. Both the bureau and state officials have been working with these ends in view. When hogs have been found to be tubercular when slaughtered under the federal meat inspection and the farm from which they came has been located, the state veterinarian is notified. In most states this officer is empowered by law to quarantine any farm when he suspects the presence of a contagious disease thereon. He then applies the tuberculin test to the cattle on the farm and otherwise looks for the source of infection. This frequently results in finding the cattle tubercular.

This co-operation with the state is of great value, and the results would be greater if state legislation were enacted compelling the tagging of all hogs going to slaughter, so that these animals if found tubercular, could be immediately traced to their point of origin and the source of infection removed.

MICHIGAN HAMPSHIRE SWINE BREEDERS ORGANIZE.

During the recent meeting of the Michigan Improved Live Stock Breeders' and Feeders' Association, there was held a meeting of Hampshire Swine Breeders, for the purpose of forming a state association, along the same lines as the various other special breed associations.

The meeting was well attended, and was called to order by Mr. H. H. Halliday, as acting chairman.

The meeting proceeded to the adoption of a constitution, and to the election of officers. The following officers were elected: President, H. H. Halliday, Clinton, Mich.; vice-president, L. C. Holden, Sault Ste. Marie, Mich.; secretary-treasurer, George E. Starr, Grass Lake, Mich.; directors, O. H. Halliday, Clinton, Mich.; Garvin Denby, Detroit, Mich.; Alfred Henrikson, Shelby, Mich.; Clarence Campbell, Parma, Mich.; Overton Creamery, Allegan, Mich.

This organization is to be known as The Michigan Hampshire Swine Breeders' Association. It is organized for the purpose of promoting the best interests of the breeders, and owners of this breed, which is becoming of so much importance in this state. It is to be hoped that all Hampshire breeders will join in, and co-operate with this association. Your name, with \$2.00 annual dues sent to the secretary, will enroll you as a member.

Hundreds of Farmers

in the Middle West have very profitably increased their yields by the use of Darling's Animal Matter Fertilizers.

A. L. Siedentop, Herscher, Illinois, is one of many leading farmers of Northern Illinois who has increased his yields at a profit and at the same time built up his soil with the aid of

DARLING'S ANIMAL BASE FERTILIZERS

He has done this for over five years.

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Warranted to give satisfaction.

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Curb, Splint, Sweeney, Capped Hock, Strained Tendons, Founder, Wind Puffs, and all lameness from Spavin, Ringbone and other bony tumors. Cures all skin diseases or Parasites, Thrush, Diphtheria. Removes all Bunches from Horses or Cattle.

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 THE LAWRENCE-WILLIAMS COMPANY, Cleveland, Ohio.

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\$200.00

R. E. BARRON,
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Mention the Michigan Farmer when writing Advertisers

The Man Under the Cow

By I. J. MATHEWS

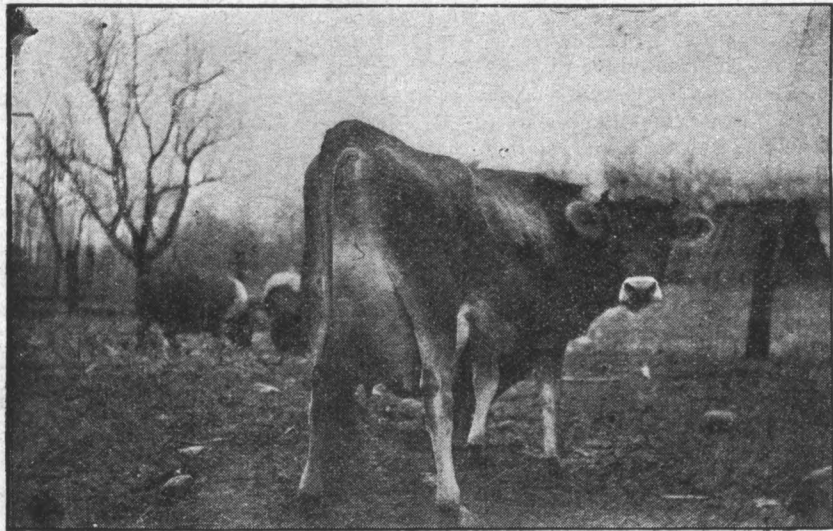
MR. W. F. TAYLOR has paid his respects in a most commendable manner to the man behind the cow. While in so doing, he emphasized many points of interest and others of a general educational nature to the man who would make a success with the cow. As a matter of viewpoint, there are three positions in which a man may make or break with the dairy cow. There is the position in front of the cow from which the feed is administered in right amounts so that the animal may do her best at milk production. Then there is the man behind the cow, and while both of these two angles are important, they are no more so than the man under the cow. In each and every case where a thoroughbred man has made a large record with an individual of any of the breeds, much of the success falls to the person who placed himself regularly in a sitting posture a little to the right and under the cow.

Desired Result is Full Milk Pail.

The old cow may be fed upon the choicest of feeds, she may be managed

through the milk veins on the abdomen, we would have a good idea of the milk secreting glands of the udder of the cow. Now there are hundreds of these alveoli and the milk is at milking time secreted and gravitates down the hollow stems where it finally collects in the milk cistern in and above the teat. The bottom part of the teat is guarded by a circular band of muscle known as the sphincter muscle.

It is curious to see how this muscle derives its name "sphincter." The ancient Egyptians were very superstitious and gods fearing and so they thought to appease the anger of the gods by building the enormous pyramids and other stone formations. One of the things that they constructed to shield them was the Sphinx, a huge pile of masonry, and one side there was a sculptured face. The Sphinx was supposed to guard the people from the wrath of the gods. So the word sphincter was derived and means "a guard." Both ends of the stomach have sphincters or guarding muscles.



The Udder of a Cow is a Complex Milk Producing Organ.

properly from the standpoint of cleanliness and sanitation, but unless she responds favorably to the stimulation set up by the man who regularly draws the fluid she has to give, there can be no large production. It is not rare to find people maintaining that a cow cannot "hold up" her milk for any great length of time, but when the process of milk formation is understood, it may readily be granted that the cow may so hold up her milk that she does not produce the maximum of either milk or what is more sought after—butter-fat. Really, the "proof of the pudding is in the eating," and the proof of the feeding, weeding and breeding is in the results measured in the pail, recorded by the scales and tallied on the milk sheet by means of the pencil tied to it. It has been found that different milkers or methods of milking will cause the cow to make a large record in one case or fall absolutely flat at record making in another case.

How Milk is Secreted.

The cow is a trifle different than the other milk-giving animals. The cow's udder is just one huge collection of alveoli, or cavities lined with epithelial cells. A description of a simple one of these alveoli may be of some avail in understanding how the milk is secreted and the different manipulations the animal might be able to exercise over her product.

The alveoli of the udder may be compared to a bunch of grapes. If we imagine the grapes to be hollow and the small stems and the main stem to be hollow also, and could further imagine a network of arteries and veins supplying the pure blood to the outside of each of these alveoli divisions and carrying impure blood away; finally to be sent back to the heart

The muscle guarding the end nearest the heart is the cardiac sphincter, while the muscle at the other end is the pyloric sphincter. The sphincter muscle at the bottom of the teat keeps the milk from coming out too freely and prevents foreign material from working its way up the teat.

Where Milk Nutrients Come From.

Each one of these alveoli or milk secreting cells of the udder is lined by many epithelial cells or small pouches. It is often supposed that the udder of a cow is simply a sack into which milk is poured throughout the day and from which it may be drawn by the attendant at night. That this is not so is evident to anyone who has examined the udder, both when full and empty. If the udder were simply a sack, it would not be possible for a cow to hold up her milk. As a matter of observation, however, all the milk that can be found in the udder of a cow as such five minutes before the time she is regularly milked, would be what is contained in the milk cistern.

Throughout the day, the arteries are bringing fats, proteins, water, ash, etc., to the outer surface of these small alveoli. The epithelial cells have the power to select the materials they desire and through this power, they select those portions that will eventually become mixed as milk. As the day wears on, these small epithelial cells are collecting more fats, proteins, and ash until at night, they are about as full as the can possibly be. However, there is no milk formed yet as such. All the elements which enter milk are available but there is no milk.

The act of giving milk is essentially a response to nervous stimulation and if the cow is not pleased with the attendant, his manipulation of the teats will not produce a pleasant sensation

SHARPLES SUCTION-FEED PATENT

and what it means to you dairymen

The new SHARPLES patent, one of the broadest process patents ever obtained, covers any separator that will **skim clean at all speeds**. It covers the **process** of varying the feed in proportion to the centrifugal (separating) force. No one else can, for 17 years, make and sell such a separator.

You know of the tremendous losses caused by all fixed-feed separators because they are never turned full speed. More than 4,000 investigations **proved** that 19 out of 20 operators turn their separators **below** speed most of the time. Purdue Experiment Station Bulletin No. 116 **proves** that the loss from slow turning amounts to from 7 to 13 lbs. of butter per cow per year—or the appalling loss of 80,000,000 lbs. of butter yearly in America alone!

Skims Clean at Any Speed

So we realized that it was far from sufficient that a separator **could** skim clean when properly handled. It was vitally necessary that it **would** skim clean—even when improperly handled. That's SHARPLES, which sucks in just as much milk as the centrifugal force can perfectly handle—and **no more**. The result is **clean** skim at all speeds and **unchanging** thickness of cream.

All separator makers **know** of this tremendous loss and some **admit** it in their advertisements. They **cannot** stop the loss (because SHARPLES basic patent covers any separator that will skim clean at all speeds) so they try to **warn** against it by putting on a sight speed indicator (on which the operator's eyes must be glued every moment and his muscle must respond instantly to the indicator's **prod** for more speed)—or a bell indicator (which, like the fire alarm, gives notice of damage only **after** it is done). All such devices have proven **failures**, time after time, because few operators can stand being prodded or yelled at whenever the speed slackens.

A bell ringing device is truly an acknowledgement of the vast **superiority** of SHARPLES which automatically **prevents** all losses from uneven turning instead of simply announcing them.

Simple Tubular Bowl—No Discs

Not a single piece is added to accomplish the wonderful "Suction-feed." And the SHARPLES was **already** by far the **simplest** and easiest to clean. We realized that it was not enough that a separator **could** be kept clean—it must be so simple that it **would** be kept clean. So the **patented** SHARPLES Tubular Bowl contains **no discs** or blades—it is just a plain, light, steel tube. No other separator can use it.

All other separators must contain discs or blades to skim at all. Their makers wrangle between them as to how many discs, and if curved or straight, and how the milk should be fed into them. They constantly change their designs without getting nearer the **ideal**. Some use more discs, many of them boast of using less. Such boasts plainly acknowledge that "the fewer discs the better."

The **ideal** is SHARPLES which has **no discs at all**. But this ideal is a SHARPLES patent.

Important to Dairymen

So all SHARPLES patents assure **you**, as a SHARPLES user, of **larger** profits and **greater** convenience than the other man gets. The knee-low supply tank, single ball bearing in oil, slow and easy crank speed, freedom from the tyranny of fixed speed, increasable capacity, easiest cleaning, automatic oiling without oil cups or oil holes—all these are **your** advantages **exclusively**, because they are exclusive SHARPLES features.

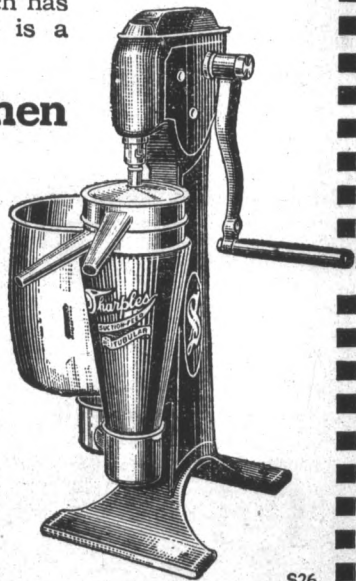
Send for catalog, which explains all this, addressing Dept. 18.

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Send for 36-page birds-eye on handling silage—a chapter from "Modern Silage Methods." 1917 edition of this book 25c. 264 pages. Answers all silage or silo questions. Ohio Silo Filler Catalog FREE.

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Tag your stock—best and cheapest means of identification for Hogs, Sheep and Cattle. Name, address and number stamped on tags. Catalog mailed free on request. F. S. Burch & Co., 263 W. Huron St. Chicago



Installation in Dairy Barn of L. S. Taylor, Owatonna, Minn.

Two Men Milk—Keep Records—Weigh Milk of 25 Registered Cows per Hour.

"Have used the Hinman Milker for one year on pure bred Holsteins with best of satisfaction. Chief features, simplicity of construction, economy of upkeep and durability and ease of operation. Two men milk 25 cows per hour, weigh the milk, keep records of each cow and do it with ease and pleasure."

Jan. 16, 1916,

L. S. TAYLOR.

HINMAN MILKERS Will Surely Increase Dairy Profits

Saves where the only saving is possible in a dairy. You can't save on feed without losing milk yield. You can only save on hand labor. So simple, your boy with a 3-unit outfit can milk 18 to 25 cows an hour. No complicated pulsating mechanism—no air pipe lines—no vacuum tanks. Just a simple combination of pump, vacuum in pail cover and natural action (not upward squeeze) teat cups.



BIG ILLUSTRATED CATALOG FREE
Shows why you can't afford to be without this milking machine if you milk only 10 cows or more.

Ask about operating on any electric house lighting current

Hinman Milking Machine Co.,

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SERVICE DEALERS EVERYWHERE

"9 years' success."

HINMAN MILKERS
Valve Chamber

Built by practical dairymen

"Short Measure—eh?"

A cow can not tell you when she is sick, but her milk yield is a very accurate indication of her condition. The fact is, thousands of cows are allowed to remain unprofitable or below their reasonable standard of productivity through their owner's failure to act on the hint of the milk pail. Don't pass it off by simply calling her a "backward cow"—correct the trouble and reap the extra profit.

Kow-Kure is a medicine for cows that are "off color." It is in no sense a food, but it promptly acts on the digestive organs and enables the cow to thrive on her natural food. Its great curative powers act on the genital organs where many cow ailments originate. The success of Kow-Kure is positive in the prevention and cure of Abortion, Barrenness, Retained Afterbirth, Milk Fever, Scouring, Lost Appetite, Bunches and other common ills.

You can buy Kow-Kure from feed dealers and druggists, in 50c. and \$1.00 packages.

DAIRY ASSOCIATION CO.
Lyndonville, Vt.

KOW-KURE

Write for free book
"The Home Cow Doctor"



AN UNFAILING SIGN

with the result that decreased amounts of fats and solids will be given up by the engorged cells. The old cow cannot be blamed for holding up her milk. The act of retaining the milk is simply an automatic one produced when the attendant does not effect a pleasant nerve stimulation.

Granted that a favorable nerve stimulation is produced, these cells of the alveoli that are engorged with the materials of which milk is made commence to give up their contents. Of course, the water being less viscid will find its way through the cell's enclosing membrane much more rapidly than the more viscous and solid particles of fat, protein and mineral matter. This accounts for the fact that the first milk drawn is usually thin and blue. It contains but little fat and fewer milk solids. If we are not constituted so that we can appreciate the barn cat, we are likely to milk out this thin blue stuff from all four teats and put it into the cat's dish. As the process of secretion proceeds, the bulk of the water is given off and there remains the less fluid particles, such as the large droplets of fat and particles of casein and mineral matter. These come through the cell walls more slowly and so we need not be surprised to find that the strippings of the cow will often test as high as ten or eleven per cent while the first milk tests as low as one and a half per cent.

Practical Milkers.

It will be quickly apparent that the milker has much to do both with the quality and quantity of milk produced. The man who produces the proper nerve stimulation within the cow will get the results, but the petulant, quick-tempered, milk-stool man will not get them as portrayed in the cream check, despite the fact that in feed and management, he may be a model dairyman. I know a dairyman who is a most excellent calf feeder, a professional cow feeder and a model in dairy cow management, but he cannot secure the quantity of milk from his cows that can be secured by some or his hired men. For this reason, he never tries to milk.

Perhaps the matter of nerve stimulation may be one of the reasons why the mechanical milker seems to be so readily taken to by the cows. There is no loud talking, flourishing of milk stools or pulling and hauling on the teats, such as accompanies the hand-milking operation as viewed in some barns.

Milking the dairy cow is a very important part of her management. The man who sits down to the cow, persuades her to "get over" with the stool, flourishes his hands and possibly his feet, in close proximity to her belly, need not be surprised if he does not induce a marvelous flow of milk. As an observer, I am often pained to see the feelingless way many milkers go at a good cow, and if I were the cow in question, perhaps the pain would be more evident. A very common sight it is to see the milker get his pail between his legs, grasp the two front teats firmly and proceed to haul the old cow back and forth across the stall. Small wonder it is that some cows seem to resent such treatment.

Fast and Regular Milking—the Goal.

I had the pleasure of seeing the man milk who is or was at that time reputed to be "Michigan's Champion Milker." It was a pleasure to see this man at his milking. The cows seemed to enjoy it and they did not come in for the usual swaying back and forth. This man did not milk with the full-arm movement; he used only his wrists and fingers and he surely was a marvel of speed. I am told that he was most valuable in the fact that the cows would turn loose the last droplet of fat that had been collected during the day.

Generally speaking, the man who
(Continued on page 233).

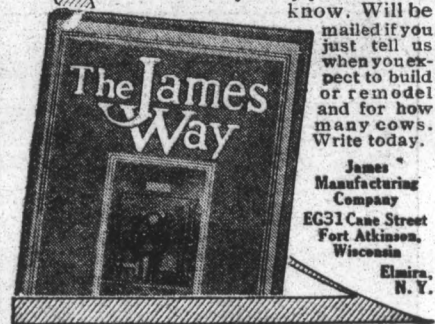
The Way to Bigger Dairy Profits

It shows how to select the right location, tells about drainage, light, ventilation and distance from other buildings. How to build best for the small herd so you can properly enlarge later. It shows

JAMES

Sanitary Barn Equipment

which is used in many of the most profitable barns in the country. James equipment keeps the cows comfortable—makes them bigger producers, increases your profits. The JAMES BOOK has a dairy story you want to know. Will be mailed if you just tell us when you expect to build or remodel and for how many cows. Write today.



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Why waste 1/4 of your silo?

Silage settles nearly one-fourth when the silo is quickly filled. That means 25 tons less silage in a 100-ton silo than you really should have. Make your silo earn full dividends. Fill and refill your own silo with a

Papec Ensilage Cutter

Your gasoline engine—3 H.P. and up—will run it. Grover McGur, Middlefield, O., says: "We use a 3 H.P. gasoline engine (on our Papec) and can put in more ensilage than either of the two machines in this community with 12 and 15 H.P. engines."

Every Papec is guaranteed to fill the highest silo. Made in four sizes—2 to 30 tons per hour capacity.

Our 1917 Catalog explains just how a Papec will save you \$75 to \$150 yearly. It's free. Send a postal today.



Papec Machine Company
60 Main St.
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25 Distributing Points

LOW-COST POWER For pumping water



Model 12

STAR WINDMILL
Equipped with NO-OIL-EM Bearings requires oil but once a year.
HAS NO EQUAL FOR PUMPING ECONOMICALLY. Talk it over with your dealer, or write us for FREE catalogue giving complete information.
FLINT & WALLING MFG. CO.
KENDALLVILLE, INDIANA.

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SEPARATOR
FULLY GUARANTEED CREAM
A SOLID PROPOSITION to send new, well made, easy running, perfect skimming separator for \$16.95. Closely skims warm or cold milk. Makes heavy or light cream. Different from picture, which illustrates larger capacity machines. See our easy plan of
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Bowl a sanitary marvel, easily cleaned. Whether dairy is large or small, write for free catalog and monthly payment plan.
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Hot Feed Helps Stock
Send for Free Circular about our 30-day free trial offer—also advantage of giving stock and poultry cooked feed—tells how much heavier cattle and pigs will be—how it improves poultry, makes better horses, prevents Hog Cholera.
FARMER'S FAVORITE Feed Cooker and Boiler
pays for itself in a short time because the feed will be more nourishing, will go farther and TASTES better. Use it also to take the chill off water for boiling, rendering, sterilizing, etc. No foundation needed—easily moved. Six sizes, from 25 to 100 gal. capacity. 30 DAYS free trial. Guaranteed. Send for Circular.
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Mailed free to any address by the Author
H. CLAY GLOVER CO., Inc.
118 West 31st Street, New York



DAIRY PROBLEMS.

Mustard in the Silo.

I have ten acres of land, rented, that has mustard in the field, and I intend sowing it to corn for the silo. Will mustard seed grow after it has been in the silo, when it comes out in the spring in the manure? J. W. E.

I do not know for sure, but believe that the mustard seed would not grow after being fermented in the silo and afterwards consumed by the cattle. I think this would destroy their power of germination.

It will destroy most of the mustard to grow corn if you give good cultivation. In fact, by going through with a hand hoe practically all the mustard can be destroyed.

Several years ago I bought some alfalfa seed containing mustard. I knew it at the time, and bought the seed very cheap. I used oats as a nurse crop. Quite a lot of the mustard grew and we pulled the most of it by hand. We only kept this field to alfalfa one year and then planted to corn. This mustard never appeared on any other field on the farm and did not appear in this field again.

A Ration Without Silage.

Please balance ration with following feeds: Good cornstalks, fine mixed hay, corn and oats. Gluten feed costs \$46; cottonseed meal \$52; bran \$38; oil meal (old process), \$50 per ton; dried beet pulp \$1.40 per cwt. Have eight good grade Holsteins. Am getting \$2.20 per cwt for milk. F. A. H.

As you have no silage I would feed a good feed of beet pulp. Mix 100 pounds of beet pulp, 100 pounds of corn and oats, and 100 pounds of oil meal, and feed one pound of grain for every four pounds of milk produced.

Feed all the hay the cows will eat twice a day, and feed liberally of cornstalks once a day.

It would possibly pay you to moisten the beet pulp by using three times its weight of water several hours before feeding. This approaches a succulent feed. In this case I would feed the beet pulp separate from the grain and not attempt to mix it with it.

How to Feed Dried Beet Pulp.

Will you please inform me how to feed beet pulp to dairy cows to get the best results?

Tuscola Co.

E. E.

Providing you have a stable that does not freeze, and that you have no silage, I would moisten the beet pulp before feeding. When this is done you come as near having a succulent feed and not have one, as you possibly can.

The pulp should be thoroughly sprinkled at night for the next morning's feed. It takes quite a while and a lot of water for it to moisten and swell. You will be surprised to see how much water a bag of pulp will absorb. Of course, you must have a warm stable to do this, otherwise it will freeze.

If you have silage then it does not make so much difference whether you feed the pulp dry or moist, as the cows already have a succulent feed.

Nothing Better than Corn and Oats.

I have a few cows and have for feed, June, alsike, and timothy hay mixed, mostly the clovers, and good bright oat straw. I feed the hay morning and noon, the straw at night. Now what mixture of grain and how much at a feed morning and night should I give? Should I feed it dry or wet?

Wexford Co.

