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Bore Hole About 30 In. from Ground.

EARLY sugar makers used very crude utensils and methods and made as a rule, correspondingly inferior products as compared with the high-class goods of the present day. The modern sugar maker recognizes that sap, like milk, is a very perishable product, being an excellent medium for the development of fermentive organisms. To make a good sugar or syrup it is necessary, therefore, to have an equipment which will allow for the least possible contamination of the product in all stages of manufacture.

The sugar house of a modern plant is not only for making and putting up the products but also for storing buckets, pails, spouts, covers, and other equipment from one season to the next. The best sugar house I know of will take care of about one thousand trees. It is forty-two feet long and thirty feet wide. The walls are built of house siding and painted; the floor is of cement and ceiling of shingled wood. It has a lean-to twelve feet wide on the east side for storing wood and a small compartment at the north end for protecting the storage tank. It is built on sloping ground so that the gathering tank empties by gravitation into the storage tank and from there into the evaporator. Where the location is level, or nearly so, it is the usual custom to build an elevation on which the hauling shed may rest while the collected sap is flowing out to the sap holder. Other sugar houses have metal roofs but these are apt to drip during boiling which is not only unpleasant for the workers but tends to color the sap in the evaporator. On this account a shingled roof is preferred. It is well to have the walls fairly tight and ventilators of large capacity, the full size of the evaporator, to allow the steam to escape freely.

It has been a long stride from the iron kettle, used in sugar-making by our grandfathers, to the modern evaporator that is necessary for the making of a high-priced product. In pioneer days the saving of fuel was not to be considered nor was quality of product a live issue.

An advance on the old kettle was the flat-bottomed sheet iron pan, built

Maple Sweets

Some Things that Michigan Maple Syrup Makers Should Understand if They Expect to Hold the Best Markets.---Earle W. Gage

over a brick or stone fireplace. The modern evaporator is designed for rapid evaporation and economy of fuel. There are several makes in use but all are similar in principle. It consists of a heavily tinned pan strongly made set on an arch which usually has a regular stove front with large doors for firing.

The evaporator is the one important item in making high-class maple products. When purchasing a new outfit it is important to provide for expansion of the plant and the taking care of heavy runs on the same bush. An experienced maker says that he believes in providing ten square feet of boiling surface for every one hundred trees tapped.

Making Maple Sweets.

At the beginning of the season all the sugar utensils should be cleaned even though they were well washed, dried and stacked away at the close of the season before for the dust which collects during the year would damage the first run of sap considerably. Utensils that have become rusty should be

discarded or painted. If painted on the inside they should not be used before the following season because freshly painted buckets have a strong tendency to taint the sap.

Having distributed the buckets and spouts the tapping is begun. As a general rule a tree should not be tapped but at one point, though larger trees may carry two or three buckets. The best tools for tapping are the three-eighths, seven-sixteenths, or half-inch bits. The hole should be bored in a slightly upward direction about one and a half inches deep in a medium-sized tree to two inches in a large tree. The point of tapping should be about thirty inches from the ground where the bark has a healthy look, and some distance from an old hole. Only the rough loose bits of bark should be removed from about the hole. The hole should be clean cut so as not to bruise the wood or bark. All chips and bark should be carefully removed from the hole before inserting the spout.