C. H.

There is no better grain ration to feed with this roughage than corn and oats, ground together, and mixed equal parts with wheat bran. These feeds are all high now, but all feeds are high. It is difficult to recommend any feed that would be cheaper. You could get protein a little cheaper in cottonseed meal, but I don't like to feed cottonseed meal unless I have silage to feed with it. A good grain ration could be compounded by using many other feeding stuffs, but I doubt if they would, under the circumstances, be as satisfactory as the one mentioned.

Dried beet pulp and wheat bran will do. Hominy feed and dried brewers' grain, etc. Usually these can not be purchased readily from ordinary deal-

ers. I would always feed the grain ration dry. Nothing can be gained by wetting it.

Delivering Market Milk Twice Daily.

I have recently bought a city retail milk business. It has always been the custom to make two deliveries a day during the summer. We understand that they deliver only once a day in larger towns. Could you advise us as to a solution to this problem, or refer us to some dairymen that may be able to give us valuable information upon the subject? A. L. P.

It is not necessary to deliver milk twice daily to town or city trade, and you can't afford to do it.

If clean milk is properly cooled directly after milking, and kept cool, it can be delivered only once daily with entire satisfaction. As fast as the milking is done run the milk over a cooler containing ice water. If you bottle the milk do it at once and then keep in ice water until morning. If you do not bottle, set the large cans in ice water. The morning's milk should be cooled in the same way. Customers will not be able to distinguish between night and morning's milk.

Of course, the customer should always keep milk in a cool place; really they should have a refrigerator if they want their milk to keep sweet from one day to another.

A Ration with Barley and Oats.

Please balance a ration composed of the following feeds for milch cows, adding to the same what you think is necessary. I have corn silage, German millet, oat straw, barley and oats.

Alcona Co.

S. F.

Grind the barley and oats together equal parts, then mix 200 lbs. of barley and oats and 100 lbs. of wheat bran. Give the cows all the roughage they will eat up clean, and for a grain ration feed one pound of grain to every three or four pounds of milk the cow produces.

If your cows are not used to a good liberal grain ration, begin by feeding a little and gradually increase by adding a half pound each day until the above amount is reached. Good dairy cows will pay well for a liberal grain ration.

The Proper Ratio of Protein and Carbohydrates.

All my cornstalks are gone, but have nice mixed hay (clover and timothy). Would like you to tell the best grain ration to go with that, also give the ratio of protein to carbohydrates that make balanced ration. D. L. B.

Careful feeding tests show that the proper proportion of protein to carbohydrates in a ration for cows giving milk is about 1:5½ or 6, that is one part protein to 5½ or six parts of carbohydrates.

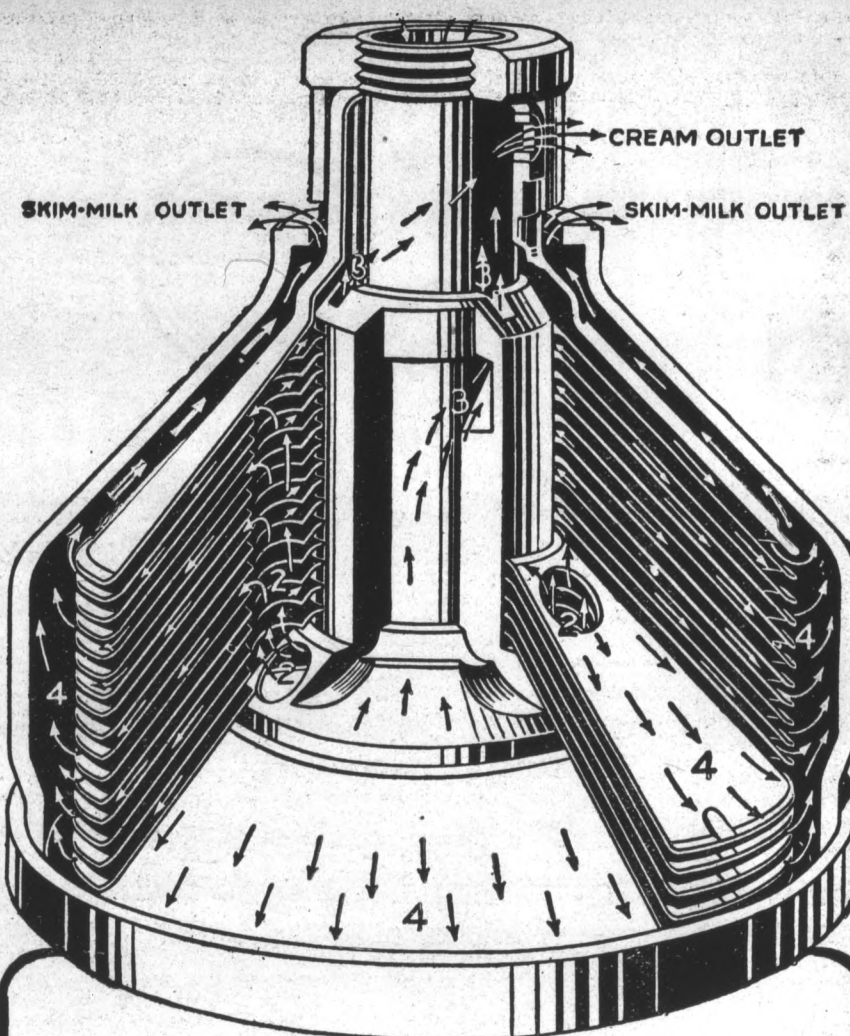
I don't think you could get a better grain ration than corn meal and gluten feed mixed equal parts to feed with your mixed hay.

If you had some dried beet pulp to feed once a day it would help, since you have no silage or other succulent feed.

COLON C. LILLIE.

MEETING OF UPPER PENINSULA DAIRYMEN.

The Cloverland Dairymen's Association, comprising the fifteen counties of the Northern Peninsula of Michigan, will hold its annual session in Sault Ste. Marie, Mich., on February 20, 1917. The work of this association is embraced as a part of the Michigan Agricultural College Extension Service. Professor A. C. Anderson, of that College, and two college instructors in veterinary science will be present and deliver lectures. There will also be present, H. H. Halladay, president of the State Live Stock Sanitary Commission, Hon. F. L. Woodworth, State Dairy and Food Commissioner, and Dr. Eben Mumford, state leader of county agricultural agents, each representing the interests of the state at large. In addition to these there will be a number of experts and practical dairymen, and the meeting bids fair to be the largest and most successful ever held by this organization, which is officered as follows: Frank H. Vandenberg, Marquette, president; N. L. Nye, Menominee, vice-president; C. V. Ballard, Iron Mountain, secretary-treasurer. Also the following directors: N. F. Asselin, Norway; L. C. Holden, Sault Ste. Marie; J. W. Byers, Iron River; W. B. Thomas, Manistique; C. E. Peck, Bruce Crossing.



Here is the heart of THE NEW DE LAVAL CREAM SEPARATOR

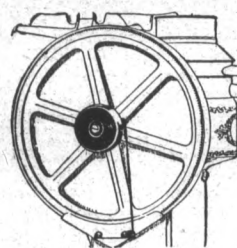
THIS is the new self-centering De Laval bowl with detached spindle, that is creating such a sensation in the dairy world.

This new De Laval bowl, with patented tangential tubular milk passages and patented removable milk conveyor, makes possible in a bowl of given size and weight, operated at a given speed, greater skimming efficiency and capacity than has ever before been attained in any other cream separator bowl.

These are big advantages that you can secure only in the De Laval.

But aside from the big advantages of greater capacity and closer skimming, there are many other important improvements in the New De Laval.

All discs are now interchangeable and are unnumbered. There are fewer discs. On account of greater simplicity of bowl construction, the New De Laval is easier to wash and, capacity considered, is still easier to run than before. High grade construction and design, together with perfect automatic lubrication, are a guarantee that the splendid De Laval record for durability will be maintained in the new style machine.



Every New De Laval is now equipped with a Bell Speed-Indicator, the "Warning Signal" which insures proper speed and uniform cream.

If you are trying to get along without a cream separator or with a half-worn-out or unreliable machine, why not get a NEW De Laval NOW and stop your cream waste? You don't need to count the cost, because the De Laval will soon pay for itself.

There is a De Laval agent near you who will be glad to explain all the improvements and advantages of the NEW De Laval, and who will set and start a machine for you on your farm and let you try it for yourself.

Why not see the nearest De Laval agent at once? If you do not know him, write to the nearest office for any desired information.

New Catalog will be mailed upon request

THE DE LAVAL SEPARATOR CO.

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50,000 BRANCHES AND LOCAL
AGENCIES THE WORLD OVER

ZYRO Metal Silos

Keep silage sweetest and better tasting. ZYRO Pure-Galvanized - Iron or Black-Enamelled Silos are proof against wind, fire, shrinking, swelling, collapse and repair. Anti-corrosive, rust-resisting.

Cost less to erect

Flanged metal sheets fit easily and are fastened in place by two men. Positively air and moisture-tight. FREE BOOKLET tells whole story why ZYRO Metal Silos give best results. Write today for your copy.

The Canton Culvert & Silo Co.
Box 108, Canton, Ohio. Makers of ZYRO Corn Crib and Grain Bins.

Wanted A married man for Dairy Farm by the year. State wages and experience in first letter. Joe S. Harris, Maple Rapids, Michigan

Cow Waters Herself

You must read about the new LIBBEY AUTOMATIC WATER BOWL for cows and horses—a wonderful improvement in barn watering. No float tank needed. Every bowl is automatic—controls its own water supply; can be placed any height and in any stall or pen. Most sanitary bowl sold. PREVENTS SPREAD OF CONTAGIOUS DISEASES. Increased milk yield quickly pays cost. Saves labor, saves feed. Write today. Also for Catalogue No. 9, if interested in stanchions, stalls, carriers, etc. Sent free. C. A. LIBBEY CO., 7 Jay Street, Oshkosh, Wis.

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Mention the Michigan Farmer when writing Advertisers

\$195 Converts Your Ford into a Guaranteed Powerful Staude Mak-a-Tractor

Drive It 24 Hours a Day If You Need It; It Will Always Do the Work

The Staude Mak-a-Tractor is the most economical, most efficient, most remarkable farm implement you can buy. It gives you four horse working ability at one horse cost, and it costs nothing when it is not running. It is a proved success all over the country. Tested under all conditions of farm work by owners who say it is the most wonderful implement they have ever used. It has hauled 9,200 pounds of wheat up into a farm elevator on high gear—pulled a 40 x 60 Minneapolis thresher, the largest size made and weighing 10,000 pounds, in a stubble field on high gear—moved a 25-ton story and a half house on trucks over dirt roads.

It is always ready, day and night. In the hot harvest weather when horses drop dead in the harness, it will do its work continuously 24 hours a day. Use your Ford headlights for night work. Anyone who can drive a Ford can drive Staude Mak-a-Tractor.

20 Minutes to Install

Mak-a-Tractor attachment clamps on a Ford with four bolts. No holes to bore. Rear wheels replaced with driving pinions—integral with brake drum. To change back to touring car, merely loosen and roll back Mak-a-Tractor axle and wheels—replace driving pinions with Ford wheels.

Mak-a-Tractor frame removable in five minutes. Can be left on car—scarcely noticeable—weighs but 50 lbs.—does not affect appearance or interfere with spring action.

11 Fords in 1

Greatest draw-bar pull for weight ever built. Greater strength in every unit of construction in proportion to work and weight required than any other tractor. Gear reduction (in Mak-a-Tractor itself) increases Ford power eleven-fold—reduces speed proportionately.

No Strain on Engine

Staude roller pinions integral with brake drum replace rear wheels of Ford. Mesh into semi-steel gears on tractor wheels. Power applied near outside rim of tractor wheels—no torsional strain on hub or spokes. Mak-a-Tractor is back of Ford axle—exclusive construction. Driving pinions push the tractor wheels down—no power wasted. Ford does no pulling. Mak-a-Tractor necessarily pushes car ahead of it, since all moving power must come from contact of rear wheels with the ground. With Mak-a-Tractor attachment Ford starts on high and runs on high all the time, proving conclusively that there is no strain. Motor speed is never more than the low speed of 1,000 revolutions per minute in low. Same speed as when touring car is making 20 miles an hour—safe, economical speed for motor.

Patented Force Feed Oil

Wonderful patented Force Feed Oiling system to motor bearings—same as high-pressure cars. Installed in a few minutes. Possibility of burned-out bearings—scored pistons—lubrication difficulties eliminated both from touring car and tractor.

Self-Cleaning Gears (Patent Applied for)

Gears in the Staude Mak-a-Tractor wheels are self-cleaning, an exclusive feature of great value. It saves in wear—prevents breakage of gear teeth. Gravel, stones, dirt of all kinds are automatically removed from the gear teeth. The Staude Mak-a-Tractor runs as quietly and smoothly as a motor car.

Staude Concave Creepers

18 Special Staude Concave Creepers are furnished for each wheel. These may be bolted through the tractor wheel rim when equipped. The concave cutting edges dig into soft soil or sand and give maximum pulling capacity. Special feature. Ordinary, flat-edged creepers ride over the soil—waste motor power by making the engine "pull up hill."

Staude Ford Radiator—Extra Large

Driving at slow speeds a motor heats up much faster than at high speeds—a smaller volume of air passes through the radiator. A tractor operates at slow speeds. So we provide a special Staude Ford Radiator—cellular type—six times more efficient than Ford. It should be left on the car permanently—it's the best Ford radiator ever built. And it is a guarantee of perfect cooling both for tractor and touring car.

Cold Rolled Steel Axle

The Special Staude rear axle is 2 inches in diameter, made of cold rolled steel. Tractor wheels run on roller bearings. All the pulling is done by the Staude Mak-a-Tractor attachment itself. No extra load is put on the car chassis. The hitch is on the rear axle where it should be and may be moved from one side to the other without interfering with the steering or causing side draft. The hitch is 33 inches wide, giving a broad range of positions to meet every hauling requirement.

Special Fifth Wheel Job 2½ to 5 Miles Per Hour

Special Fifth Wheel attachment for receiving ordinary farm wagon bolster and reach furnished at slight additional cost. Gives perfect tractor construction for hauling heavy loads. Special pinions give speed ranging from 2½ to 5 miles per hour.

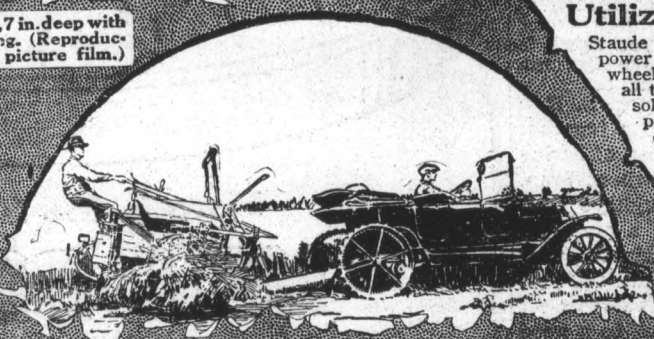
Send Coupon NOW Only 20,000 Staude Mak-a-Tractors will be built this year. There will not be near enough to supply all farmers. Ask at once to avoid being disappointed. Only those who order first can be favored. Send the Coupon NOW—QUICK. Read the starting big Book. See what the Staude Mak-a-Tractor is doing for others—what it will do for you. Then see your local dealer and arrange for a demonstration on your own farm. But mail the Coupon NOW.

References: Your own banker or any bank in St. Paul or Minneapolis.

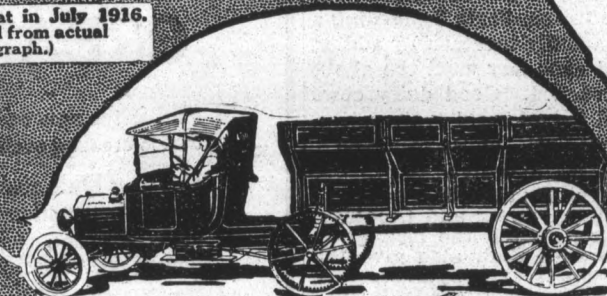
E. G. STAUDE MFG. CO.
2667 West University Ave. ST. PAUL, MINN.



Breaking virgin sod, 7 in. deep with 2 bottom, 28 in. gang. (Reproduction from moving picture film.)



Harvesting wheat in July 1916. (Reproduced from actual photograph.)



Hauling 125 bushels farm wagon, using fifth-wheel attachment.

This to This
—in—
20 Minutes



Reaping a Golden Harvest...

Utilizes Tremendous Power of Ford Engine

Staude Mak-a-Tractor utilizes the wonderful power of the Ford engine to turn two tractor wheels. The tractor attachment, itself, does all the actual pulling work. There is absolutely no unusual strain on the working parts of the Ford. The Ford rear axle drive shafts merely turn the pinion gears of the Staude Mak-a-Tractor. These gears mesh with the tractor wheel bull gears and turn the wheels under.

We positively guarantee that any Ford in good condition used

The Staude Mak-a-Tractor does not strain any part of the Ford, regardless of working conditions.

First—It uses less than half the Ford power.

Second—Motor speed is never over 1,000 R. P. M., equivalent to twenty miles an hour as a touring car.

Third—It starts on high gear—cannot strain the differential.

Fourth—Staude Mak-a-Tractor carries the rear of the Ford and pushes the Ford ahead.

Wonderful Cooling System—Remarkable Oiling System Included

Every service detail has been carefully worked out. The wonderful Staude Ford Radiator, furnished as regular equipment, has six times the cooling efficiency of the Ford Radiator. Leave this on permanently. It guarantees perfect cooling for touring car and tractor both. We wouldn't think of selling you our Tractor attachment without this increased cooling capacity. Without it no tractor attachment can give satisfactory results. The new force feed oiling system, also regular equipment, gives positive feed to all motor bearings through a side gauge on the dash.

With this wonderful cooling system, this remarkable oiling system and a motor speed which never exceeds 1,000 R. P. M. under the hardest work, the Ford motor used with Staude Mak-a-Tractor is more serviceable, more efficient, more durable even than when it is used in the Ford touring car at no increased cost.

Use Any Ford You Can Get

If you have no Ford, get a cheap second-hand one. Clamp Staude Mak-a-Tractor on in twenty minutes, get the lowest farm power in the world and the most efficient tractor you can buy. And save the cost of your Ford and your Staude Mak-a-Tractor in the first month you use it.

This Wonderful Book Free

Get our wonderful farm book, "Reaping a Golden Harvest." It's a real, scientific, carefully edited explanation of how farmers are opening the way to bigger crops, bigger earnings, greater savings and vastly improved land by using Staude Mak-a-Tractor. It is jammed full of information that means real money to you. And we will send it to you FREE. Fill out the Coupon.

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Please send me FREE your Big Illustrated Book "Reaping a Golden Harvest," which shows how farmers are making piles of money with Staude Mak-a-Tractor. I would also like to see the Staude Mak-a-Tractor demonstrated on my farm. This does not obligate me in any way.

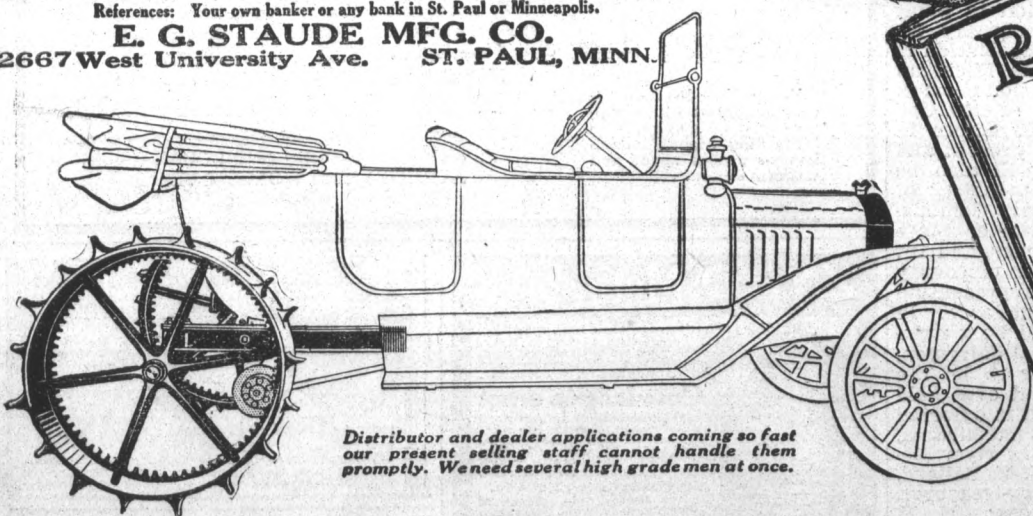
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Magazine Section

LITERATURE
POETRY
HISTORY and
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MICHIGAN FARMER
AND **LIVE STOCK**
PUBLISHED WEEKLY
JOURNAL
ESTABLISHED 1843.

The **FARM BOY**
and **GIRL**
SCIENTIFIC and
MECHANICAL

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

WHY not have a boys' and girls' fair in every neighborhood every year? Why send the boys and girls away to learn the common things they should learn at home, and could learn just as well if they had an incentive to pitch in and do it? Learning for the sake of the knowledge gained does not have a strong enough appeal to make the average boy or girl put forth their best efforts. If they are offered some profit as they go along they will get the knowledge for the sake of making it bring them the present prize. Afterward they will come to recognize the value of the knowledge.

Nearly every farm is provided with

A Fair for the Boys and Girls

By L. H. COBB

one or more farm papers and these farm papers are filled with information. Very little that the agricultural colleges could give could not be discovered by a careful perusal of their pages and an intelligent putting of the information into practice. Give the boy or girl an incentive to do their best, and make it a regular yearly matter, and you may be sure they will not let any information that would help them, slip by them, and they will learn much not found in the papers. It

is actual intelligent practice that teaches. I have seen men do the same old thing in the same old way year after year, and never try to see if their method could not be improved, but the enthusiasm of youth will not be satisfied with what is known; it will catch at any suggestion of new methods, and will work them out. Give them the real present incentive and the boy and girl will do the rest.

There is a Grange fair near here every year, but it has not taken much in-

terest in the children. The fair for the juniors should be strictly their own, and should be for all ages up to the time the boy or girl begins work for themselves. It can be worked out through the schools, or the church can take it up; even a public spirited person could develop the idea alone. The Grange organization has an ideal opportunity, but they must give the junior fair a separate and important place or it will fail to do its work. It should be strictly a juvenile competition, and the prizes should be worth working for. Where the schools or the church takes it up prizes can be solicited. A hog breeder can offer a pure-bred pig; a banker can give a prize for some

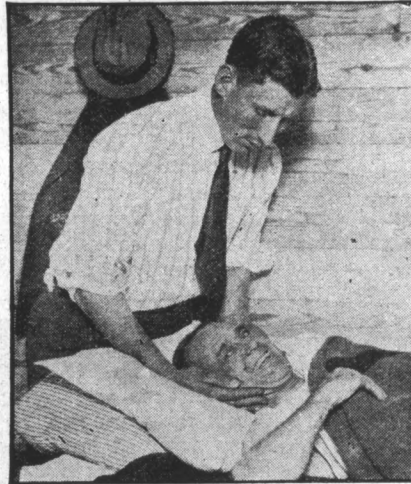
WORLD EVENTS IN PICTURES



German Chancellor Hollweg Dictating to His Secretary.



14-year-old French Army Officer in Service Since 1914.



Billy Sunday Having Throat Muscles Massaged After Strenuous Sermon.



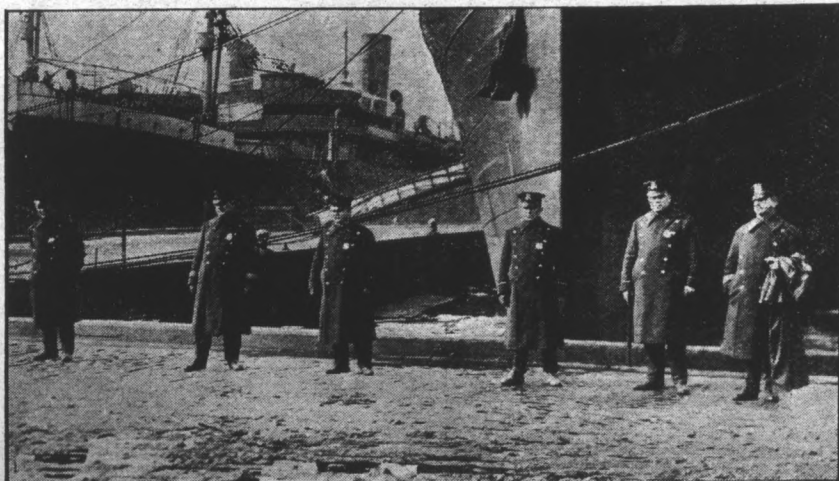
New Austrian Ambassador to United States is of Polish Birth.



Russian Headquarters in Poland is Destroyed when Germans get Range.



Periscope Enables Soldiers to Fire from Trenches without Exposure.



Police and Neutrality Squad Keep Vigil Over Interned German Liners.



Team which Participated in the 522 Mile Winnipeg to St. Paul Derby Race.

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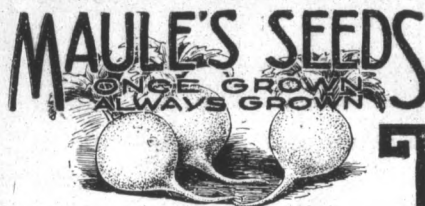
ARE designed to satisfy American women of good taste who want foot comfort combined with neat appearance, good materials, substantial workmanship and moderate price.

"Ruth" Shoes for women possess every element of refinement possible in good footwear, yet are not prohibitive in price or too extreme in style.

"Ruth" Shoes are made for American women who wear their shoes, and not simply put them on and take them off again.

Your local dealer will gladly show you "Ruth" Shoes of Character.

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special product; and so on through the list. Where there are no business men in the neighborhood to interest, the special prizes can be omitted, and money raised among the people of the community to give a regular series of premiums. It is not necessary to make the premiums expensive, for the greatest value to the boy or girl will be the blue ribbon, just as it is in the big fairs with the grown-ups.

While it is wise to guide the line of products for which the prizes should be given no attempt should be made to dictate, or the boys and girls will feel that their fair is not their fair at all. Let them grow such crops as appeal to them mostly, for it is the method of growing, the principles involved,

the value of fertilizers, and such matters, that it is desirable for them to learn, and one crop will serve as well as another for this. In the poultry or stock rearing, again, it is the methods that count, and that should receive consideration, not the actual product. Make them use the best judgment you can without taking the judging away from them, and they will pitch in with a will nine times out of ten. And above all things don't neglect to patronize their fair to the limit. Help them to save money enough to help finance their own fair for the next season. If their fair association has some money in the bank it will make them feel their responsibility and add much incentive to their efforts.

Adventures of Azoto Bacter—III

By M. J. ERWIN

AZOTO BACTER drew in a deep breath and then the man in the moon knew that there was some hope for him yet. After two or three fruitless attempts to rise, the one-time rich Bacter finally gained his feet and staggered slowly to a large maple tree which stood nearby.

Azoto had not been badly wounded. He had, however, been almost exhausted before the enemy had been overcome. He had fainted, and while still in his faint, the moon had turned his eye upon the prostrate forms of both the victor and the vanquished just in time to see the victor show signs of life. The complete exhaustion of the struggle made Azoto forget the dreariness of his surroundings and as he leaned against the tree, the battle fraught form lapsed into sweet sleep.

The sun had already chased the moon into darkness and the morning breeze sprang up from the east and became warmer as the sun rose into the heavens. The clock struck eight—then nine—then ten. The sun had risen this high before our friend awakened from his sleep. The shadows cast by the trees scattered here and there over the barren farm were fast getting shorter and a few rays of sunlight strayed in upon the tired young Bacter at the foot of the tree. He opened his eyes, yawned, stretched himself; then stood up and looked about. The desolate waste of clearing that confronted him the night before was now made more cheery by the scattered rays of the southern sun. The thought that he was master of the farm added to his comfort and after taking a drink from a nearby stream and eats from

the small store that he still had by him, he proceeded to map out his plans for building another "Nodule."

The story of how he made a Nodule on a root of the clover estate is very interesting as is always the story of one who makes much out of nothing. We will not dwell upon the hardships Azoto further endured in order that he might have a place of his own. The happy thought was that June Clover had put herself out in order that he might have a home. Azoto Bacter took good care of that which was offered him, slight though it was, and made it into a respectable dwelling that was a credit both to himself and to June Clover. He built a house very much like the Nodule in which his father and mother had lived and after this was built, he went out to find a mate who would consent to become Mrs. Azoto. In a few weeks, "Nodule No. 2" was alive with little Bacters, all of them anxious to be of service to June Clover because she had helped their father to get the home.

Azoto never heard of his horse, Soil Particle, after he turned her out to graze in the twilight of that eventful night. Rumor has it that she was stolen by a hostile germ and ridden out of the country. Just what became of her will never be known, but every year when Clovers fill the air with fragrance, Azoto remembers his lost steed and thanks his lucky stars for the horse that took him near June Clover. Azoto did, however, make good use of his enemy's horse, Water Particle, and she was faithful for many seasons.

THE END.

"Mister 44" By E. J. RATH

There was genuine horror in Mrs. Stoddard's eyes. Those of Betty had less of dismay in them, but an equal amount of astonishment. She had never seen her brother in the garb of a tramp, with a torn shirt and a stubble of beard, and she was frankly interested in the spectacle.

"Here, sit down, the pair of you," urged Stoddard. "Sorry we haven't got porch-chairs. Tremendously glad to see you, just the same. Want something to eat?"

Mrs. Stoddard glanced at a pile of tin plates and cups, and shuddered.

"We dined at the hotel," she said hastily.

"Then tell me all the news," commanded Stoddard. "How's New York? And what brings you here?"

"We came in your uncle's private car," said Mrs. Stoddard as she gingerly sat on the blanketed log. "We are going through to the Pacific Coast. He had some business near North Bay that was to keep him for a couple of days, so we decided to run up to see you."

"That's fine! Too bad I wasn't in this afternoon. Did Larry show you the camp?"

"We have seen it," replied his mother with a sigh as she drew her skirt about her ankles.

"Nice little island, isn't it?"

"I can't say that I appreciate it. Don't you get enough of this sort of thing John, without deliberately choosing it as a vacation?"

"No," was the prompt answer.

"But it's so crude, so uncomfortable, so dirty! Ugh!"

"Why, it's as clean as a pin, mother! This is a spotless camp."

"Look at your hands, John. And your arms! Do you call them clean?"

"It's clean dirt," he said stoutly. "It hasn't any New York germs in it anyhow."

Mrs. Stoddard made a gesture of annoyance and inspected her gloved hands, whereon she promptly discovered smudges. She was a handsome woman, and to her son she never looked more attractive than now, with the ruddy light of the fire playing upon

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We want your verdict. Ventiplex Collar Pads are sold by dealers everywhere—if your dealer does not carry them send us his name and we will see that you are promptly supplied.

Makers of the famous Burlington STAY-ON Stable Blankets.

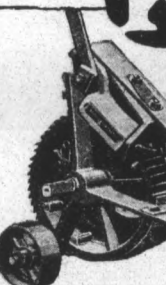
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Give the roots a chance.

You can go deep without bringing up trash,

stones or manure. You can at the same time pulverize and level. For thirty crops rely upon the forged sharp, penetrating disks of the

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Disk Harrow—Single or Double Action—light in draft and built for a lifetime of service. If your dealer has not the genuine CUTAWAY, write to us direct. Be sure to write us for our new free book, "The Soil and Its Tillage."

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Maker of the original CLARK disk harrows and plows

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This Double
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When Writing to Advertisers Please
Mention The Michigan Farmer.

her fine features and her heavy coils of white hair. In the matter of costume she made no concessions to the Deepwater country. Her gown was from Paris, and looked it.

Stoddard surveyed the pair with amused eyes and began to smile.

"You'll have to pardon me mother," he said, "but you look just as funny to me as I do to you, I imagine. We don't see clothes like that up here once in an age."

Mrs. Stoddard inspected her costume with anxious eyes.

"Betty and I didn't know we were leaving civilization," she answered.

"Otherwise you wouldn't have left at all," he laughed.

"More than likely. We certainly should not willingly have undertaken anything like this. We have been very comfortable aboard the car. But of course you know all about that yourself. I imagine we do look somewhat misplaced, but the visit was entirely unexpected."

"I suppose you're something of a sensation at the hotel," he remarked. "Sensation!" broke in Betty. "I should say we were! I never longed for a shirtwaist and a golf-skirt as I did today. We were positive curiosities!"

She looked down at her pumps and silken ankles with a rueful expression.

"But tell me about this trip," said Stoddard. "How long are you planning to be gone?"

"Three or four weeks probably," answered his mother. "It depends somewhat upon your uncle's business. We will meet the Wallaces at the coast, where they will join us."

"Estelle?" Stoddard smiled a trifle ironically as he mentioned the name of the society girl whom his mother wished him to marry.

"Yes. With her father and mother. They are west now."

"And the Fitches?"

"They went abroad, you know. Kitty is with them."

"That's so; I'd forgotten."

"I wish we could have gone," complained Betty. "The west is so stupid, mother."

"Your uncle wanted us to go with him," said Mrs. Stoddard in a tone of resignation. "He has asked us so many times I felt that we simply could not refuse."

Larry Livingston had been holding aloof from the conversation. He acted like a man whose soul is burdened with discontent, as indeed his was. A secret was in his breast but he must not tell it, and this to Larry was a form of cruel and unusual punishment. Often Larry's glance wandered toward the place where Sadie was hidden among the trees, and when Stoddard intercepted it on one occasion he frowned heavily and shook his head in warning.

"Tell Jack about Mrs. Westfall, mother," suggested Betty.

"You know the Westfalls, John?" said Mrs. Stoddard.

"Don't think I do. I've heard the name."

"Mrs. Westfall went to school with Betty. We don't see much of her now, of course; they live over in New Jersey somewhere. But she is at the hotel here."

"Sensible woman," said Stoddard.

"Well, she doesn't think so. She has just been through a most terrible experience and says she never wants to see the country again. Why, it was a positively unheard-of thing! It makes me nervous every time I think of it, and I shall not be in peace of mind until we have left. Have you heard about the lunatic?"

"Where? Here?"

"Right here at this place," said Mrs. Stoddard with an involuntary shiver. Stoddard shook his head.

"Haven't met him," he observed. "Unless it's Larry. He carries on once in a while."

Livingston merely scowled.

"Well, Mrs. Westfall had a most (Continued on page 223).



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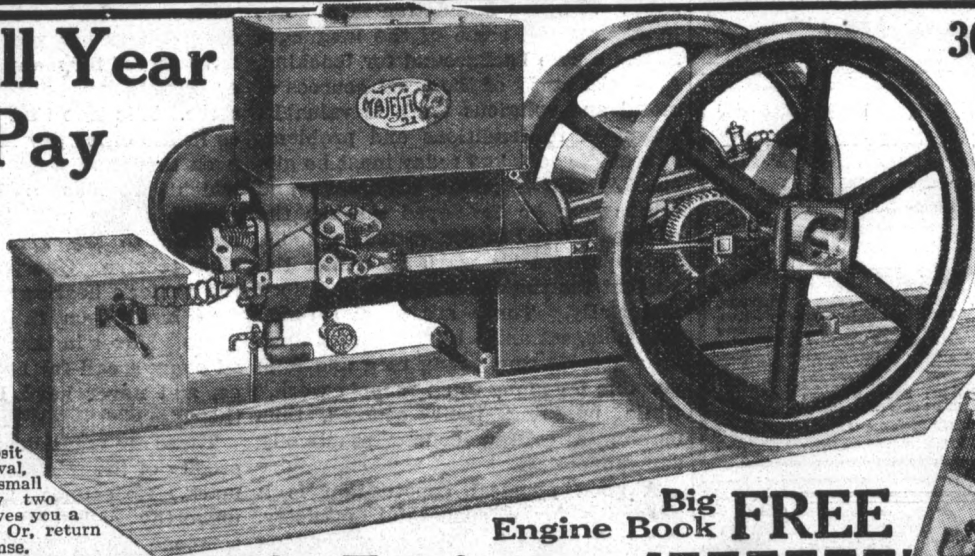
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Working for Life—Some Ways of Doing It

The Minister's Way

By EARL R. RICE

THERE are some good reasons why some of the younger readers of the Michigan Farmer should choose the ministry as a life work. Perhaps there are some reasons, also, why it should not be chosen—by many.

We do not regard the ministry, today, as a calling apart from the "useful" ways of living. That man makes, other things being equal, the best kind of minister, who can get near to other men in sympathy and understanding, and who considers that his is only one way in which men's hopes and ideals may be put into action. It would be strange if bright and wide-awake people did not see the real place of importance held by this calling or profession.

The work the ministry seeks to do is a very necessary one. Without putting too much emphasis on the part the right kind of conduct plays in society, it may be said that there never was a time when really efficient workers along this line were so greatly needed as today. There is plenty of places for applicants, and men of the right qualifications will be warmly welcomed in all the great branches of the church. Many parents desire to find among their sons at least one who shall choose this channel as an outlet for his best endeavors.

But this choice should be made in the light of the facts of life as they

The work of the ministry is by no means easy. There are hours of toil, real hard work, to be expected. A young man in the work recently made this comment:

"I have done all kinds of work. Have dug ditches, cared for horses, and shingled houses. Have worked in the harvest field, cut wood, and mended fences. I have put in sixteen hours a day for months at a time."

Observation of many men now active will not only verify the above statement but would add to it.

The minister's time belongs to the community he serves. He is not free to refuse calls for aid or service, no matter how disagreeable or untimely. When others fail he must be true and untiring. The course of life he lives, will, in time, make strong drafts upon his vitality and bring prematurely the infirmities of age. For an average length of life service the strong man is needed.

There will be some disappointments in this line of work for every man. It is easy to meet disappointments which have come from one's own failures, but they are doubly hard when coming through no lack of effort on the part of him who received them.

Nevertheless, that will be the common experience of the minister. He will not get the place he seeks, he will be blamed for things he could not prevent, friends will fail him, and sor-

means hardship for the leader of the flock. Perhaps some of my readers know of instances of this kind.

However, there are some very encouraging things which may be said regarding the present outlook for this profession. The conditions are rapidly changing, there being a strong drift of population toward the cities. Larger groups, or congregations, can be more readily handled if they come from fairly small fields. City parishes are easier to travel and to assemble than country ones. Efforts may be made more effective and workers better cared for. The country churches are weakening, due to loss of young life city-bound. To offset this, efforts are being made to consolidate church interests in given communities, giving each minister a larger constituency and hence better support and surer results. The automobile is playing a very important part in the general changes.

Experts in church efficiency are busy studying the various fields. Interesting charts are being made of the different sections of the cities and others of the country. The building of new churches is being discouraged save in places actually needed. A better system of church finance is being urged everywhere. A most hearty co-relation is sure to be established in the near future. All of which will help to remedy conditions. Still the problems of church finance is being urged everywhere. A most hearty co-relation is sure to be established in the near future. All of which will help to remedy conditions. Still the problems of church work will be with us for some time to come.

In passing, it may be said that within proper bounds of expectation, the faithful efficient man in the ministry may look for fair success. He will never grow wealthy. He will always be hard-working. But he may aspire to the higher places of his denomination. He may fail to reach them, but the way is open, and he can try. The men who are at the heads of some of the largest churches known to the writer began in humble places and with small salaries.

The influence exerted on life and communities served is very great. A successful pastorate of four or five years is usually a landmark, and is often referred to by men and women of the church. Its influence grows from year to year. Happy sayings are remembered. Deeds of kindness and thoughtfulness are long enshrined in the hearts of humble folks who have felt the touch of good men. The ministry is a place of great power and its influence grows with the years. The commissioner of police in a great city made this remark to a group of men:

"The Christian ministry of this city exerts a stronger influence for law and order than the police department."

On the whole, and extending over a large extent of time and territory, the statement would probably be found true. Therefore in seeking to tie up with one of the real vital forces, today, the young man may look with expectancy to the ministry. It will demand much of him. "Who chooses me must give and venture all he has," but it may be that the leaden casket, if chosen by him, will bring the portrait of his best dreams and visions, just as it brought fair Portia's wealth to the Merchant of Venice. (Next week "The Mechanic's Way.")

The key to every man is his thought. Sturdy and defying though he look, he has a helm which he obeys, which is the idea after which all his facts are classified. He can only be reformed by showing him a new idea which commands his own.—Emerson.



Washington served us chiefly by his sublime moral qualities. To him belonged the proud distinction of being the leader of a revolution without awakening one doubt or solicitude as to the spotless purity of his purpose.

(Dr. W. E. CHAPMAN)

are, and not merely for sentimental reasons. The objective of the ministry is a moral and spiritual one, but it must be worked for under very material conditions.

The young minister must be a well prepared man. A college education, in the present stage of development in church activities is almost indispensable. A broad foundation in history, literature, and some of the languages makes a safe background for teaching. A special study of the great sources of moral and religious truth is valuable. Attention to conditions and problems of real life as found today must be given. All these points of fitness and others may be developed through the courses offered in the various schools. There are many ways in which the student for the ministry may be helped financially. There are special funds available, set aside by the churches as an aid to worthy young men and it is possible for many to do "supply work," while pursuing their courses, thus making a college course practically self-supporting.

A good physical constitution is a necessity for a successful ministry. The sickly man is under a tremendous handicap. Vital force is needed, both to do the physical work incident, and to secure efficiency in public presentation of moral and religious facts. Sound lungs, pure rich blood, and strong muscles are still of service here. It goes without saying that the cleanest personal habits are also indispensable.

rows will come. Where large efforts have been put forth results will be meagre. The candidate for the ministry must expect these and many others which cannot even be mentioned.

The minister's salary is small. The fact is so well known that it is almost idle to state it. The writer has before him the list of over a hundred men whose salaries are less than five hundred dollars per year. Some of them have served for many years at no higher figures and never expect to get more. It is true that the great churches in the cities pay more liberally, but even there the wage is not above that which provides a living. In some churches the minister has little or nothing to say about how much he shall receive. One young man said, in the writer's hearing:

"I have been in the work twelve years. Never in that time have I turned away a call for my personal services, and never have I put a price on them."

There are many demands on the generosity of the minister. He is an easy mark. He cannot turn them away as unworthy calls, for it may be that someone who is worthy would suffer. If the minister has a family he must, whether he serve in city or country practice a strict economy.

It would not be so bad at times, if only parishoners would pay promptly and with regularity the amounts subscribed for the support of the church. But many of them fail, and the salary goes unpaid as a result, and that

"MISTER 44."

(Continued from page 221).
harrowing experience," said Mrs. Stoddard. "The poor little thing is still upset over it. You know, her husband, Dick Westfall, and her brother have been here for several weeks, camping. She came on to join them. She arrived two or three evenings ago, and they were late in getting to the train."

"The thing happened at the station. It's unbelievable! It seems that she had no sooner gotten off the train than a wild man rushed up to her and began shouting something about a mistake having been made. Then he seized her by the arm and began dragging her along the platform. She was absolutely helpless. She was too frightened to scream."

Mrs. Stoddard paused to shudder, while her son stared. So this was the girl Stoddard had hustled from the inbound to the outbound train, thinking she was Sadie.

"It seems there was another train at the station," said Mrs. Stoddard, resuming. "He dragged her to this train and flung her aboard as it was starting. Then he threw her baggage after her and yelled something about writing. And then she was carried away!"

"Huh!" said Stoddard mechanically. "It was a mercy, of course, that he did not strangle her. She was so utterly stupefied that she remained sitting on the car-platform until the conductor found her."

"And what became of her?" ventured Stoddard, trying to make his tone casual.

"That is another extraordinary part of it. This insane man had thrown into her lap an envelope. When she opened it she found a railroad ticket to Toronto, a Pullman berth—and fifty dollars!"

"He must have been insane!" "Beyond all question," declared Mrs. Stoddard emphatically.

"Does she describe him?" He spoke in a whisper.

"That's another difficulty. She cannot. She was too completely bewildered and terrified. She simply knows he was a large man, roughly dressed, and possessed of tremendous strength. That's all she can recollect."

"Didn't anybody else see him?" apprehensively.

"They haven't found anybody yet. But they are looking, of course."

"Where are they looking?"

"All over," broke in Livingston. "There were a couple of men here this afternoon after your mother left. Forest rangers, they said they were. They wanted to know if I had seen anything of an escaped lunatic, and said there were a lot of men out in the woods looking for him."

Stoddard's face went blank as this intelligence reached his ears.

"Mr. Westfall is offering a reward," added Mrs. Stoddard. "They have already brought two or three men down to the hotel to see if Mrs. Westfall could identify them, but she was quite sure none of them was the man."

"They say they will be able to get him before long. But until they do everybody is terribly excited and frightened. Imagine a creature like that at large! Why, he might be hiding on this very island—now!"

"And what happened to Mrs. Westfall after the conductor found her?" Stoddard risked, controlling his voice with an effort.

"She couldn't get a train back that night, so she went clear through to Toronto. Meantime she telegraphed her husband, and he went down and brought her up here. She didn't want to come at all, poor thing. But they needed her here in case they caught the man, so she could identify him."

"I see," said Stoddard slowly.

His brain was whirling but he managed to keep an appearance of outward calm. The rangers were looking for him! He was a hunted man!

"Weren't they able to get any clue at the station?" he asked.

"Nothing that has helped, it appears. The ticket-agent at Deepwater doesn't remember who bought the ticket and the berth."

Stoddard wondered if they had questioned Billy Mason, the station-master. If so, Billy, who was a friend of his, had clearly been shielding him, for Billy knew of Stoddard's actions, and he was the only one who did. But Billy's silence merely added to the seriousness of the thing. If Billy had chosen to shield, rather than to explain, he must have had grave reasons.

"But what are they going to do to this man if they get him?" he asked. "Is it a crime to put a woman on a train and give her a ticket and money?"

"I am sure I don't know whether it is a crime or not," said his mother. "That, of course, has nothing to do with it. The man is wanted so he can be sent back to whatever asylum he escaped from."

"That's so; I was forgetting he was a nut."

"I wish you wouldn't use such words, John," said Mrs. Stoddard, frowning.

"All right, mother; I'll call him a bug. And how much reward is Westfall offering?"

"It's only a hundred dollars, but they say it looks as large as a thousand to most of the men who are out hunting for the creature."

Stoddard knew that was true. For a hundred dollars they would comb the Deepwater country to its uttermost recesses. It was a temptation even to Billy Mason, who was obviously in a position to collect the reward if he wished. He decided he would have to see Billy himself; he might, in fact, have to pay the reward—privately.

"All of the men at the hotel," volunteered Betty, "are going armed, and the rangers are carrying guns, too."

"It's against the law," Stoddard exclaimed.

"Well, they say it is different in this case. That while it is against the law to shoot animals, it's all right to shoot a lunatic."

Betty looked up at her brother with an emphatic nod and added:

"He ought to be shot, too, and he probably will be, because they say he's so big and strong that it would take several men to capture him alive. I don't believe even you could manage him, Jack, and you're big enough, goodness knows! Dolly Westfall says he has all the strength of an insane man."

"Is she an expert on lunatics?"

"A person doesn't have to be when somebody picks them up and throws them twenty or thirty feet aboard a rapidly moving train."

Stoddard opened his eyes wide.

"Did she say that?" he asked in an awed voice.

"I think Betty exaggerates a little," explained his mother. "But it was a very perilous experience, and, coming right after an attack of nervous prostration, it was enough to frighten any woman to death."

"I'm sorry," murmured Stoddard absent-mindedly.

"Sorry!" echoed Betty. "Why should you be sorry?"

"Sorry for Mrs. Westfall, I mean," he exclaimed hastily. "It's too bad to have her get such an impression of the country on her first trip."

"Is it her first trip, mother?" asked (Continued on page 231).

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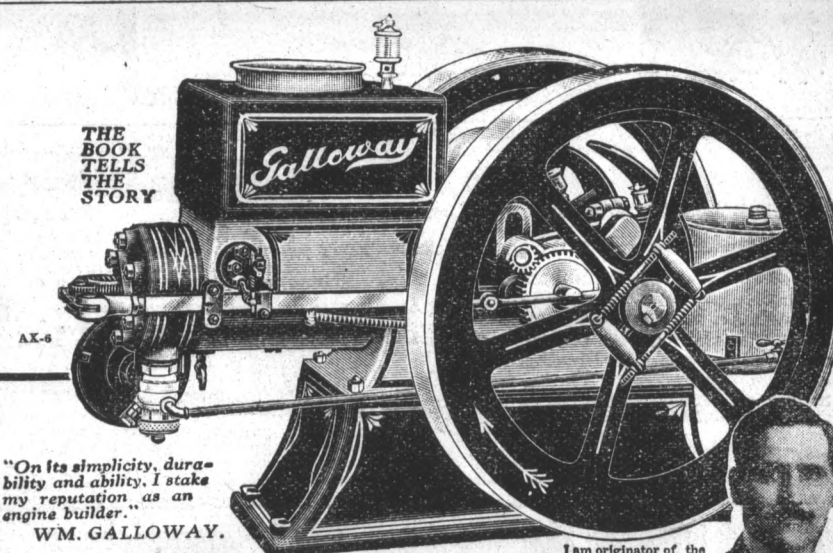
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Woman and Her Needs

The Opening Courses

By M. A. L.

WHEN the dinner is announced, the host leads the way to the dining-room, escorting the lady who is considered the honor guest, and the hostess comes last with the gentleman who is to sit at her right. Cards with the name of the guest written plainly are at each place to avoid confusion in seating. The hostess plans to have those seated farthest from the door enter the dining-room first. The place cards should be placed upon the napkins.

The very formal dinner may start with oysters or clams in the half-shell, an oyster or clam cocktail, or with canapes. None of these are necessary, however, and the soup may be the first course. If there is plenty of help, and the hostess wishes to add to the number of courses, canapes, or appetizers, may be served to stimulate the appetite for what is to follow.

These may be made of white, graham or brown bread, cut in thin slices not more than two inches long by one and a half inches wide. They may be dipped in melted butter and fried or toasted, or toasted and spread with butter, or even left plain. After being prepared the bread is spread with any suitable mixture and made into sandwiches. Anchovy or caviare paste, grated cheese, minced ham, bacon, lobster or crab meat may be used. In fact, almost any salt water fish may be utilized, and even minced nuts and olives are sometimes employed to make these tiny appetizers. They are placed on a plate before each guest, and are on the table when the guests are seated.

Following the appetizers, oysters or clams in the half-shell are served. Arrange five or six oysters on a bed of chopped ice in deep plates, the small ends of the shell pointing towards the center. In the center place a slice of lemon. Pass with the oysters a mixture of six teaspoons of horseradish, three of tomato catsup and a dash of tobasco sauce and cayenne pepper. plain horseradish alone may be served. Loosen oysters from the shell before serving and clean carefully, removing all sand and grit. Clams are served in the same way.

One pint of oysters should be enough to serve twelve persons oyster cocktails. Clean the oysters, selecting small ones, and place in a shallow dish. Then mix two tablespoons of Worcestershire sauce, two of vinegar, three of lemon juice, one each of tomato catsup and horseradish, a teaspoon of salt and a speck of cayenne pepper and dash of tobasco sauce. Pour this over the oysters and let it stand for several hours in the icebox, or other very cold place. Serve ice cold in small glasses. If you have no suitable glasses the cocktail may be served in lemon or grapefruit shells, or in summer time, in tomato cups. Clam and shrimp cocktails are made in the same way, substituting clams or shrimps for oysters.

Thin brown bread and butter sandwiches are served with oysters in the half shell. Salted wafers are sometimes passed, though the bread and butter sandwiches are considered the correct thing.

If canapes are served, the plate on which they are placed is removed with the left hand and a service plate substituted with the right hand. The oysters, or clams, are set on this plate, which is left when they are removed. The soup plate is also placed on this service plate. The service plate is not removed until fish course is served.

The soup should be a clear soup, served in soup plates, and with it are passed celery, radishes, olives, etc. To clarify, or clear, stock, let it cool and remove all fat from the top. If the stock has jellied wring a clean flannel out of warm water and wipe off the top to remove all bits of fat that adhere. If it has not jellied take up the fat with clean tissue paper, laying it flat on the surface of the soup. Next pour off the top, taking care not to disturb the sediment, and to each quart of stock allow the slightly beaten white of one egg and the crushed shell. Mix with the stock and set over the fire, stirring constantly until it boils. Then let boil hard for five minutes, skim, strain through a cheesecloth, heat up again and serve.

GETTING READY FOR MONDAY.

BY HILDA RICHMOND.

Where Monday is the wash day in the household the morning is always more or less broken into by the picking up from Sunday, and this can hardly be helped, as no one wants to make the day of rest one of work, but there are certain things that can be done on Saturday to make the wash day easier, and busy ladies welcome all helpful suggestions.

In the first place the clothes can be sorted and arranged so that it is easy to begin with the first kettle on Monday. Sorting clothes is a back-breaking task, as some ladies do it, but when it is done on a table or bench it is not so hard. Put the first kettle into a pillow slip or tie in a table cloth, and so on through the list. Then pack them in the basket to come out as needed. If a towel or handkerchief is added later it can be placed in the proper bundle without difficulty.

We use the bits of left-over toilet soap in the wash boiler and these are cooked into a kind of soap jelly on Saturday with a pint or so of water. When the kettle is put on after breakfast on Monday the soap is added and in a few minutes there is a fine hot suds.

But, more than all else the dinner is always carefully planned and partly arranged for on Saturday. Perhaps it is baked beans with pork and potatoes. The beans are soaked and par-boiled late on Saturday and then placed in a cold place until Monday. On Monday the pork is added and the pan shoved into the oven out of the way. If baked potatoes are to be served they are washed and set away in a pan on Saturday and the dessert is always cookies, baked on Saturday, with canned fruit or some equally simple preparation.

A simple supper and an early bedtime on Sunday help wonderfully on Monday morning. Staying up very late, a great deal of company, heavy suppers, eating pop corn and taffy and apples late at night, and excitement of any kind will make "blue Monday" a very real thing in the wash room. We like to keep the Sabbath free from noise and excessive eating and all kinds of excitement, and then Monday is a happy day, too.

Sometimes the breakfast dishes go unwashed until after dinner but they are soaking in a big pan of hot water all the time and not getting harder to manage. After the wash things are out of the way we go at the other leisurely and really enjoy putting things to rights if the tubs and kettles are not in sight.

HOME QUERIES.

Household Editor:—Mrs. C. S. asks for a recipe for white cake without eggs. Here is one I use successfully: White Cake: one cup of granulated sugar, butter the size of an egg, one cup of sweet milk, teaspoon of vanilla, two cups of flour, two teaspoons of baking powder, salt. Good either in layers or loaf.

Aid Society Cake.—Boil together for 10 or 15 minutes the following ingredients: One cup of sugar (white), one cup of hot water, one cup raisins, half cup of lard, quarter teaspoon of nutmeg, one teaspoon each of cinnamon and clover, salt. Let cool, then add two cups of flour in which has been sifted half a teaspoon of baking powder, one teaspoon of soda dissolved in a little hot water. Bake in slow oven.

For making doughnuts when no eggs are at hand, I take a good-sized potato, boil and mash for each egg called for in recipe. They are more fluffy than when eggs are used.—Mrs. R. W.

Mrs. E. S., Fowlerville, sends recipes much like those already published, and the information that eggless cakes must be beaten much longer than those with eggs. She also sends the following cookie recipes:

Molasses Cookies.—One and a half cups sugar, one cup lard, one cup of molasses, half cup cold water, one teaspoon cinnamon, ginger and cloves, one teaspoon soda, one teaspoon baking powder, flour enough to roll out. Dissolve soda in water. Are better when a day or two old.

Soft White Cookies.—One and a half cups sugar, one cup of butter, two-thirds cup of sweet milk, one and a half teaspoons of baking powder, flour enough to roll out soft. Bake in quick oven. Flavor with vanilla or nutmeg.—Mrs. E. A. S.

Household Editor:—In answer to M. W. H.'s question about cake, I would suggest that you try sifting together the dry ingredients of your recipe first, then after they are well sifted and re-sifted add your egg, cream and flavor, then use my favorite rule for all cake. Beat, beat, beat; then beat some more, and have the oven just right. For light layer cake I have greatest success with a quick oven, then watch it closely, to see that it does not bake a few seconds too long. Fifteen minutes, more or less, depending on oven, is about right. The success of all kinds of baking depends to a great extent on the exact heat of the oven. The oven should be hot when you put your cake in, and a little hotter five minutes later. If your oven is managed that way your cake will not fall if you use a full cup of sugar and a cup and a half of flour.

Try removing the shine from serge by rubbing with very fine sand paper or emery cloth.

Will someone please tell me of a quicker method than the old-fashioned way of washing dishes and greasy pots and pans? I wish to thank you for the pleasure I get from reading the paper.—Mrs. A. F.

White Cake.—One cup of granulated sugar, one teaspoon of salt, one teaspoon of lemon, one cup sweet milk, one tablespoon butter, two and a half cups of sifted flour, one teaspoon of soda, two teaspoons of cream of tartar, three tablespoons whipped cream. Place sugar, salt, lemon, milk and butter in granite dish on stove and let heat until blood warm. Then add flour, soda and cream of tartar, sifted together, and lastly, cream beaten until stiff. Beat lightly and bake in moderate oven.

Filling.—Eight tablespoons of cream beaten stiff, four tablespoons of granulated sugar, lemon. Place between layers and over the top.

Cream Roll Cake.—One cup of granulated sugar, one teaspoon of salt, one teaspoon vanilla, two and a half cups sifted flour, one teaspoon of soda, one

teaspoon cream of tartar, one cup of boiling water, four tablespoons cream. Sift sugar, salt and flour in dish with soda and cream of tartar. Add boiling water, beating swiftly to avoid lumps, add vanilla and cream beaten stiff. Bake in sheet tin in quick oven. When done turn out on napkin, whip six tablespoons of cream until dry, add two tablespoons of granulated sugar, spread on cake and roll as you would roll jelly cake.

The success of these recipes depends on warming the ingredients before placing together, or adding the flour and leavening.—Mrs. C. F. S.

If Mrs. C. S. will use her ordinary white cake recipe, leaving out the egg or eggs, and sifting in with the flour a tablespoon (slightly heaped) of corn starch, it will prove equally as tempting, may be baked in loaf or layers. Beat the sugar and shortening until very light and creamy, I use sour cream for shortening, and do not make it quite so rich as when eggs are used. Also stir the batter slightly stiffer. With this, as with other things, a little experience adds perfections.—Mrs. E. A. S.

Mrs. S. L. B., Mrs. E. J. C., Mrs. C. S., Mrs. A. M. R., and Mrs. H. S. are also to be thanked for recipes.

BABY WEEK.

Nineteen-sixteen was baby year. Forty-seven of the fifty cities with more than 100,000 population, and 700 villages and rural communities with less than 2,500 population had baby weeks. The 1917 baby week bids fair to be an even bigger, more worth while celebration than last year's. The Children's Bureau at Washington has already received numerous inquiries concerning the 1917 baby week, and the bureau is making the following suggestions:

Have your baby week from the first to the sixth of May, if possible. This date has been agreed upon by the bureau and the General Federation of Women's Clubs as the time best adapted to the varying conditions of different states.

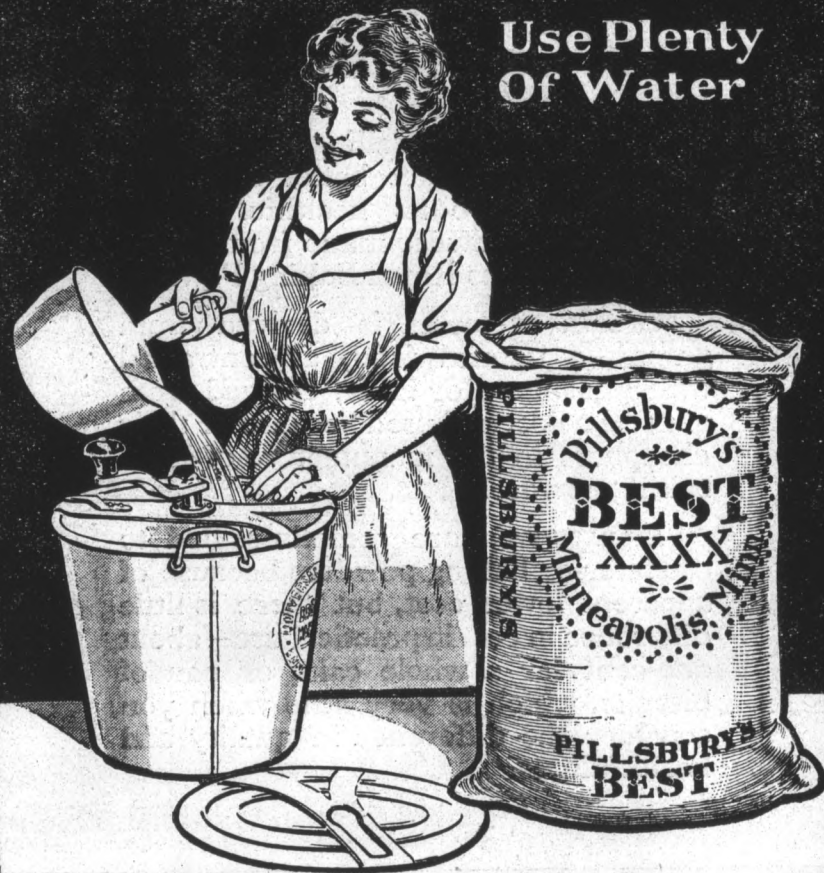
Remember the older babies. As one woman said it:

"It requires only twelve months for a baby to become one year old and no longer subject to the hazards of 'infant mortality,' but there are still many risks for him to encounter; he is still absolutely helpless, although increasingly charming, and his parents are as eager to keep him well and happy, as desirous of sound advice, as they were last year. Open out the 1917 baby week to include all children still at home with their mothers."

Remember the mothers. Well-cared for, healthy mothers are necessary for the health and happiness of their babies. Find out what your community is doing to ensure to every mother skilled advice and adequate care before her baby is born and during her confinement, and give the importance of protecting the mother a prominent place in the educational work of the campaign.

And one word to communities where infantile paralysis has been epidemic: Mothers should be urged to leave the baby at home during baby week. Any feature of the campaign involving the bringing together of numbers of babies must, of course, be omitted, but such features are not essential to the interest and success of a campaign. And baby week will afford an excellent opportunity for giving information as to the proper physical training of children with paralyzed muscles.

The Children's Bureau has a bulletin of suggestions for baby week campaigns which may be had upon request and it is now preparing a revised edition describing the interesting new features reported from the 1916 campaign.



Flour Facts

The strength of a flour is determined largely by the amount of water it will absorb.

Bread made from a good strong flour will not dry out quickly. The extra amount of water absorbed in the mixing keeps the bread moist and fresh.

If your bread dries out in no time, and you have to bake often and in small batches, it is probably because the flour you use lacks strength.

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Club Work In Mecosta County

By BERT J. FORD
County School Commissioner

THERE is much being said and written these days concerning school credit for home work. Many experiments are being tried out but there seems to be no definitely organized plan in practice in the rural schools at the present time. No state so far as I am able to learn, has adopted a system of any kind the purpose of which is to give recognition to this line of work. The ultimate outcome of this widespread interest and agitation will be a well organized scheme which will provide for a safe and sane amount of credit for project work that is carried on under adequate supervision. Not for the simple homely duties, not for doing chores, running errands, or washing dishes, but for a line of effort which includes some of

of four townships, Deerfield, Austin, Colfax, and Martiny. At each of these fairs, junior club members from two to four schools made exhibits. The fair was held during the afternoon. Either the state junior club leader or one of his representatives was present and did the judging. In connection with the 1916 fairs an original four-part community pageant was given in the evening and in a majority of cases a pot-luck supper was served at the close of the afternoon session.

Three annual county junior club institutes have been held with a splendid attendance of boys and girls. This is an event that is looked forward to with much interest. The county exhibit is made at this time, the products are judged, and a suitable pro-



Junior Club Exhibit at a Mecosta County Fair.

gram including games and contests, is provided. A junior club department has been established in connection with the Grangers' Gleaners' and Farmers' fair of Mecosta, and the second junior club exhibit was made at the fair in September, 1916.

In 1916 there were thirteen clubs in the county, all except one of which included from two to four schools. The majority of these clubs held regular monthly meetings during the school year. Fifty per cent more completed their projects on the four-point basis during the year than in any previous year. Much larger results are expected for 1917. The new enrollment is made and the officers are elected each year at the January meeting. This work is getting to be a real practical phase of school work and is closely related to the community life and its activities. A system of school work credit for home work could be limited to junior club project work and thus save much confusion and provide a common standard for measuring results. It would be well to start the work in a small way and enlarge upon it as soon as adequate supervision can be provided.

In Mecosta county the examining board expects to try out the following credit system: Boy hours, or girl hours, as the case may be, (by this is meant the number of hours of work that is required for the project), will be used as the basis in reckoning credit and 100 hours will be the maximum amount that can be credited. Credits earned to be considered in connection with the county eighth-grade examination in agriculture and grammar.

Credit in agriculture will be given as follows: One hundred boy hours, a credit of 50 per cent of the project mark; 75 boy hours, 37½ per cent of the project mark; 50 boy hours, 25 per cent of the project mark. In grammar just half of the above mentioned amount of credit will be allowed. The lar community fair was held in each

the foregoing that requires days, weeks, and months for its completion and that is connected up in such a way with certain school subjects that the knowledge of said school subjects is put into actual practice.

the so-called four-point club project basis.

Those desiring credit will complete the project and file a copy of the report and story in their own hand-writing with the commissioner for the season which closes next preceding the county eighth-grade examination at which said credit is to be considered. This plan will not affect in any way those taking the examination who have not done project work.

This club movement and suitable recognition for project work will tend to vitalize the work in the rural schools and result in a larger and deeper appreciation of the community life.

RECIPES.

Instead of using so many high-priced eggs try a dish of baked hominy for supper some time as a substitute. Take two cupfuls of hominy, two cupfuls of sweet milk, one egg, two tablespoonfuls of melted butter, salt and pepper to season. Put the hominy in a strainer and drain, beat the egg until light, add the milk, salt and pepper, then hominy and butter. Sprinkle lightly with cracker or bread crumbs and bake in a quick oven until nicely browned.—M. A. P.

Honey Cakes.—Into two cups of sifted flour stir one cup of sour cream, two tablespoons of strained honey and two of granulated sugar, a half teaspoon each of cinnamon and ginger. Beat well and add a level teaspoonful of soda dissolved in two tablespoons of boiling water. Beat well again, and bake as a loaf cake.

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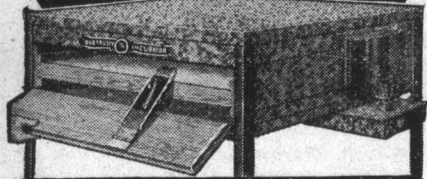
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and Almanac for 1917 has many colored plates of fowls true to life. It tells all about chickens, their prices, their care, diseases and remedies. All about incubators, their prices and their operation. All about poultry houses and how to build them. It's an encyclopedia of chickendom. You need it. Only 15c. C. G. SHOEMAKER, Box 911, Freeport, Ill.

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The Control of Roup

THE disease known as roup is apt to be prevalent when the birds are constantly exposed to sudden changes in temperature. Overcrowding on the roosts causes the birds to become overheated and in the early morning they step out on a cold frosty ground or possibly a cold raw wind may blow every day for a week and their foraging is limited while the huddling in the colony houses continues day and night. This results in colds and if they are given no attention the roup may rapidly follow. The prevention of roup is important as the cure is apt to be unsatisfactory. Sick birds spread contagion among the flock and the birds that recover are lowered in vitality and are more subject to disease thereafter. Clean and dry quarters which are well ventilated and allow the birds plenty of room inside during bad weather are the best prevention. Controlling lice and mites will save the vitality of the birds and make them more resistant to colds and other diseases.

Method of Treatment.

If the conditions causing colds are removed as much as possible and some of the birds are ill, a certain amount of doctoring may stop the trouble and soon restore the bird to health. As near as I can determine from observation and experience there is little difference between a simple cold and the more acute trouble called roup. At first the hen may have a slight inflammation of the throat and eyes. The eyes become frothy and in the morning a sneezing and shaking of the head will be especially noticeable. The hen is then said to have a cold. The cold may continue for several days until some morning the head is swelled until the eyes are closed. There will be discharges from the mouth and nostrils, diphtheritic patches in the throat, and an offensive odor to the breath. The bird will seem to gasp for breath, find considerable difficulty in swallowing and probably will make no effort to eat. If treatment is effective it must be started promptly. Among the remedies of value are the following: Make a solution of kerosene oil and olive oil, equal parts, and thoroughly immerse the head of the fowl. This can be repeated at least twice each day for several days until the inflammation entirely disappears. Peroxide of hydrogen and water, equal parts, may also be used in the same manner. I have found that rubbing the head with carbolated menthol vaseline is of some value in curing a cold in its first stages. Recently I rubbed the heads of several pullets showing frothiness in the eyes, with the vaseline and they appeared perfectly well the next morning. A one per cent solution of carbolic acid can be used for dipping the bird's head.

Establishing a Hospital.

Before beginning treatment the sick fowl should be isolated from the flock and a clean dry shed or vacant colony house can be quarantined for that purpose. A dry floor covered with plenty of clean straw is necessary. The bird should be placed with its head in the sunshine whenever possible, as sunshine is the best disinfectant and healing remedy that the poultryman can find. The bird with its eyes swollen shut will need hand-feeding and bread soaked in beef juice or milk will be satisfactory until the regular ration can be used. If the inflammation does not leave in a reasonable length of time and the bird continually grows weaker it will be wise to use the axe. A sick bird is rarely ever profitable and should not be used for breeding stock. Occasionally they can be cured and turned into profitable egg producers but it is easy to believe that their offspring would also be susceptible to disease and they should be marked and kept from breeding pens. Killing fowls when they are at a

producing age is not an easy operation for the poultrymen to perform, but often such an act will be the best insurance against disease. Some poultrymen do not fear to use the axe and they do little doctoring and it seems that they are the breeders who build slowly and stay in the game the longest. The controlling of roup depends upon careful preventive measures, such as using permanganate of potash in the drinking water until it is a deep cherry red, furnishing sanitary quarters and fighting every cold that ap-

pears as soon as it is noted. Passing through the roosting quarters at night will enable the poultrymen to pick out any birds with colds. The hoarse rasping breathing will be instantly noted and such a bird can immediately be dipped in the solution of kerosene and olive oil and isolated. Work of this kind is some trouble but it is one of the necessary precautions on the poultry farm and every farmer with a good flock will find that he can ship more cases of eggs and get fewer cases of blues if he fights roup before roup captures the flock. A rapid offensive is the best defensive in fighting poultry diseases. R. G. KIRBY.

Keeping Geese for Profit

UNDER favorable conditions, no class of poultry is more profitable than geese. No domestic fowl can be raised with less work or smaller expense, which can compare with them in size or market value.

We have raised geese for a number of years. Some years we raise as high as 240. We raise the Toulouse and Embden, but will not say these are better than others in every way, but they are larger than some others. Embden goslings are usually considered difficult to raise. But Embden geese are very large and beautiful and the feathers being white, bring the highest market price.

The Egg Producing Kind.

Both the Brown and the White China geese are profitable and are without exception the best layers of all. A neighbor kept these two varieties of geese some years ago. They are very beautiful and yield the finest quality of feathers. We want to try the Wild Canadian crossed with the Toulouse. When crossed with other geese, such as the Toulouse or Embden, they are said to be easier to raise than other geese. However, we have not found either of above hard to raise. A good deal depends upon having good, healthy, well-matured stock to begin with; and a good deal depends, also, upon the care of old and young.

During the winter, when pasture is not very plentiful, geese require some sort of roughage, such as clover, alfalfa or corn silage. Grain is, of course, necessary also. We feed plenty of whole corn when the weather is cold and when it is less severe, a ration of chopped turnips or beets with some corn meal and bran, twice a day, has given good results. We sometimes use equal quantities of oat chop, corn meal and middlings. The vegetables are fed raw.

A little salt and some pulverized charcoal are added several times a week, to the dry mash.

Grit Necessary.

Don't forget that geese require grit to grind their feed. Sharp, coarse sand and cinders are eaten by these fowls. They will not thrive for any length of time without grit.

We have known instances where half-grown goslings became so weak that they could scarcely walk, because no sand had been provided for a few days. When a supply of coarse, sharp sand was again placed where they could help themselves they ate of it ravenously and gradually recovered.

Lack of sand will cause the same trouble with ducks.

Good shelter is essential in winter the same as for all other kinds of poultry. We know some people who contend that geese need no protection, even in the coldest part of the winter. But we have learned, by experience, that geese appreciate shelter when once they have become accustomed to it. After being driven to shelter a few times, they soon learn to go of their own accord.

Do Not House Geese with Hens.

Geese must not be housed with other poultry. They need a house or shed to themselves. One that is dry and will keep out the wind and snow, with

plenty of straw or clean litter for bedding.

See that the geese have clean water to drink at all times. When they have access to a creek or pond of course that will be all that is necessary, at least in summer. But it is not always advisable to let the geese or goslings have free range and we have large yards fenced around the houses so that they can be confined when it is necessary. Besides these yards we have a young apple orchard properly fenced for a good pasture. Young geese are fond of running away, when given free range.

We do not think it pays to bother with the eggs of the young, or yearling geese, for hatching. If they hatch at all, the goslings are small and weak, as a rule. Large chicken hens are best to hatch goose eggs. We begin setting the eggs in March and continue until about the last of June.

There is nothing to be gained by setting the first lot of eggs laid, because they are usually chilled in the nest, and besides it does not pay to hatch out a lot of little young geese before the weather is warm enough for the grass to grow. They must have plenty of tender grass.

Ohio.— A. W. GALLIGHER.

EARLY SEASON POULTRY WORK.

The poultry raiser who wishes to produce fall and winter eggs with a by-product of spring "friers" should begin now to plan for the early setting of eggs. Settings should be made from the latter part of February to the early part of April. With settings timed on this schedule the chicks will hatch in ample time to allow their maturity before cold weather. The pullets from these broods should lay during the early winter when eggs are high.

The setting schedule outlined also will permit the development of early spring "friers." The young chicks will be developed to the point where they may be turned out on the ground by the time vegetation is out, and so may augment their feed with green stuff. The smaller breeds of chickens can be hatched later than those which are larger and slower to develop.

The time suggested for hatching can be followed exactly if an incubator is used. The machine should be operated in a warm room, preferably a cellar, as a protection against outside temperature changes. It should be disinfected thoroughly before being used, with a solution of a reliable coal-tar disinfectant. Instead of using such a solution a small receptacle containing one-half ounce of permanganate of potash on which one-half ounce of formalin has been poured may be shut up in the incubator. The resulting gas will thoroughly disinfect the machine. After disinfection the incubator should be run empty for several days to get it into good operating condition. After the eggs are in place the temperature should be held at from 101½ to 102 degrees F. the first week, 102 to 103 degrees the second week, and at 103 degrees the third week.

The eggs usually are turned for the

first time at the end of the second day and twice daily through the eighteenth or nineteenth day. The eggs are cooled outside the hatching chamber once daily after the seventh and up to the nineteenth day. Moisture should be furnished in artificial incubation in the south, in high altitudes, and when the incubator room is dry. This may be done by sprinkling the eggs with warm water or by placing a wet

sponge or pan of water under the egg tray.

During the hatching period carefully fill the lamp and trim the wick each day. It is best to trim the wick by scraping off the burnt portion rather than by cutting the wick. The lamp should not be filled entirely. After the lamp is filled it should be closely observed for a time to make sure that the flame does not get too high.

Some Essentials of Good Hatching

N successful hatching with incubators the selecting of eggs for hatching is to know that they are from sturdy stock—stock that is capable of producing eggs of strong fertility. With the assurance that the stock meets these requirements you need have little fear of poor hatches, provided the necessary details of incubation are attended to with regularity.

Eggs selected for incubation should be of average size and good shape. Those ridged or odd in shape should not be used for incubation; they may develop life, but they rarely hatch, because the deformity of the shell prevents the growth of the chick. When such eggs do hatch, deformed chicks are the usual result. Thin-shelled eggs are wasted when placed in the incubator, for they will break in turning, not only causing the loss of the egg but also smearing neighboring eggs with the sticky contents, which is exceedingly detrimental to hatching eggs.

Best results will be obtained if eggs intended for hatching are kept for two or three days before being placed in the incubator. The period of storage should not be too long, for the longer the eggs are stored the less chance there is of a good hatch. While there are records of good hatches from eggs stored for a number of weeks, best results will be obtained from those stored not more than one week. I should consider an egg more than two weeks old not worth placing in the incubator. Many times the three-weeks-old eggs will not hatch much over half as many chicks as the week-old eggs. Delayed hatches and chicks of poor vitality are frequently the result of eggs stored too long.

Gather Eggs Often in Cold Weather.

It must be remembered that eggs which are allowed to remain in the nests long after being deposited, when the thermometer is below freezing point, are next to useless for hatching purposes, simply because such a temperature is calculated to disorganize their internal structure to such an extent as to render the normal development of their life germs impossible, if such germs are not destroyed before development actually commences. The eggs should be gathered frequently while yet warm and placed where they can cool down gradually.

Rough handling of incubator eggs is also important, for there are two ways in which eggs are likely to be roughly used. There is first, the desire on the part of the operator to get the eggs heated up to 103 or 104 degrees as rapidly as possible; and many believe that if the full temperature is not reached during the first day the eggs are totally spoiled. Of course, this idea is wrong, since artificial incubation is but an imitation of the natural process, and when a hen sits upon a clutch of eggs she takes time to heat them up. She has no extra heat available to turn on with the object of attaining the full temperature during the first day or two; and experiments have shown that the temperature of eggs under a hen rises very gradually, and only attains its maximum height about the fifth day.

Heat Eggs Gradually.

It should be the same with eggs in an incubator. It is positively injurious to heat them up quickly, and the operators should aim at attaining

about 101 degrees in the course of the first twelve hours, and the heat may then be gradually increased by only one-half a degree per day until about the fifth day, when the desired temperature will have been attained.

The other manner of rough usage to which I have referred consists in careless turning of the eggs in the early stages of incubation. It is advisable that at this stage the eggs should be handled with the utmost care, so that their delicate organism may not be upset, and if the machine has an automatic turning tray I would not use it until the infertile eggs have been tested out. It is no waste of time to turn the eggs slowly and carefully by hand, because they want to be cooled, at any rate, and one might as well turn them and take time over it while the cooling process is going on.

How to Cool the Eggs.

Cooling the eggs is something that can be learned only by experience and that depends upon the machine you are operating. It also depends upon the temperature of the incubator room and the season. Ordinarily in a cold room the eggs get enough airing at first while being turned. After the first week it is usually a good plan to cool the eggs from five to fifteen minutes once a day, and in hot weather the cooling may be considerably longer. One can judge on the feel of the eggs to tell when they are cooled enough, and that generally is when they feel just warm when touched to cheek or eyelid.

In a perfect hatch the chicks begin to pick the shells on the twentieth day, and all are out by the end of the twenty-first day. Hatches that are abnormally early or late are usually lacking in thrift and vigor. The more nearly simultaneously a hatch comes off, and the quicker it cleans up, the better.

Leave Incubator Alone at Hatching Time.

It is not good practice to help the chicks out of their shells. If they haven't the strength to get out alone they will not have the vitality to live or make profitable growth afterward. Besides, it is always more or less harmful to interfere during the midst of the hatch. When opening the door at hatching time it allows the cold outside air to blow in over the weak, wet chicks, chilling them and drying out the moisture that is so essential in the egg chamber at hatching time. About the only time the incubator should be opened is when the hatch is two-thirds over. Then remove the empty egg shells, put all the dry chicks down in the nursery drawer, and make sure that no shells have slipped over pipped eggs and are suffocating the imprisoned chicks.

Should there be any crippled or deformed chicks in the hatch, they might as well be destroyed promptly. It is usually a waste of time to try to raise them, and even if they should live are more bother than they are worth. Do not be in a hurry to remove chicks from the incubator nursery; allow them plenty of time to dry off and gain strength. This is usually about thirty-six hours. Chicks struggle and gasp when first hatched, but this is natural. Gasping opens the lungs and struggling gives them strength.

Iowa. F. F. HUNSTOCK.

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FOR SALE Pure bred White Plymouth Rock Eggs for hatching in season. **CHAS. KLETZLEN, BATH, MICH.**

Poultry Ads. Continued on Page 231

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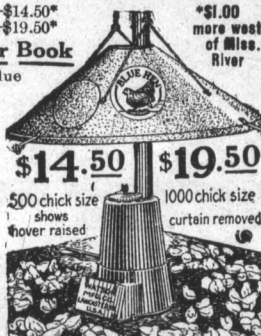
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Controlling White Diarrhea

CONSIDERABLE has been written in the past two or three years about bacillary white diarrhea in chickens; but most of the articles have been from the point of view of the scientist or investigator rather than that of the practical poultryman. Perhaps this scarcity of practical information is due to the fact that most poultrymen are reluctant to admit—often even to themselves—that this disease exists in their flocks.

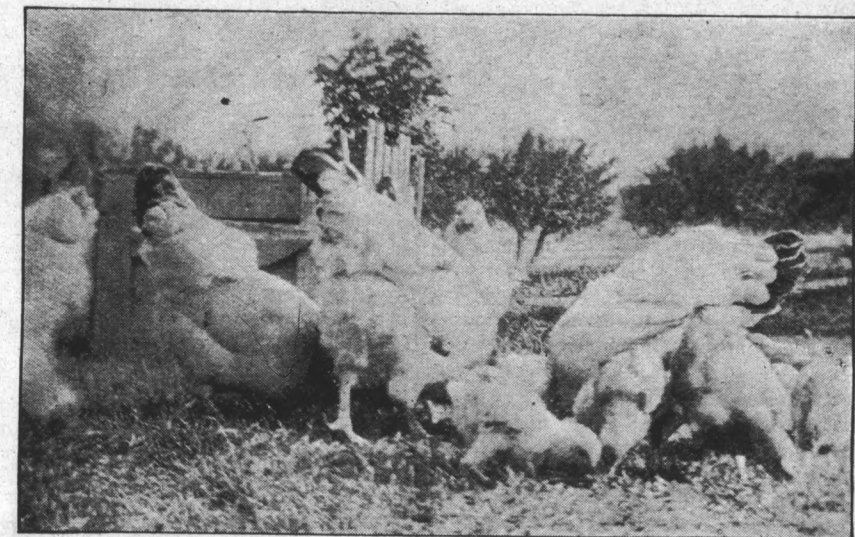
In any event, when I awoke to the fact, a couple of years ago, that my chickens were infected, I could obtain but little definite, concise information as to how they might be saved. It took me the greater part of one season to find out that much of the loss due to bacillary white diarrhea in young chickens may be prevented by maintaining the proper degree of cleanliness during the first few days of the chicks' life.

Before proceeding further with my experience, permit a brief explanation. Bacillary white diarrhea is a highly infectious disease of young chickens

prevent chicks from picking at the excrement, incubators were kept dark while the hatch was in progress; and except at feeding time, brooders were kept dark until the chicks were four days old. The chickens were moved to the brooder as soon as the hatch was completed, for I found it impossible to keep the nursery clean for any length of time. On papers that were removed and burned after each feeding, the chicks were fed five times a day. To quickly absorb any infected droppings, an inch of dry loam was used on the brooder floor for the first few days. And lastly every sick and ailing chick, as soon as discovered, was killed and buried.

Incubator Usually Neglected.

Most poultrymen keep their brooders well cleaned and disinfected; it is the incubator that they neglect. Yet, this is the one most fertile source of infection. The temperature at which the nursery and egg tray are kept is very favorable to growth of bacterium pullorum—white diarrhea. Such disease producing organisms may enter



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that often causes a loss of from one-half to two-thirds of the season's hatch. Disease Transmitted through the Egg.

The bacteria that cause the disease live in the ovaries of hens that survive an attack. Such hens lay a few infected eggs—not many, for diseased hens are poor layers—and not all their eggs harbor white diarrhea germs. Chickens hatched from infected eggs are diseased, and their excrement is swarming with bacteria. This excrement contaminates feed and water, and by eating such feed or drinking such water healthy chickens become infected. A few of these survive the attack, live to become carriers, and maintain the disease in the flock.

Through the purchase of infected fowls, chicks, or hatching eggs, the disease may be introduced on the farm. There is no known cure for white diarrhea; our only hope is to prevent its spread. In this we are aided by the fact that after chickens are three days old they are practically immune. Thus, by the use of proper precautions during the first part of the chick's life, it is possible to confine the disease almost entirely to those individuals that were infected by their parents—usually only a small percentage of any hatch.

Two years ago, bacillary white diarrhea claimed from forty to forty-five per cent of my season's hatch. Last year, by care and cleanliness, I was able to reduce the loss to from fifteen to twenty per cent of the hatch.

Clean Incubator Thoroughly.

To secure this result I carefully observed the following: Before eggs were placed in incubators or chickens in brooders all accessible parts were scrubbed with hot soapsuds and chloride of lime; the soiled burlap in the nursery or hover was replaced with new; and the machines were closed and fumigated with formaldehyde. To

the abdomen of newly hatched chicks; or if the eggs are damp the bacteria may pass through the egg shell and infect the embryo. Thus, where incubators are not disinfected, one diseased chicken may deposit germs that will live on the egg tray, or in the nursery, and badly infect each succeeding hatch. To a large extent, this explains why many farmers are most successful with the first hatch of each season, and why chickens hatched under hens are freer from white diarrhea than those hatched in incubators.

Every poultryman should aim to breed only from fowls that are known to be free from white diarrhea. A clean flock may be secured by the agglutination test, which some of the experiment stations perform for the poultryman; or, since infected hens are poor layers, by the use of the trap nest. However, these tests are unavailable to the majority of poultry raisers. Most of us must breed from flocks that may contain infected individuals. To reduce the dangers of an outbreak to a minimum, extreme care and cleanliness should be observed from the time the egg is laid until the chick is well started in life.

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"MISTER 44."

(Continued from page 223).

Betty. "I didn't remember her saying that."

Stoddard chewed his lip in dismay at his clumsiness. He suddenly remembered that this bit of information had come from Sadie, who learned it first-hand from the stranger on the train.

"I don't recall that she mentioned it was her first trip," said Mrs. Stoddard. "Did I say so, John?"

"I thought you did," he answered. "Maybe I misunderstood you."

"Well," declared Betty after a brief pause, during which she studied the rugged figure of her brother, "if I were a man I wouldn't waste time being sorry. I'd get a gun and go out and shoot the lunatic. Have you a gun, Jack?"

"Never carry one up here. It's foolishness."

"You won't think so if you meet a maniac and you're all alone in the woods. Ugh!"

"He is not likely to meet him," remarked Mrs. Stoddard quietly. "Not unless he sees him to night."

Stoddard looked at his mother for an explanation.

"We are expecting you to join our party tomorrow," she added.

"Oh, out of the question!" he exclaimed. "Impossible, mother!"

"But why? We planned it as part of the surprise."

"Why," he repeated. "Why, because—"

He thought of the girl hidden in the woods a few yards distant.

"Because I'm up here for the woods, that's why. And I'm carrying out the doctor's prescription for Larry. That's another reason."

"But Larry has said he will go with us."

Stoddard turned a baleful look upon Livingston.

"Did you?" he demanded.

"Why not?" said Larry. "It'll be a lot more fun than this."

"But your doctor—"

"A lot that worries you, Stod. You disappear forty-eight hours at a time and then preach about having to take care of me."

"Well, you had John."

"That makes no difference. Anyhow, I'm not strong for this primitive man business. I've had enough of it."

"Larry is sensible," affirmed Mrs. Stoddard, nodding.

"Larry's an idiot," observed her son. "But of course he can go if he wants to."

"I'm not keen about running into this wild man from Borneo," said Livingston. "I'm no hero."

"I guess that private car sounds good to you, Larry. Go ahead. But I'm going to stay here."

Mrs. Stoddard was plainly annoyed.

"Be reasonable, my son," she said as patiently as she could. "We have counted on you to come and we shall be greatly disappointed if you refuse."

Betty has already written to the Wallaces that we expect you. And as I mentioned before, Estelle will be with them."

She watched the effect of this; then resumed:

"We shall be short of men if you don't come. Estelle will be looking for you. You always did like Estelle, John."

"Sure; she's a nice girl," he responded perfunctorily. "But you've got Larry now. He can look after Estelle."

Betty knitted her forehead. She was not entirely sure about that.

"It's going to be a beautiful trip," continued Mrs. Stoddard. "And the Wallaces are delightful people. Your uncle suggested that we bring you. He's expecting you."

"He'll be disappointed, then. I can't go, mother."

"But why?"

"Because I came up here for the woods."

"But what is there to keep you here?"

"The woods."

Mrs. Stoddard tried to cover her exasperation. Already she scented defeat; she knew of old her son's will.

"It's a reason that does not appear to me, I admit," she said as her glance swept about the camp. "Surely you get enough of this, John, when your business calls you! Sometimes you're away from us for a year and more."

"I should think you'd be utterly weary of it. But now that you have leisure you must run straight into your woods again. There isn't a thing to keep you here except your own whim. Your business doesn't call you here; there is nothing whatever to compel you to stay."

Stoddard mumbled something about the woods and shrugged his big shoulders. He never had been able to make his mother understand; and now that she had viewed his much-praised Deepwater without discovering the reason he had no hope that she would ever see it. There was another reason, too—concealed in the darkness beyond the rim of the firelight; that also was something she would not understand.

"Let's drop it, mother," he said. "I can't go."

Mrs. Stoddard and her daughter exchanged glances and sighed.

"Betty," said her mother, "you must telegraph Estelle in the morning."

Stoddard shot a look of inquiry.

"Estelle was coming part of the way to meet us," explained Mrs. Stoddard. "But now—"

She made a dainty gesture of despair.

"Oh!" said her son.

For some time he had been aware that his mother was tentatively mapping the future of Estelle Wallace in conjunction with his own, and he had regarded the occupation with tolerant amusement. Now it was obvious she was beginning to embellish her chart with details. He loved his mother; he admired her tremendously; he hated to disappoint her. But Stoddard was the cartographer of his own destinies.

"You go down on the evening train tomorrow?" he asked.

"Probably. Our car is on the siding here. It is possible, though, that your uncle may arrange for a special engine, in which case we may go earlier."

Betty, who had begun to yawn, suggested that it was time to start back for the hotel. As she arose from her seat her brother slipped an arm around her shoulders and whispered:

"Get mother to cut that Estelle business out, Bet."

"I'm mad at you," said Betty petulantly. "You're mean! And you are soiling my gown with those horrid hands."

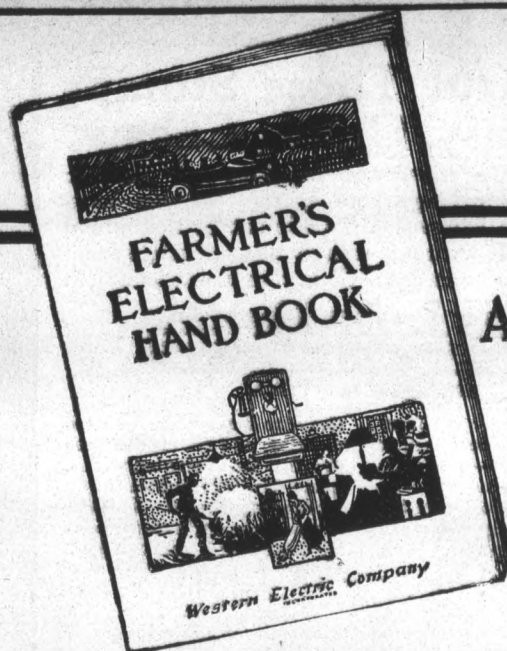
He laughed, hugged her close to his grimy clothes, and kissed her.

As they were re-embarking Mrs. Stoddard told Larry that they would call for him on the morrow, for they would use the special launch to take them to Deepwater Station. Her disappointment at the failure to lure her son away from the woods did not prevent her from bidding him a warm good-by. Although he often exasperated her she was gloriously proud and fond of him.

Back in her sylvan refuge Sadie sat listening to the steadily waning sound of the motor-boat exhaust. She was glad the darkness hid her, for she had been crying.

She had seen and she had heard, and her mind was troubled. She felt that something was aching within her breast. The big outdoors no longer seemed so friendly. The vision that had filled her with wonder was slipping away. It had only been a dream, after all.

(Continued next week).



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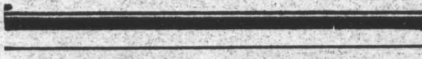


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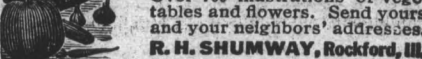
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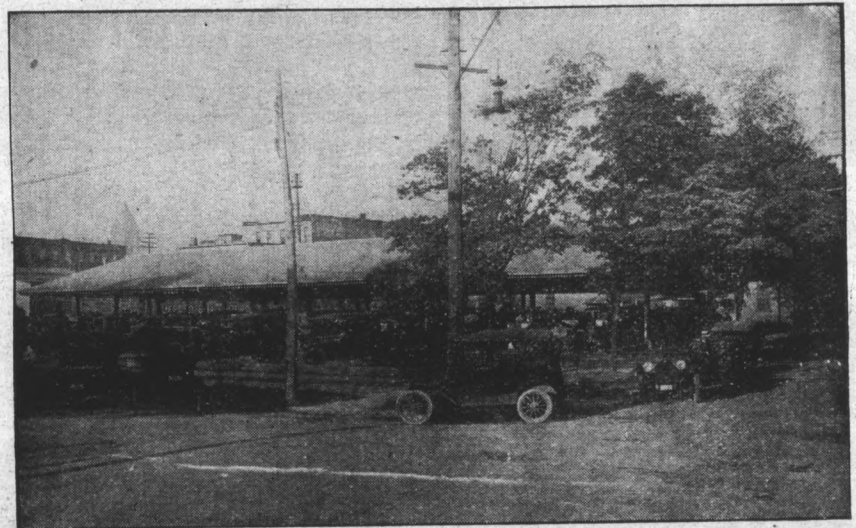
Farm Commerce.

Consumers Buy at This Market

THE Lansing Municipal Market is not a financial success. It probably is not intended to be, yet there would be no objections should its income exceed the cost of operation. The marketing idea has been elaborated with the thought of providing the city consumers with opportunity to secure fresh farm produce at a reasonable cost. The Lansing public market is pre-eminently a consumers' market. The consumer buyers appear as the dominant factor whenever a careful analysis is made of the market or its transactions. The housewife with an eye to a good bargain, is ever in evidence. She often carries a market basket. Sometimes she is accompanied by a small boy with an express wagon, not infrequently she comes in her auto and brings her husband along to drive the car and to carry her purchases from the market shed to the waiting

The market equipment is good. It consists of a large area at the corner of two main streets near the business center of the city. The greater part of the area is paved with concrete. Almost in the center is the market shed and at one side are the city scales and scale-house. The shed is largely of steel construction. It is wired for electric lights. The selling stalls are arranged on either side, the farmers' wagons being backed so as to form three sides of a rectangle with the buyers under the shed in the center.

The management of the market is placed by ordinance in the hands of a market master appointed by the mayor. This officer has police power in the enforcement of order, he is also charged with the duty of seeing that no imposition is practiced by seller or buyer. The market hours in the summer are from five a. m. to twelve noon.



The Lansing Municipal Market is Essentially a Consumers' Market. Much Farm Produce is Taken Directly to Homes in Automobiles.

car by the curb. Occasionally some workman appears and takes advantage of what he believes to be a good bargain and a few professional men are seen among the buyers. But the principal buying is done by the thrifty housewives.

During the latter part of the past summer the market was well attended. All during September the attendance varied for the three market mornings each week, from forty to sixty sellers. The best record was made one morning when sixty-four producers offered their products for sale. The number of consumer buyers has varied during the season from a hundred, more or less, in May to better than a thousand in September when the growers had vast quantities of vegetables, fruits and dairy products for sale. On the big mornings the buying is sharp. The sellers are alert and anxious to sell, the buyers are active and almost greedy for bargains. The attitudes of the two give spirit to the market, and this spirit is somewhat similar to that noted when the chain store sells full-fledged dish pans at seven o'clock in the morning at ten cents each.

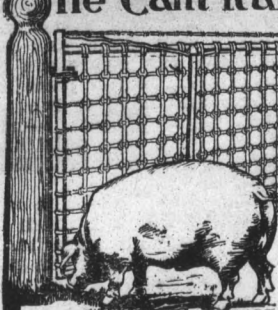
Many different things are sold on the market. A complete enumeration would include most of the products of the farm, except perhaps grains and forage crops. Among some of the unusual things sold the past season were live chickens, maple syrup, white clover plants, flowers and cookies. As a rule, the prices were a little below those prevailing at the same time at the regular retail stores. When large quantities of produce were bought from a single grower, or when bulky products, such as potatoes by the bushel, were bought, the seller delivered the goods, provided the point of delivery was within reasonable distance.

In winter the opening occurs two hours later. While according to ordinance every morning save Sunday is market morning, by custom, Tuesdays, Thursdays and Saturday mornings are the ones recognized. The sellers are assigned their places by the market master but so long as there is no confusion, the first seller to arrive selects a location to suit him. The ordinance provides that stalls may be rented at annual rentals varying from \$5.00 to \$25 according to location. The ordinance fixes the daily charge for selling on the market at ten cents for a single rig and twenty cents for a double rig or auto. Nearly all the sellers use the market on the daily basis, paying each morning that they are on hand. Sellers are forbidden to solicit trade by outcry or to be too aggressive. The ordinance requires that all hay, straw, and fodder shall be weighed on the city scales at the market, and that all wood shall be measured by the market master.

A few grocers replenish their supplies of farm produce at the city market and occasionally a huckster buys something that he needs to fill out the load that he has prepared for a day of peddling.

The market property, consisting of real estate, market shed, scales, and scale house, has a book value of \$27,874.81. The market receipts for the year ending April 30 were \$424.60 and the expenses for the same period, not including interest on investment, were \$722.97. In determining the expenses the market was charged with one-third of the salary of the sealer of weights and measures, who is also market master, and one-third of the salary of the weighmaster. On this basis the loss for the year was \$298.37. There was also a loss on the operation of the

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scales. However, in order that the public shall be fully protected, it is necessary that the city scales be operated and that there be a sealer of weights and measures.

Ingham Co. R. H. ELSWORTH.

THE MAN UNDER THE COW.

(Continued from page 216).

milks most rapidly will secure the most milk and this of the best quality. A slow milker is almost invariably a poor milker, and it is true that a child just learning to milk can dry up a very productive cow. Start the learner on a cow that is going dry, don't risk having a productive animal dried off prematurely. Some cows are not overly sensitive and they can be milked by almost any fairly rapid milker with much the same results; others are so nervous that the slightest change of posture or attitude will be reflected in the milk pail and eventually on the tally sheet. The highly nervous cow is likely to be the high producer. Whenever three men milk a string of cows, they should always milk the same cows and in the same order. Some cows seem to enjoy the whistling of the milker, while to others it seems to be repulsive. Suit the action to the cow at hand.

When milking is about completed, go over all the quarters. Reach high up on the udder and gently work the milk down the ducts. I have found that such manipulation would produce from three to five more pounds of milk than was forthcoming under the usual method.

Really, the man under the cow is a very important fellow when results are to be reckoned. It is best generally to be quiet, avoid loud talking and above all, do not excite the cow with a nervous temperament just at milking time. The results do not justify such a procedure. Remember that the last milk often tests as high as ten per cent and one or two pounds of such milk will materially raise the fat test for the month—surely a result that is worthy of any true dairyman's attention.

MICHIGAN CROP REPORT.

Wheat.—In reply to the question, "Has wheat during January suffered injury from any cause," 31 correspondents in the southern counties answer "Yes" and 215 "No;" in the central counties nine answer "Yes" and 108 "No;" in the northern counties three answer "Yes" and 101 "No" and in the upper peninsula 28 answer "No."

Snow protected wheat in the state 28 days, in southern and central counties 27, in the northern 29 and in the upper peninsula 30 days.

The average depth of snow on January 15 in the state was 6.19, in the southern counties 4.71, in the central counties 5.97, in the northern counties 8.44 and in the upper peninsula 11.46 inches.

On January 29 the average depth of snow in the state was 7.49, in the southern counties 4.68, in the central counties 6.98, in the northern counties 12.13 and in the upper peninsula 15.79 inches.

The total number of bushels of wheat marketed by farmers in January at 76 flouring mills was 168,307 and at 82 elevators and to grain dealers 195,778 or a total of 364,085 bushels. Of this amount 310,726 bushels were marketed in the southern four tiers of counties, 41,619 in the central counties and 11,740 in the northern counties and upper peninsula.

The estimated total number of bushels of wheat marketed in six months, August-January, is 5,500,000. Fifty-nine mills, elevators and grain dealers report no wheat marketed in January.

The average condition of live stock in the state is reported as follows, comparison being with stock in good healthy and thrifty condition: Horses and sheep 96; cattle 95 and swine 93.

William Shafer, of Plainfield, Ill., was on the Chicago market on a recent day with twenty head of cattle of his own feeding which he bought on the third day of last October at \$7.25 per 100 lbs. and finally sold as high-class beefs at \$11.50 per 100 lbs., showing good gains in weight.



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Markets.

GRAINS AND SEEDS.

February 13, 1917.

Wheat.—Notwithstanding the uncertainty of political relations between the United States and Germany and the influence of the Teutonic U-boat campaign upon international commerce, wheat values advanced last week. Exporting has not stopped and traders are coming to believe that a lot of wheat has gone out of the country unreported. This position is supported by heavy seaboard buying at close last week. There seems to be considerable faith in higher prices for wheat while in southwestern states there is lack of moisture. Generally speaking, the new crop is pretty well covered with snow. The Australian surplus is now estimated at 100,000,000 bushels. One year ago No. 2 red wheat was quoted at \$1.31 per bushel. Last week's prices were:

	No. 2 Red.	No. 1 White.	May
Wednesday	1.80½	1.75½	1.83½
Thursday	1.80	1.75	1.83
Friday	1.80½	1.75½	1.83½
Saturday	1.85½	1.80½	1.88½
Monday			
Tuesday	1.85	1.80	1.88

Chicago.—May wheat \$1.74; July \$1.48%; Sept. \$1.38%.

Corn.—Values here have followed those of wheat and at the close last week the market occupied a firm position. The expanding of feeding operations in some sections and the conservatism of farmers about selling their surplus corn are compelling the continuation of high prices, which condition is further augmented by lack of cars to move grain from local elevators. Foreigners are also buying the grain more liberally. A year ago the local price for No. 3 corn was 73c. Last week's Detroit quotations were:

	No. 3 Mixed.	No. 3 Yellow.
Wednesday	1.03	1.04
Thursday	1.03	1.04
Friday	1.03	1.04
Saturday	1.04	1.05
Monday		
Tuesday	1.05	1.06

Chicago.—May corn \$1.01½ per bu; July \$1.

Oats.—This grain is meeting with a larger foreign demand as it is being used more freely by the Europeans in manufacture of bread. The strength of other cereals also gives firmness to the oat trade. The domestic consumption while about normal would likely be increased by an improvement in railroad traffic. A year ago buyers were paying 50½c for standard oats at Detroit. Last week's quotations were:

	No. 3 Standard.	White.
Wednesday	58	57½
Thursday	57½	57
Friday	58½	58
Saturday	60	59½
Monday		
Tuesday	61	60½

Chicago.—May oats 56c per bushel; July 54½c.

Rye.—The market is steady, with cash No. 2 quoted at \$1.43 per bushel.

Beans.—Firm and higher. Country holders are keeping back their surplus and the quantity coming to market is consequently small. Cash beans are quoted at \$6.95 on the Detroit market. The Chicago trade is more active for pea beans than for other kinds, with that variety quoted at \$6.75 and red kidneys at \$6.75@7.

Peas.—Trade fair and steady at Chicago with field peas quoted at \$2.40@2.75, sacks included.

Seeds.—Prime red clover \$11.30; March \$11.15; alsike \$11.30; timothy \$2.50.

FLOUR AND FEEDS.

Flour.—Jobbing lots in one-eighth paper sacks are selling on the Detroit market per 196 lbs., as follows: Best patent \$9.30; seconds \$9; straight \$8.70; spring patent \$9.80; rye flour \$8.80.

Feed.—In 100-lb. sacks, jobbing lots are: Bran \$37; standard middlings \$29; fine middlings \$40; cracked corn \$41; coarse corn meal \$43; corn and oat chop \$38 per ton.

Hay.—In carlots at Detroit: No. 1 timothy \$14.50@15; standard timothy \$13.50@14; No. 2 timothy \$10@11; light mixed \$13.50@14; No. 1 mixed \$13.50@14; No. 1 clover \$12@12.50.

Pittsburg.—No. 1 timothy \$15.50@16; No. 2 timothy \$13.75@14.75; No. 1 light mixed \$14@14.75; No. 1 clover \$15.50@16.

Straw.—In cars at Detroit, rye straw \$9@10; wheat and oat straw \$8.50@9 per ton.

DAIRY AND POULTRY PRODUCTS.

Butter.—The market continues firm at slightly higher prices. Creamery extras 40½c; do firsts 37c; packing stock 24½c.

Elgin.—Delayed shipments have caused scarcity and higher prices. The price, based on sales, is 42c, an advance of 3c over last week.

Chicago.—Continued scarcity has caused further advances in price. At present levels the feeling is only steady. Extra creameries 42c; extra firsts 41½c; packing stock 26½@27c.

Poultry.—The market continues firm at advanced prices. Demand is good and receipts light. No. 1 spring chickens 21@22c; No. 2 do 19@20c; No. 1 hens 22@23c; .o. 2 do 20@21c; small do 15@16c; ducks 22@23c; geese 20@21c; turkeys 25@26c.

Chicago.—The market continues firm with slight change in prices. Supply and demand both light. Fowls 16@20c; spring chickens 22c; ducks 17@20c; geese 16@18c; turkeys 12@24c.

Eggs.—Receipts are light on account of cold weather and the market is firm at present prices. Firsts 44½c; current receipts 43½c.

Chicago.—Market is unsettled with prices slightly higher. Demand active for fresh stock, with offerings small. Fresh firsts 44½@45c; ordinary firsts 42½@43c; miscellaneous lots, cases included 40@44½c; refrigerator firsts 39c per dozen.

FRUITS AND VEGETABLES.

Apples.—Market steady with prices unchanged. Baldwins \$5.25@5.50; Spy and King \$5.75@6 for best. At Chicago the feeling is strong with good demand and light supply. No. 1 stock sells at \$3.75@6 per bbl; No. 2 at \$2@2.50.

Potatoes.—In carlots at Detroit, in sacks \$2.20@2.25; Washington \$2.50@2.55 per bushel. At Chicago no Michigan stock was reported. Market remains firm and active with prices ranging from \$2.30@2.50 per bushel.

WOOL.

International complications have had little influence on the wool trade except perhaps to augment the strong position now held by this market. Only a limited amount of contracting for the 1917 clip is going on as growers are holding for higher prices than the dealers care to give just now. Sales of fleeces are of small volume because of the short supply, with Boston prices ranging from 47@55c; pulled wools 68c@1.10; territory 28@43c; scoured at 72c@1.30.

GRAND RAPIDS.

Cold weather has stiffened the egg market, with fresh quoted at 38@40c. Creamery butter has advanced 3c this week. The Grand Rapids Growers' Association is selling lettuce this week at 12c, or 1c below last week because of the supply. Potatoes are being quoted here at \$2.50 and at \$2 to farmers at many loading stations. Beans are now quoted at \$6.25.

DETROIT EASTERN MARKET.

Extreme cold weather reduced business to almost nothing on Tuesday morning. A few carrots were held at \$1.50@1.75 and parsnips at \$2.25@2.50 per bushel. A half dozen loads of loose hay were on hand but no sales were reported.

LIVE STOCK MARKETS.

Buffalo.

February 12, 1917.

Receipts of cattle, 50 cars; market 15@25c higher; prime steers \$11@11.75; good to choice \$10.50@10.75; fair to good \$9.25@9.75; plain to coarse \$8.50@9; prime yearlings \$10.50@11; best handy steers \$9@9.50; light butcher steers \$8@8.50; best butcher steers and heifers, mixed \$8.50@9; western heifers \$8@8.50; best heavy fat cows \$7@8.75; butcher cows \$6.50@7; cutters \$5@5.50; canners \$4.25@4.75; fancy bulls \$8@9; butcher bulls \$6.75@7.25; common bulls \$6@6.25; good stockers \$7@7.25; light common stockers \$6@6.25; feeders \$7.50@8; milkers and springers \$8.50@11.

Hogs.—Receipts 40 cars; market 25c lower; heavy and yorkers \$13@13.50; pigs and lights \$11.75@12.25.

Sheep and Lambs.—Receipts 20 cars; market strong; top lambs \$15.40@15.60; yearlings \$13.50@14.50; wethers \$11@11.50; ewes \$11@11.50.

Calves.—Receipts 400 head; market strong; tops \$16; fair to good \$13@14.50; fed calves \$5.50@7.

Michigan.

February 5, 1917.

Cattle brought last week much the highest prices of the season, the meager offerings at the start due to the cold snap bringing about sharp advances. Part of the improvement in

prices was lost later, but it was a good week for sellers, about everything selling extremely high, with the bulk of the beef steers taken at a range of \$9.50@11.50 and the choicer offerings purchased for \$11.50@12.25. Steers classed as good found ready sales at \$10.75@11.45, while medium grade steers went at \$9.75@10.70, fair to middling light weight killers at \$8@9.70 and sales of inferior little steers all the way down to \$6.50@7.75 in limited numbers. Butchering cattle were active and high sellers, cows going at \$6.15@10, and heifers at \$5.90@11, while cutters went at \$5.40@6.10, canners at \$4.75@5.35 and bulls at \$6@9, a few prime bulls selling at \$9.25@9.35. Calves were in active demand, and a firm market was experienced, with sales of desirable light vealers up to \$13@15 per 100 lbs. and sales all the way down to \$5.50@9.50 for the heavier weights. Fair activity and high prices prevailed in the stocker and feeder department of the market, with sales of stockers made at \$6.25@8.65, while feeders found buyers at \$8@9.10. The volume of business in this department would have been much greater but for the freight congestion on railroads caused by recent severe storms, nowhere near enough cars being available for the wants of country buyers of feeders. Carloads of feeders were purchased early in the week to go to eastern states and to Wisconsin, but the railroads refused to accept them until later in the week. The week's cattle receipts were about 10,000 head less than a week earlier, and choice beefs closed 15@20c higher, while cows and heifers advanced 25@35c per cwt.

Hogs made their customary new high records in prices during the last week, with decreasing receipts and a good general demand, the cold weather causing meager supplies during the early days and also checking shipments from here to eastern packing points, but the outward movement became on a large scale later. Hogs brought higher prices than ever before, and the top stood at \$12.55 per 100 lbs., with everything selling extremely high and average grading very satisfactory. As the week progressed the supplies increased, and sellers were forced to cut their prices more or less. Shippers would have bought more liberally had the eastern railroad lines been in a position to furnish all the cars needed. While prime heavy hogs continued to top the market daily, the best light hogs sold to a limited extent within a dime of the highest prices. Prices were at their highest on Saturday, hogs bringing \$11.75@12.30 for light bacon grades, \$12.20@12.45 for heavy packers, \$12.35@12.45 for selected light shipping, \$12.45@12.55 for heavy shippers and \$9@11.10 for pigs. A week earlier hogs brought \$11.15@12.05.

Lambs made their customary highest record price during the last week, with prime yearlings on the lamb order going relatively high, followed by advances in prime wethers and the best ewes. Colorado lambs arrived in increasing volume, although they were far from plentiful, and most of them sold satisfactorily. The week's receipts of lambs and sheep were much increased, although greatly inadequate, but killers managed to force some sharp declines in prices after lambs had sold up to \$14.85, their high record. Heavy weight lambs had to sell at a sharp discount from prices paid for prime lambs of medium weights. At the week's close prices were: Lambs \$12.25@14.65; feeding lambs \$12@14.15; yearlings \$11@13.75; wethers \$10@12; ewes \$7@11.25; feeding ewes \$7@8.50; shorn lambs \$11@13.60 and bucks \$9@10.

Horses were in unusually small supply and demand last week at generally unchanged prices, even "warriors" moving slowly at \$120 for mounts and \$150@160 for "gunners." Horses rejected by the army inspectors were slow sellers at \$75@120. Inferior animals went as low as \$60, while drafters were quotable at \$185@285, drivers at \$100@200 and feeders at \$125@240.

CROP AND MARKET NOTES.

Michigan.

Eaton Co., Feb. 10.—Plenty of snow on the ground, and roads badly drifted in places. Winter grains went under the snow in good condition. Farmers cutting wood, making repairs, and cutting and storing ice. Not much stock being fed, grain too scarce and high; most farmers have plenty of roughage. Some wheat and beans being held for higher prices, but not a large amount. Wheat \$1.60@1.70; beans \$6.40; corn \$1; oats 53c; rye \$1.35; butter-fat 39c; potatoes quoted at \$2.25 but none to sell in this section; hay \$7.50@11; hogs 9@11½c; cattle 4@9c; calves 8@11c; lambs 8@13½c; sheep 3@6c; butter 28@32c; eggs 34@36c; hay

\$7.50@11. Quite a bit of zero weather.

Cass Co., Feb. 9.—There is plenty snow. Wheat is in good condition. The ice harvest is well along, and the quality is fine. But few cattle are on feed and some lambs. Hay is plentiful but grain is high and hard to secure. Cattle 10@11c; hogs 11½c; lambs 13c; wheat \$1.65; corn 95c; oats 58c; rye \$1.35; hay \$8@10; butter-fat 39c; eggs 35c; chickens 13@14c.

Washtenaw Co., Feb. 10.—The severe weather continues, but there is some snow protecting winter grains. A good many farmers are engaged in getting out manure and securing firewood for the coming summer. Live stock is looking well, a good supply of roughage on hand, but the surplus of merchantable products on farms is practically all disposed of. Beans \$5.50; potatoes 2; corn 50c per basket; milk \$2 for 3¼ per cent; cattle \$7.50@8; hogs \$10@11; eggs 40c.

S. W. Shiley, of Nebraska, obtained satisfactory profits on his lately winter-marketed cattle and hogs. He says: "The cattle bought at the beginning of August were run on grass all but 70 days, during which time I had them in the feed. I shipped them to market with a gain of 250 lbs. and obtained \$1.90 per 100 lbs. more than they cost me at the start. My hogs and cattle made my corn bring me a profit of \$1.20 per bushel after all expenses were figured out—that is, interest on the money, hay bill and other items—besides 83 head of shoats and brood sows getting their living."

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DETROIT LIVE STOCK MARKET.

Thursday's Market.

February 15, 1917.

Cattle.

Receipts 2711. The run in this department at the local stock yards this week was much heavier than last, notwithstanding the severe weather which has prevailed.

In the cattle division the general market was steady with the close last week at the opening, but closed 10@15c lower. Several loads of good cattle sold at \$9.50@10.25 per cwt.

We quote: Best heavy steers \$9.50@10.25; best handy weight butcher steers \$8.75@9.25; mixed steers and heifers \$8@8.50; handy light butchers \$7.50@8; light butchers \$6.50@7; best cows \$7@7.75; butcher cows \$6@6.50; common cows \$5.50@5.75; canners \$5@5.25; best heavy bulls \$7@8; bologna bulls \$6.75@7; stock bulls \$6@6.50; feeders \$7@8; stockers \$6.50@7; milkers and springers \$4@80.

Veal Calves.

Receipts 1115. With nearly double last week's run the veal calf trade opened and closed steady, with the best grades selling at \$13@14.50, while the bulk of good sold at \$13@14; culls \$11@12; heavy \$7@9. The close was steady.

Sheep and Lambs.

Receipts 5863. The sheep and lamb trade opened steady with last week; sheep strong. Prices averaged as follows: Best lambs \$14@14.50; fair do \$13@13.50; light to common lambs \$11.50@12.50; yearlings \$12.75@13; fair to good sheep \$9@10.25; culls and common \$7@8.

Hogs.

Receipts 4594. In the hog department receipts were also larger but the quality generally common. Prices were 10@15c higher than last week's close, pigs selling at \$11@11.25; mixed hogs at \$12.20@12.40.

ADDITIONAL VETERINARY.

Out of Condition—Barrenness.—I have a large gray mare ten years old that is somewhat stiff when first taken out of stable, but with exercise this soreness appears to leave her. Last year she had a colt which only lived a day, since then she has failed to breed. H. H. Conklin, Mich.—Give your mare a teaspoonful of salicylic acid, a tablespoonful of ground gentian and a tablespoonful of ground red cinchona at a dose in feed three times a day. Perhaps you are not feeding her enough grain. Your mare will perhaps get with foal next spring.

Cows Chew Wood.—Some of my neighbors, including myself, have cows that seem to be inclined to chew wood; therefore, we would like to know what to do for them. C. M. A. Snover, Mich.—Cattle suffering from a capricious and variable appetite, showing a strong desire to lick and eat substances for which healthy cattle show no inclination, are usually suffering for want of certain kinds of food that they are not supplied with. Cows in calf, and young cattle are most liable to develop this ailment. Cattle pastured on low swampy land seem to become predisposed to this ailment. It also arises from an imperfect assimilation of the nutritive elements of the food supplied to the animal. Mix together 4 ozs. of carbonate of iron, 4 ozs. of ground gentian, 4 ozs. of powdered fenugreek, 8 ozs. of salt and 1 lb. of finely ground bone or "bone flour," and give each cow or full grown heifer a tablespoonful or more at a dose in feed three times a day. Feed your cattle a greater variety of foods.

Cow Gives Poor Quality of Milk.—Infected Udder.—I have a cow that occasionally gives gargety milk, especially when the udder is hot and swollen. One teat appears to be in a diseased condition and a hard sort of core can be felt in upper part of teat. This cow is not giving as much milk as she should give. G. W. W. Corunna, Mich.—Apply one part fluid extract of belladonna, one part fluid extract of belladonna and 14 parts wool fat to udder once a day. Change her feed and if her bowels are costive, give her enough epsom salts to open them. She should be fed well salted bran mash and roots to keep her bowels open.

Sow Fails to Come in Heat.—I have a brood sow that farrowed last fall, raised ten pigs which were weaned before Thanksgiving. She is very thin and has not yet been in heat. I would like to breed her and raise another litter. F. P. B. Carleton, Mich.—Give your sow 10 grs. of ground nux vomica and 30 grs. of ground capsicum at a dose in feed twice a day. Increase her grain ration and keep her warm.



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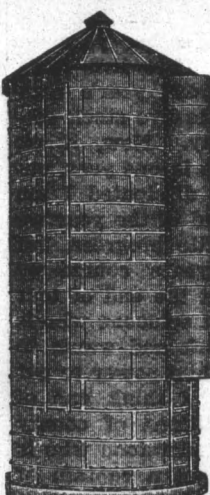
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Farmers' Clubs

Address all communications relative to the organization of new Clubs to Mrs. J. S. Brown, Howell, Mich.

County Agent Work

Address of D. L. Hagarman, county agent for Ottawa county, at the annual meeting of the Michigan State Association of Farmers' Clubs.

(Continued from last week.)

MY work has shown me who are the people who desire to learn. For five months I kept a record and not one person came into my office to inquire with regard to any principles of agriculture who was not on a farm which he actually owned, who was not a prosperous farmer, one of more or less repute and had the confidence of the people in his community. He was the man who least of all needed my help, and yet he was the first one who came into the office. I have an idea that today the interest in agriculture is perhaps more intense than it ever has been before because the prices are high. I am wondering, however, if our farmers who have made a couple of thousand dollars from potatoes, or from beans or from live stock, won't be able to pay off their mortgages and move to town. Now, in regard to the educational feature of farm life, you people on your program are threshing out. The college of agriculture has done a lot toward agricultural education. You all know of the wonderful fund of information which is available not only through the bulletins but through the extension agents who are sent out from the college. He is a person who has had considerable experience in farm practice.

County Agents Are Practical Men.

Some people think the agent has forgotten all those things simply because he has gone through college. The county agricultural agents, particularly of this state, because I know them more familiarly, are men and boys who have had the best farm experience and coupled with that is the benefit of scientific agricultural education. Now we say that science is common sense—simply the common sense education. Now, in combination with these features of experience and scientific education, the student has been taught to be observant. He has had to study into nature's laws and we say that nature obeys only those who serve her and in order to serve her we must know nature's laws.

Observation and Object Lessons.

I believe that one of the most potent factors in county agricultural work and one of the best characteristics which a farmer can have is that of observation. I know of farmers going by plots which we have been conducting in our county, where the crops will stand up from eight to fifteen inches higher than the one on the other side of the road perhaps, and unless there is a sign board—and that as large as the side of a barn—they never notice or inquire why it is that this plot of ground is producing a better crop.

The farmer is not an analyst. He cannot analyze his problems. When we have a trial we have a jury, we have, say twelve disinterested persons to settle personal matters of our own. We don't let the individual himself settle that matter. We have twelve disinterested persons who are supposed to have some power of analysis—some power of comprehension. So you people have in your county—or you should have if you haven't—a man who has had some experience, who has had the benefit of a college education, who is competent to observe the conditions which that county lives under. You people, of course, naturally as a unit won't care to be praised on your desirable characteristics. What you desire

is to be informed of the weaknesses and the county agricultural agent, possessing a more or less analytical mind, is in a position to help you to analyze your social conditions as a club and a county, and to outline to you the best, or at least several means of progress in order to obtain the results which you desire. And so, from an educational standpoint I believe that the agricultural agent is necessary to help the county to organize itself, to promote the interests of the county in the most practical and in the most efficient way. And then there are two things, or really two or three things that are necessary in order to secure the best results to the Farmers' Club as a social unit, is recommending co-operation, is recommending organization, and yet I sometimes think that it is the last order in the county to live up to that which it has recommended. We have all heard of the time when the idea of conservation was one of the subjects that every public speaker, every voter, was bound to bring up, which reminds me of a story of an old farmer who came into a meeting where a conservation expert was speaking. He said: "Is there a person in my hearing who has ever done a thing toward conserving our great American forests?" and finally an old man in the back of the room said, "Brother, I believe I help a little. I, for forty years, have been using the same toothpick twice."

Co-operation is Essential.

Now, the next step is that the Farmers' Club as a unit should co-operate in every detail of their work, then the agricultural agent should co-operate with the Farmers' Clubs. You have got to get together. The farmer is going to know the condition and the problems of the county; the agricultural agent is going to know what should be done and able to suggest some of the matters of importance to that county, and getting these matters understood, there should be a good outline of work—campaign program, you might say—outlining every detail of the work which is expected to be accomplished. Ordinarily when we get this far our enthusiasm has been generated to such a pitch that we think we must have everything the first year.

Civilization does not move that fast; it has got to filter; it must go slowly and saturate a county and for that reason we can't shoot it into the county, and so the idea of a program which was suggested here this morning which takes up just one feature of the farm work, I believe will help in the solution of that problem. We expect to take up the study of soils in every feature; simply soils; maintaining of the soil; analysis of the soil; soil rotation—some of those problems which are vital to soils; then that soils produce the crop. Another year we will study the crop, then live stock and we can devote one year's campaign to improving the live stock conditions of the county. Now, if we started out on all this in one year, our energy would be so dissipated I am afraid, that by the end of the year we would have made little progress, but by outlining a four years' course we can get somewhere at the end of four years. Then we want someone who is interested in this work and wants to see it grow and give him power to put that work through. I think one of the undesirable conditions of county activity is, it is not understood who is the captain. If we get a captain of one idea to push that proposition through it is his work and his responsibility, and just in closing I want to say if we can discover the problems in order to remedy them, and put the right people at that work—and that brings in an idea that I hope to see discussed at some time, the selection of committees for county work, we are going to develop a county which is second to none.

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SOME ESSENTIALS OF GRANGE GROWTH.

(Continued from last week.)

But this is not all. There are many communities where no Granges exist. Here, too, the county agent forms clubs to assist in his work, and at any future time when an effort is made to place a Grange in one of these neighborhoods, it will be found harder to do so on account of the presence of another organization which, while it can not and will not do much of the important work of the Grange, is doing a special work which the Grange might have done equally well had it been awake to its privilege and its duty, but about which it was indifferent. And since this club is there, and the people of the community have not the time for both, the Grange will not be organized, or if it should be, it can not rise to the place it should occupy as a community center.

Twelve years ago the State Grange began an effort to breed corn, or possibly I should say to grow better corn. Varieties were chosen with reference to location, and small quantities of seed were sent out to each Grange just prior to planting time. It gives us pain to record that this great work, so filled with promise not only for our Order but for agriculture generally, was discontinued after a single experiment, on account of some unfortunate complications.

But though the State Grange made only this one effort at corn improvement, the results of it are apparent in many localities to this day.

Long ago the writer began advocating corn and potato clubs for the benefit of boys and girls in Grange communities. He was not alone in this, for here and there were public spirited men and women who saw an opportunity for our Order in this, then, new field. But those of us who saw were so nearly alone that practically no effort was made on the part of the Grange to further this work.

CLUB DISCUSSIONS.

Elect President for Fifteenth Year.—The annual meeting of the Wixom Farmers' Club was held at the K. O. T. M. Hall on January 10. Owing to the inclement weather the attendance was not as large as it usually is, this being the time for the election of officers for the ensuing year. The following were elected to fill the offices for the next year: Our Worthy President B. T. Nicholson, was re-elected for the fifteenth consecutive year; first vice-president, David Gage; second vice-president, James Bishop; secretary, Mrs. R. D. Stevens; treasurer, R. D. Stevens; organist, Mrs. E. Furman; corresponding secretary, M. Bogart. The treasurer's report showed the financial condition of the Club to be in a thriving condition, and prepared for a successful year's work ahead.—M. Bogart, Cor. Sec.

We were organized in every county in Michigan where corn or potato clubs were likely to be of service to the young people of the country. We might have led in this work. The Grange, the oldest, the solidest, the most influential of all farm organizations was the logical agency to be depended upon in this new field of service, but we did not heed the call, and so Sunday schools, day schools, Y. M. C. A. organizations, and county farmers' institute societies, have substituted in our place, and now the Department of Agriculture is doing much of the work at public expense. The Grange could not have organized all of these clubs for boys and girls, but we had a chance to lead in this work, and leading in it we should have found ourselves in possession of the key to many a community where now the Grange is not known. In a few counties Granges have gotten into this work, always to their good and to the advantage of the public, but they have done so because of local leadership. The State Grange has always favored these activities when it has given expression to any sentiment upon the subject, but we who have been responsible for its program have not been awake to our opportunity in this regard, and while we slept, others have taken our crown.

But what are we to do today? Is it too late for us to do the things we ought to have accomplished sooner? And are there still new activities that await our concerted and intelligent effort?

No, it is not too late. The call for assistance in the great task of agricultural betterment rings out as clearly today as ever.

Granges everywhere must heed this call and find its particular part of the of the work, and discovering its work, must go forward in a definite line of community service.

The Michigan State Grange must be ever behind the county agent in his many-sided program. Not all of these men are going to make good, we should be thankful if half of them make good. After all, it is not the particular man the Grange should support, though in every county the Grange should give encouragement and help to the person having this work in charge. But in a very special sense the Order should get behind the movement as a strong factor in the evolution of agriculture.

Every Grange ought to assist in the matter of Club work at each opportunity. Not only boys' and girls' clubs but alfalfa clubs. Experimental associations, stock breeders' associations, and anything and everything that will help to make the country a better place in which to live, should receive the hearty support of the Grange. Hundreds of Granges in Michigan today are languishing for want of some new inspiration. Ah, if they could but hear again the words of "The Great Teacher," "Say not ye, there are four months and then cometh the harvest. Behold, I say unto you, Lift up your eyes and look on the fields for they are white already for the harvest." Great, indeed, is our Grange field, and it is "White and ready for the harvest." Let the Granges of Michigan accept the whole splendid program of agricultural betterment as it is planned by the United States Department and the Michigan Agricultural College. Let us enter the field of co-operation with new courage and higher hopes, for now the government is assisting in the solution of the market problem, the greatest problem of the present day.

Let every Grange ascend to where it can get a larger view of Grange possibility, and then with a new and fuller vision, come down from the mountain with a determination to use its best efforts to make itself an indispensable factor in the community.

Oceana Co.

W. F. TAYLOR.

Saginaw

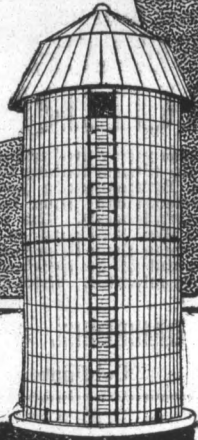
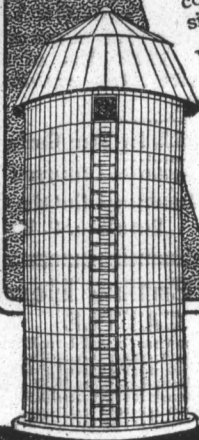
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E. A. Holden, President, in his address, pointed out that one third of the insurance of Michigan was carried in Mutual Companies and that there were about 400,000 policy holders; that the Mutual Companies, carrying one third of the business, were receiving in assessments each year about \$1,500,000; that the Stock Companies, carrying two thirds, were receiving about \$15,000,000. He advised all Mutual Companies to put themselves in order and conduct their business on a sound financial basis. In fact many Mutual Companies are following the advanced assessment plan, and the new laws and new insurance companies provide in their charter for an assessment to keep a surplus on hand. In this way when a loss comes, the Company is prepared to meet at once its claims.

Another topic of general interest was the delinquent assessments which was handled by Attorney Liebrand. It seems under State laws and Supreme Court decisions that when an assessment is made, it is the duty of all to pay. The farmers and business men are becoming educated along the Mutual line, and when an assessment is levied, it is generally paid promptly.

The Annual Meeting was well attended and a lively interest was shown in the good record of the Mutual Companies of the State.

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ABERDEEN-ANGUS

Bulls by BLACK QUALITY ITO, sire, First prize, Breeders and Calf Herds Mich. State Fair 1916. We also won first on Exhibitors Herd, Jr. Champion Bull, Jr. Champion Female and Grand Champion Cow. Also breeders of Percheron, Hackney and Saddle Horses. WOODCOTE STOCK FARM, IONIA, MICH.

Aberdeen Angus

Eight bulls from eight to ten months old. One show bull, eight yearling heifers bred. Our motto: size with quality, best of breeding. Prices reasonable. Inquire of F. J. WILBUR, CLIO, MICHIGAN.

3 Aberdeen Angus Bulls for sale, all good ones, 8 & 9 months old, also 2 cows. Wilson Bros., Lake Ann, Michigan

AYRSHIRES—One of the foremost dairy breeds. The most economical milk producers. Calves for sale. White Leghorn cockerels; Duroc Jersey swine. Michigan School for the Deaf, Flint, Michigan.

MILO D. CAMPBELL CHAS. J. ANGEVINE

BEACH FARM GUERNSEYS

Average yearly production 422.3 lbs. of fat, three fourths of them making their records as two year olds. By the use of a pure bred sire, a big improvement can soon be attained if the right selection is made. The breeding of the Beach Farm Herd is as good as can be found, and we guarantee them to be free from contagious diseases and to be satisfactory in every way or money refunded. Write and let us tell you about them.

CAMPBELL & ANGEVINE,

Coldwater, Michigan.

Guernsey Bulls of service age and calves from choice. Adv. reg. breeding. T. V. HICKS, Route 1, Battle Creek, Mich.

GUERNSEYS—REGISTERED BULL CALVES
Containing blood of world champions. HICKS' GUERNSEY FARM, Saginaw, W. S., Mich

For Sale: At farmers prices, registered Guernsey bulls old enough for service, from advanced registered cows. L. J. Byers, Coldwater, Mich.

FOR SALE Registered Guernsey bulls and and bull calves and Berkshire swine, the best breeding. John Ehls, R. 10, Holland, Mich.

FOR SALE: Registered Guernsey bulls involved in the administration of the affairs of the Holstein-Friesian Association are best comprehended by a consideration of the fact that, during the fiscal year ending April 30, 1916, \$158,994.50 was received by the secretary's office for the registration of pedigrees and for transfers. This volume of business required 46,700 entries in the cash books, and the issuance of 142,120 certificates, and this prodigious labor is demanded for the conduct of but one department of the greatest dairy cattle breeders' association in the world.

GUERNSEYS For Sale 3 May Rose mo., one 12 mo. and one 3 years old. 9 grade cows and 11 grade heifers from 6 to 20 mo. old. JAY D. RUSSELL, R. 1, Gobleville, Michigan.

BARGAINS! NOW!!

Registered young Holstein Bulls at nearly half price. 15 of my famous blood strain

Must be Sold at Once.

Some ready for service. All in perfect condition. Act quick and get first choice—wire or write for illustrated booklet.

LONG BEACH FARM

AUGUSTA, - - MICHIGAN

Do You Want A Bull?

Ready For Service.

From a grand daughter of The King of the Pontiacs. Sired by a bull that is more than a half brother to the Champion Holstein Cow of the World, and whose dam is a 30 lb. 6 1/4 % fat daughter of Pontiac Aggie Korndyke who has more 30 lb. daughters than any other living bull. If you do write for pedigree.

EDWIN S. LEWIS, Marshall, Mich.

Extra Good Registered Holstein Cows FOR SALE

From \$125.00 to \$200.00.

Send for list or look them over.

Bigelow's Holstein Farms, BREEDSVILLE, - - MICHIGAN

HOLSTEINS

Herd No. 1, Five cows, one two year old bull. Herd No. 2, Five yearling heifers, one yearling bull. Herd No. 3, Five Heifer calves and one bull. Bulls ready for service and 6 to eight months old bulls. Prices will please you. If interested, write as soon as you read this. L. E. CONNELL, Fayette, Ohio.

"TOP NOTCH" Holsteins

By careful retention, for many years, of largest producing females, and use of superior sires, a breeding herd of wonderful quality has been established. We are selling young bulls of this "TOP NOTCH" quality, of serviceable age, at moderate prices. Information, pedigrees, etc., on application. McPHERSON FARMS CO., Howell, Michigan.

CLOSING OUT SALE

OF THE

Dunkelberg Farm Guernseys

Wednesday, March 7, 1917

COMMENCING AT 10 O'CLOCK

Consisting of 50 head of Registered and 25 head of High Class Grades—Strong in the Glenwood and May Rose Blood Lines. Some very fine A. R. Cows with records of over 500 lbs. of Butter-fat. A number of especially good heifers sired by Glenwoods Champion No. 15639 and fine heifer calves by Roxies Glenwood of Broadhead No. 25288. The Sale will be held at Boch & Watson Sales Stable, 1001 Well Street, Fort Wayne, Ind. Col. D. L. Perry, Auctioneer. For Catalogue, address

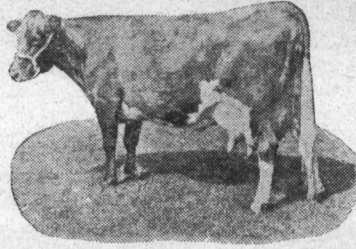
C. A. Dunkelberg, 2401 Fairfield Ave., Fort Wayne, Ind.

This Guernsey Grade Cow
produced yearly for five consecutive years an average of 11490 lbs. of milk and 604 lbs. of butter fat, equivalent to 705 lbs. of butter.

Buy a GUERNSEY BULL for Your Grade Herd

Write for our free booklets about GUERNSEYS

The American Guernsey Cattle Club
Box W. M. Peterboro, N. H.



Dispersion of Entire Herd HOLSTEIN CATTLE

On account of health conditions am forced to sell my entire herd of valuable Holstein cattle consisting of 20 lb. cows bred to our Junior sire a son of Friend Hengerveld De Kol Butter Boy, his dam 35.10 lbs. daughter of Pontiac Aggie Korndyke also the highest yearly record daughter. Come at once and get the first chance, prices right. Write for pedigree of Sire.

ORCHARD MEADOW FARM
W. A. Service, Prop. Perry, Michigan

Registered Holstein Friesian Heifers. 3 to 6 mos. old. Some from 30 lb. sires. Priced to sell. Fred J. Lange, Sebawaing, Mich.



Purebred Registered HOLSTEIN CATTLE

The scope of its labors and the numerous details involved in the administration of the affairs of the Holstein-Friesian Association are best comprehended by a consideration of the fact that, during the fiscal year ending April 30, 1916, \$158,994.50 was received by the secretary's office for the registration of pedigrees and for transfers. This volume of business required 46,700 entries in the cash books, and the issuance of 142,120 certificates, and this prodigious labor is demanded for the conduct of but one department of the greatest dairy cattle breeders' association in the world.

Send for FREE Illustrated Descriptive Booklets
The Holstein-Friesian Association of America.
P. L. Houghton, Sec'y., Box 164, Brattleboro, Vt.

Holstein Calves, 10 heifers, and 2 bulls 15-16ths pure. 15 weeks old, beautifully marked, \$20.00 each, crated for shipment anywhere. Edgewood Farm, Whitewater, Wis.

REG. HOLSTEINS: Herd headed by Albina Bonte Butter Boy No. 93124. Dam's record at 6 yrs. butter 28.53 lbs. milk 619.4. Yearly record at 2 1/2 yrs. butter 802 lbs. milk 18622 lbs. W. B. READER, Howell, Mich

Cluny Stock Farm
100 REGISTERED HOLSTEINS 100 Save Money! Buy Now!

THE MILK AND BUTTER KIND

Bull calves by a sire whose 3 nearest dams average: Milk, 7 d. 658.2 lbs., Butter 30.618 lbs. His dam's record 31.766 lbs. butter in 7 das. as Jr. 4 yr. old. State record for age when made. Make a saving on Price and Express charges, and raise one of his sons for your next herd sire. Prices and Pedigrees on application. R. B. McPHERSON, HOWELL, MICH.

Holstein Bulls

1 to 9 months old. Dam's A. R. O. Our herd sire is Johanna McKinley Segs 3 d. 7 nearest Dams average 27.26 BLISSVELDT FARMS, Jenison, Mich.

OAK LEAF FARM

Herd Sire

Ypsiland Sir Pietertje De Kol
I have several young bulls for sale, good individuals and the kind that is a credit to head any herd at farmers' prices. E. H. Gearhart & Son, Marcellus, Mich., R. No. 4.

Registered Holsteins. Young bull ready for service. 30 lb. breeding. Satisfaction guaranteed. W. B. Jones and J. F. Lutz, Cohoctah, Mich.

A 26 LB. JR. 4-YR.-OLD

A 20 lb. Sr. 2-yr.-old and a 15 lb. Jr. 2-yr.-old were among the records recently made in our herd. All cows in the herd have creditable A. R. O. records and are tuberculin tested.

PEACELAND STOCK FARM, Three Rivers, Mich.
Chas. Peters, Herdsman, C. L. Brody, Owner, Port Huron Mich

REG. Holsteins. Place your order now for a bull calf. I have cows due to freshen soon, bred to the best bull in Mich. Elmer E. Smith, Redford, Michigan

Holstein Bull calf nearly white. Sire: Colantha Johanna Creamelle Ltd. Dam: Serris Aggie Hengerveld De Kol. Write GEO. D. CLARKE, Vassar, Mich., for photo and price.

Registered Holsteins 2 yearling heifers same breeding as cattle I sold at Detroit sale at average of over \$900 each. Also 2 or 3 young A. R. O. cows of same breeding. Write or come and see them. Hobart W. Fay, Mason, Mich.

\$200 Buys Reg. Holstein heifer 1 1/2 yr. old fresh next summer and Reg. bull 14 mo. old, notakin both evenly marked. B. B. REAVEY, Akron, Michigan

Reg. Holstein Bull calves. Michigan Champions 1916. Male and female. World's record breeding at Farmers' price. John A. Rinke, Warren, Mich.

Reg. Holstein Bull Calf. 4 1/2 white, a beauty, 5 weeks old, \$50 Reg. & Del. anywhere in state. A. R. O. dam. J. R. Hicks, St. Johns, Mich.

For Sale Registered Holstein cow. 8 years old, large, sure breeder, persistent milk. 2 A. R. O. sisters. C. L. Hulet & Son, Okemos, Mich.

HEREFORDS

Both sexes and all ages for sale, our herd comprises about 100 head representing the blood of such sires as Prime Lad 9th, Perfection Fairfax, Bonnie Brae 3d and Dale. Write us your wants.

ALLEN BROS., PAW PAW, MICH.

20 Herefords BOTH SEXES ALL AGES
EARL C. McCARTY, Bad Axe, Michigan

The All-Around Jersey

is the farmer's cow. She's his friend and pride—the beautiful, gentle, ever-paying milk machine that lifts the mortgage, builds up the fertility of the farm, and puts the whole business on a sound, paying, permanent basis. She adapts herself to all climates and all feeds and does not need fancy care. She matures early and lives long. And she's so sleek, clean cut and handsome, as to be the family pet and pride. She produces well and sells well. Learn about her in our fine, free book, "About Jersey Cattle." Write for it now.

THE AMERICAN JERSEY CATTLE CLUB
346 West 23d St., N.Y. City

Maple Lane R. of M. Jersey herd offers for sale tuberculin tested cows, bulls, bull calves and heifer calves, carrying the best R. of M. blood of the breed. IRVIN FOX, Allegan, Mich.

Maple Hill Farm Registered Jersey Cattle for Sale
Both sexes. The kind that pay at the pail. J. R. Worthington, R. No. 7, Lansing, Michigan

Jersey Bulls for sale, ready for service. Out of good producing dams. Prices right. R. B. FOWLER, Hartford, Mich.

The Wildwood Farm

Jersey Cattle, Majesty Blood. We have Bulls for sale from Register of Merit cows of good type. Write your wants. Alvin Balden, Capac, Michigan.

Jersey Bulls for Sale from high-producing dams, with testing Asso. records, also on semi-official test. C. B. Wehner, R. 6, Allegan, Mich

JERSEYS FOR SALE Young bulls ready for service from R. of M. ancestors. Meadowland Farm, Waterman & Waterman, Packard Road, Ann Arbor, Mich.

FOR SALE REGISTERED JERSEY BULLS

Ready for service. Write your wants. SMITH & PARKER, R. D. No. 4, Howell, Michigan

Hillside Farm Jerseys For sale, seven mos. old bull calf, fine, large, individual whose combined butter production of four nearest dams is 2878 lbs. butter. C. & O. Deake, Ypsilanti, Mich.

Lillie Farmstead Jersey Cattle. Bull calves from R. of M. Cows, also heifer calves and several bred heifers for sale. Colon C. Lillie, Cooperaville, Mich

Shorthorn Cattle of both Sex for Sale
W. W. KNAPP, Howell, Michigan.

Francisco Farm Shorthorns and Large Type Poland Chinas

We offer bulls & boars ready for service: Bred sows & gifts & young cows. P. P. POPE, R. R. 3, Mt. Pleasant, Mich.

Veterinary

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

Indigestion.—About a year ago you prescribed treatment for my six-year-old mare that had eczema; she seemed to recover, but has never thrived real well since. She has worked fairly well, but is inclined to grow thin and is not now thriving. She is inclined to shake her head and frequently opens and closes her mouth. D. A., Montague, Mich.—Give her a dessertspoonful of Fowler's solution and 1 dr. of fluid extract of nux vomica at a dose in feed three times a day for ten days, then increase the dose of Fowler's solution a teaspoonful for two more weeks, then another teaspoonful to make it a tablespoonful at a dose three times a day. But, remember, 1 dr. is a full dose of the fluid extract of nux vomica and should not be increased.

Bog Spavin.—I have a five-year-old mare that has bog spavin; would like to know how to treat her. She is some lame. A. S., Hilliards, Mich.—Clip hair off hock and apply one part powdered cantharides and four parts lard every two weeks.

Out of Condition—Barrenness.—I have a large gray mare ten years old that is somewhat stiff, when first taken out of stable, but with exercise this soreness appears to leave her. Last year she had a colt which only lived a day, since then she has failed to breed. H. H., Conklin, Mich.—Give your mare a teaspoonful of salicylic acid, a tablespoonful of ground gentian and a tablespoonful of ground red cinchona at a dose in feed three times a day. Perhaps you are not feeding her enough grain. Your mare will perhaps get with foal next spring.

Enlarged Gland—Roarer.—We have a horse that has enlarged glands in throat, which we believe causes him to blow and rattle in throat or head when trotting. Is this ailment catching? C. R. K., Mancelona, Mich.—Apply equal parts tincture iodine and spirits of camphor to bunches in his throat once a day. No, this ailment is not infectious nor contagious.

Bunch on Jaw.—For the past three weeks our two-year-old colt has had a bunch on lower jaw. We would like very much to know how the swelling can be reduced. R. K., Conklin, Mich.—Apply one part iodine and nine parts fresh lard to bunch every day or two and it will perhaps reduce it.

Chronic Cough.—Ever since last fall my cows have been coughing and whatever it is, it seems to be spreading. I hear them coughing considerable in the morning before feeding, but they cough less during the day. My barn is well ventilated and has lots of light. L. C. S., Holly, Mich.—Apply equal parts turpentine, aqua ammonia and olive oil to throat three times a week. Give each cow that coughs 1 oz. doses of glyco heroin, (Smith), in feed or drinking water three times a day. It should be kept in mind that a cough is not a disease, but only a symptom; therefore, if the cause can be ascertained and removed, the cough ceases.

Barren Cow.—I have a cow that comes in heat but she fails to get with calf. This is a good cow, but I dislike to part with her if there is a remedy that I can give her which will make a regular breeder of her. Mrs. E. R. W. A., Marion, Mich.—Dissolve 2 ozs. of bicarbonate soda in three pints of clean tepid water and wash out the vagina as soon as she comes in heat and breed her before she gets over heat period. I am inclined to believe that a cow of this kind will prove unprofitable for dairy purposes.

Eczema.—I have a cow that itches and on account of it she rubs the hair off neck and rump. J. C. L., Potterville, Mich.—Groom your cow once a day and apply one part coal tar disinfectant and 30 parts water once a day. Give her a tablespoonful of cooking soda in each feed.

Itch—Lice.—I wish you would tell me what to do for a young cow that appears to be healthy, but is thin; her hair is coming out on spots all over her body and neck and I have been unable to find lice on her. L. F. G., Gd. Haven, Mich.—Wet itchy parts of body one part bichloride of mercury and 500 parts water once a day. If you believe that they have lice, apply a small quantity of mercurial ointment to fore and upper part of neck and rump twice a week. Give her 1 oz. of cooking soda, 1/2 oz. ground cinchona and 1 oz. of ground gentian at a dose in feed two or three times a day. Itchy cattle should be groomed once or twice a day, for they may scratch on account of their coat being filled with fine dirt.

LIVE STOCK NEWS.

Andy Origer, of Illinois, was in Chicago recently with a carload of cattle which averaged in weight 1267 lbs. and found a ready sale at \$10.70 per 100 lbs. He bought the cattle in the Chicago stock yards on the 24th day of last October, and they made gains of two and three-quarters pounds per head a day.

Provisions were affected seriously by the recent action of the German government in regard to submarine warfare, prospects of seriously cutting down our exports causing a sudden big fall in prices for pork and other lines.

With a shipment of hogs to the Chicago market a short time ago made by Charles Dieterle, of Illinois, were two ewes which weighed 500 pounds and brought \$10.25 per 100 pounds, the pair grossing \$51.25.

Recent transactions in the Chicago market in sheep, yearlings and lambs, including feeding and shearing lambs, showed higher prices than ever before in the history of the trade, with demand far greater than the supply.

The course of the hog market this winter has been unusually encouraging to stockmen who are so fortunate as to be the owners of thrifty pigs and growing youngsters. Corn held around \$1 a bushel in feeding districts may look high to owners of hogs, and this is responsible for the premature marketing of great numbers; yet corn at that price is made to bring good returns when fed this winter to healthy hogs. And yet recent receipts of hogs in the Chicago market have averaged in weight only 197 lbs., comparing with 201 lbs. one week earlier, 200 lbs. one year ago, 223 lbs. two years ago and 219 lbs. three years ago. Naturally, with such a showing, the packers and smaller city butchers are ready to pay a premium for hogs carrying plenty of weight, and they are selling still at a good premium, although their advance over prices for prime light weights is smaller than a few weeks ago. The importance of the eastern shipping demand is extremely great in putting the hog market on a higher level of prices, as is shown by the recent movement. During a late week the Chicago market received 230,000 hogs and shipped out 83,900 hogs; whereas a year ago the week's receipts aggregated 278,117 hogs and the shipments but 42,317 hogs. The point of quality the receipts are very satisfactory, and the bulk of the offerings sell daily within a narrow range of prices. Provisions are following the same course as hogs, and within a short time pork for May delivery has sold for \$30 a barrel, or \$9 higher than a year ago, with similar advances recorded in short ribs and lard. Domestic consumption of fresh and cured hog products is as large as ever, and liberal exports are going forward.

The wool trade has slowed up recently. Commission firms handling that staple extensively state that contracting, which was active several weeks ago, has nearly ceased. Never in the past have conditions governing the cattle industry been more favorable for stockmen than they are at the present time, the general employment of labor at the highest scale of wages ever paid and the large export orders for canned beef and other cheap beef acting as a powerful stimulus in the demand for cattle in the Chicago stock yards. In numbers the receipts of cattle in the Chicago market are going well ahead of last year, but a marked falling off is shown in both quality and weight, this being attributable to the fact that the unusual dearthness of corn is causing stock feeders to ship early. Short-feeding is well high universal at the present time, and the small percentage of choice, heavy, long-fed beefs causes them to sell at a liberal premium over prices paid for merely good cattle. Still, there is a remarkably high market for all descriptions of cattle, prices being far higher than in former winters, and the general quotations are the highest ever paid if the show cattle sold during the International Live Stock Exposition are excepted. The best heavy steers have been selling around \$12 per 100 lbs., and even canner and cutter cows have reached far higher prices than ever before, the packers having received big orders for canned meats from the allied powers of Europe. Dollar corn forces cattle-men to see that maximum daily gains in weight in the feed yards are maintained, and this leads to their roughing many cattle through the winter. The packers have continued to compete with country buyers for the better class of fleshy feeders weighing 900 lbs. and upwards, and this cuts sharply into the future marketing of choice heavy cattle. Stockers and feeders are selling at much higher prices than early in the winter, and as spring draws near further advances may be expected.

Feb. 23 6th Public Sale of Duroc Jerseys AT Brookwater Farm, Ann Arbor, Mich. Feb. 23

50 Bred Sows and Gilts to farrow in March, April and May

This offering mostly sired by or bred to the following great prize winning boars: Panama Special, Brookwater Cherry King and The Principal 4th. All tested sires—All prize winners at State Fairs. All bred in the purple. Brookwater won grand champion boar and sow at the Mich. State Fair 1915 and again 1916. Won first prize under 6 mo. s. litter four consecutive years. To breed the best and be assured that the type and blood lines are correct buy at Brookwater. Send for catalog giving full particulars and remember the date Feb. 23rd.

Feb. 23 Brookwater Farm, Ann Arbor, Mich. Feb. 23

Herbert W. Mumford, Owner O. F. Foster, Manager

CATTLE

Bidwell Shorthorns

"For Beef and Milk"

This heifer at 6 months has bone, size and quality—our own breeding. The blood of Scotch bulls, Imp. Shenstone Albino and Imp. Villager Registered stock always for sale.

BIDWELL STOCK FARM, Box B, Tecumseh, Michigan.

Bates Shorthorns the original milk strain, 2 bulls and heifers for sale. 8 to 10 mo. old. J. E. HUMMEL, MASON, MICHIGAN.

Milking Shorthorns. Bulls Ready for Service. DAVIDSON & HALL, TECUMSEH, MICHIGAN.

Shorthorns—Dairy or beef bred. Breeding stock all ages for sale at farmers prices. C. W. Cram. Secy. Cent. Mich. Shorthorn Breeders' Assn. McBride, Mich.

Two Shorthorn Bulls for sale. 9 and 10 months old. Price right. For particulars address J. E. Tanswell, Mason, Michigan.

SHORTHORNS FOR SALE 8 Bulls, also females. W. B. McQuillan, Howell, Mich.

Shorthorns For Sale. Young bulls \$100. Bred cows, and heifers \$150 for quick sale. Write W. J. BELL, ROSE CITY, MICHIGAN.

FOR Sale—Reg. Short Horn Bulls by Maxwellton F. Monarch 2nd, a son of Avondale, from 11 to 13 mos. old. John Schmidt, Reed City, R. No. 5, Michigan

Cattle For Sale

2 Loads feeders and two loads yearling steers. Also can show you any number 1, 2 and 3 years old from 600 to 1200 lbs. Isaac Shanstun, Fairfield, Iowa, R-8.

HAVING sold my farm, will sell 5 head of registered Brown Swiss cattle, 2 cows, 2 heifers, 1 young bull at a bargain. Walter Frederick, R. 10, St. Johns, Mich.

HOGS.

Durocs and Victorias

Heavy bone, lengthy Spring Boars and Gilts from prize winners sired by one of the best Sons of the Great Defender & other noted strains. M. T. STORY, Lowell, Mich.

Swigartdale Farm Berkshires

Home of the greatest show herd in the State. Stock of all ages and both sex for sale, including some of the winners at the State Fair, write us for particulars and let us tell you about them and our

HOLSTEIN BULLS

some of them old enough for service, sired by "Maplecrest Korndyke Hengerveld" (the Bull with the best yearly record backing of any sire in the world) and "G. & B. Segis Ulrica Pledge 108790," all from A. R. O. Dams with good records and the best of breeding, one very fine Grandson of the

FIFTY THOUSAND DOLLAR BULL out of a 27.39-lb. dam, all stock guaranteed to be just as represented and a credit of six months will be given to responsible parties.

SWIGARTDALE FARM, Petersburg, Mich.

BERKSHIRES: Gilts and mature sows that will farrow in April and May. Mammoth Toulouse Geese. Pekin Ducks \$2 each. Chase Stock Farm, R. 1, Marlette, Mich.

Berkshires, Boars, serviceable age, best blood lines. Registered. ELMHURST STOCK FARM, Almont, Mich.

J. W. KEENEY, Erie, Mich. Gilts bred for April farrow. D. M. & T. local from Monroe or Toledo, Keeney Stop.

Duroc Jerseys 30 bred gilts for sale priced to sell. Hastings, Mich.

DUROC Sows, Spring gilts, Aug. Boar Pigs, Sept. Pigs either sex. Percheron Stud Colt six months old. E. J. Aldrich, Tekonsha, Mich.

Duroc Jerseys Gilts and tried yearling Orion Cherry King the Premier Champion of the breed also fall pigs. F. J. DRODT, R. 1, Monroe, Michigan

Duroc Sows 26 beauties bred to grand big boars at Auction Feb. 12th. Some splendid fall boars. Orlo L. Dobson, Quincy, Michigan.

HIGH CLASS FALL BOARS

registered. Will mature into big type hogs. \$20 to \$40. NEWTON BARNHART, ST. JOHNS, MICH.

FOR SALE BIG TYPE DUROC

Boars and sows of Sept. farrow. Also sows bred for April. Wm. F. Grettenberger & Bros. Okemos, Mich.

Durocs, pigs of Sept. farrow. (Dams) by Joe Orion 2nd. Defender C. Superba, Highland King (Sires) Superba King and Hoosier J. O. C. Either sex. H. G. Keeler, Cassopolis, Mich.

Duroc Jersey Gilts We have a choice lot of good rugged heavy boned Gilts, registered. All bred to our Herd Boar, Jennings Pilot Wounder No. 7373. Bred for Apr. and May farrow. Send for pedigree. Prices reasonable. THE JENNINGS FARMS, R. F. D. 1, Bailey, Mich.

Duroc Sows and gilts bred to Eureka Cherry King and Crimson Critic son of Critic Model 1916 champion Iowa Fair. W. C. Taylor, Milan, Mich.

FOR SALE: Duroc Jersey swine, choice breeding good quality (either sex), S. C. W. Leghorn cockerels \$1.50-\$3. Buff Rock cockerels \$2-\$3. John McNicoll, Station A, R. 4, Bay City, Mich.

Duroc Jerseys—Boars and Gilts all sold. Some good fall pigs for sale. Grass Lake, Michigan.

Duroc Sows and gilts bred for Mar. & Apr. farrow. King The Col. Defender and Oakland Fancy families. E. D. Heydenberk, Bell Phone, Wayland, Mich.

CHESTER WHITES Gilts bred to farrow in Feb. or March. Fall pigs, either sex. F. W. ALEXANDER, Vassar, Mich.

Parhams' Pedigree Stock Farm offers: Reg. C. W. Boars, Bred Gilts, Fall Pigs, Reg. A. R. O. Holstein Cows, Male Calves. Show Bull ready for service, price \$125. R. B. Parham, Bronson, Mich.

Raise Chester Whites

Like This

the original big producers

I HAVE started thousands of breeders on the road to success. I can help you. I want to place one hog from my great herd in every community where I am not already represented by these fine early developers—ready for market at six months old. Write for my plan—More Money from Hogs. G. S. BENJAMIN, R. F. D. 10, Portland, Michigan

CHOICE BRED GILTS Bred to Big Prince 5902, sired by Wildwood Prince 1110 lb. 3 yr. Grand Champion at Iowa, sold for \$750. Ship C. O. D. —J. Carl Jewett, Mason, Mich.

O. I. C. and Chester White Swine, all ages. A few service Boars and open gilts, 400 fall pigs either sex, sired by Crandells Wonder, Grand Champion at Ohio State Fair, Schoolmaster the champion of champions and highest prize boar of the breed and others. Get a sow bred to Galloway Edd Grand Champion Mo. State fair, we are looking for one. We had the undefeated breeders age herd at six state fairs. Get our catalogue, buy the best it pays, we have them. We ship on approval. Rolling View Stock Farm, Cass City, Mich. R. 2

O. I. C. Serviceable Boars, Gilts bred for March and April farrow. Prices reasonable. H. W. MANN, Dansville, Mich.

O. I. C. & Chester White Swine

Strictly Big Type. Five gilts bred for Apr. & May farrow. Bred to as good boars as there are in the breed. Have a fine lot of fall pigs, that I can furnish, in pairs not akin. Newman's Stock Farm, Marlette, Mich. R. 1.

O. I. C. Serviceable boars. Yearling sows and gilts bred for Mar. farrow. Summer and fall pigs. G. P. Andrews, Dansville, Michigan.

O. I. C. Year-old boar 2nd prize winner at Grand Rapids fair also spring gilts and boars ready for service. A. J. Barker, Belmont, Mich. R. R. 1.

FOR SALE. Thoroughbred O. I. C. Swine, sows bred, gilts and boars. O. D. Somerville, Grass Lake, Mich. R. 2.

O. I. C's. 25 choice Gilts bred to Son of Schoolmaster to farrow in Mar., also fall pigs. Clover Leaf Stock Farm, Monroe, Mich., R. 1.

O. I. C. Choice bred gilts for Apr. & May farrow. Serviceable boars, fall pigs. Out of prize winning stock. Write for low prices. A. V. Hatt, Grass Lake, Mich.

O. I. C's. Am offering two extra good boars and a few bred gilts. C. J. THOMPSON, Rockford, Michigan

O. I. C's. One extra good big last Sept. yearling sow bred for spring farrow, last spring sows bred and some extra good last fall pigs, also service boars. ½ mile west of depot, Otto B. Schulze, Nashville, Mich.

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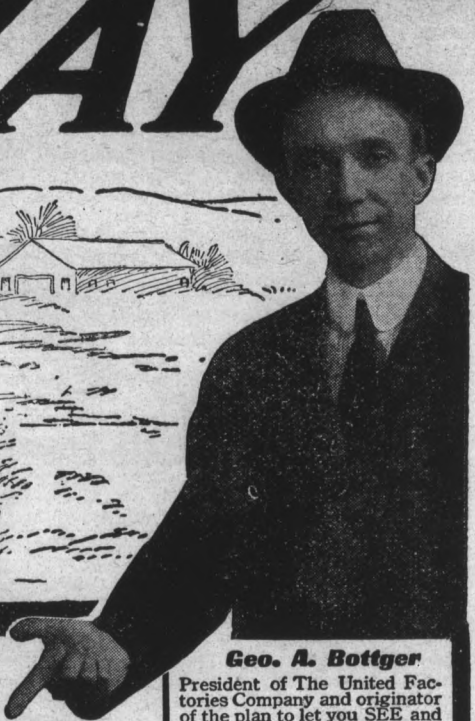
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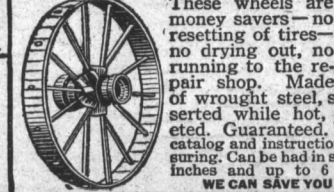
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