Good tin buckets, well cared for,



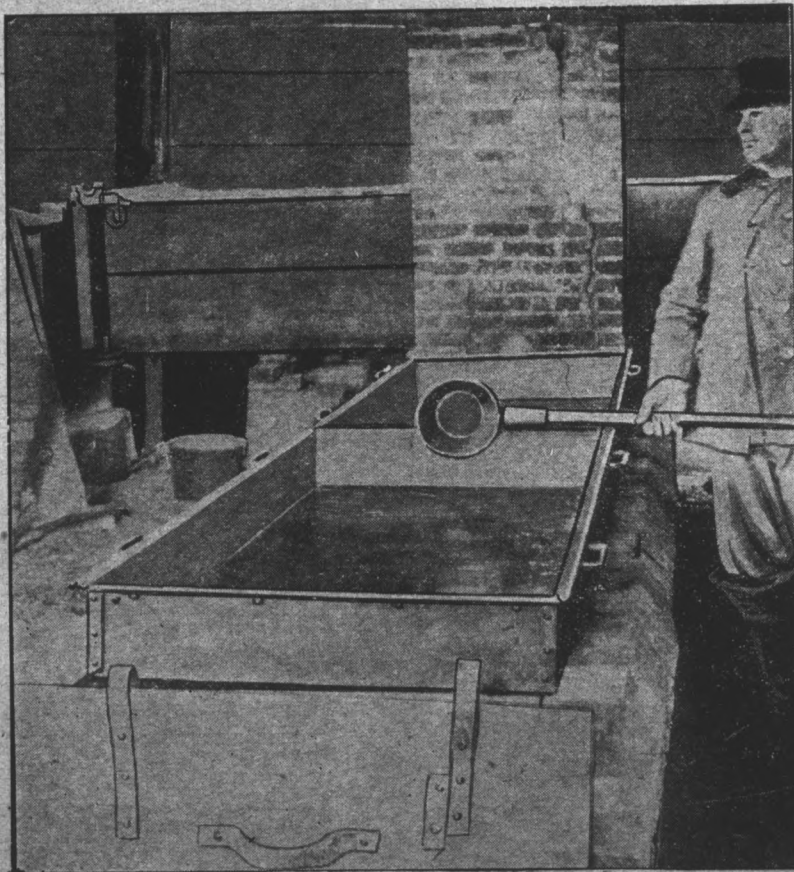
Too Many Buckets for the Tree.

are the best for use where it is the aim to make the best quality of syrup or sugar. These should be painted on the outside, to prevent rusting, and will last, with good care, several years. Many makers have not yet learned the value of covers. In one community this cover lesson was brought home forcibly a few years ago. A man with one thousand trees was able to make more than six hundred pounds of sugar during a heavy rain, while his neighbor was obliged to throw the watery sap away. The profit from the six hundred pounds of sugar was more than sufficient to pay for the one thousand covers.

As the season advances and the days become warmer, fermentation is sure to take place in the vessels, causing the sap to sour and slime to accumulate about the spouts, buckets, pails and tanks. To continue making a fine product it is necessary to draw down the spouts and ream out the holes so as to expose a fresh surface of wood. Some recommend boring a new hole a few inches from the old one and claim to get better results. At this stage all utensils should be scalded or washed with hot water. By carrying out these precautionary measures the season may be prolonged without the risk of making "buddy" products.

The Vermont station recently made a study of the influence of micro-organisms in spoiling sap. They conclude that although there is really such a thing as "buddy sap," that is to say, sap the flavor of which has been injured by the physiological changes occurring in the tree as it resumes its summer activity, yet most of what is called "buddy sap" is really sap spoiled by micro-organisms, which find conditions particularly favorable to their growth during warm weather toward the end of the sugar season. The sooner the sap is turned into syrup or sugar the better will be the product. Sap deteriorates very quickly after it leaves the tree.

The tank for hauling the sap should be mounted on a wooden sled. A rectangular hauling tank is not recommended. (Continued on page 9.)



Interior of a Well-equipped Sugar House.

The Michigan Farmer

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DETROIT, FEBRUARY 22, 1919.



CURRENT COMMENT

A League of Nations

PRESIDENT WILSON'S mission in Europe has apparently been a success, so far as the reaching of an agreement by the peace conference on a working basis for a League of Nations is concerned. As chairman of the peace conference commission on a League of Nations, President Wilson presented the report of the commission to the conference in the form of a covenant or constitution of the League of Nations, consisting of twenty-six articles, which had received the unanimous approval of the commission, composed of representatives of fourteen nations who may be considered as fairly voicing the varied national interests brought together in the conference. Besides representatives of the United States, Great Britain, France, Italy and Japan, the committee was made up of representatives of Belgium, Serbia, China, Greece, Rumania, Czecho-Slovakia, Poland, Brazil and Portugal, making it fairly representative of the nations of the world participating in the peace conference.

The covenant agreed upon by this committee is a comparatively simple working basis, providing for a permanent secretariat and an executive committee of nine members, composed of representatives of the five greater powers, the United States, Great Britain, France, Italy and Japan, with four other members to be chosen by the body of delegates of which the league is composed. This body of delegates is to be made up of not more than three representatives of each nation, no member nation to have more than one vote in the league, membership to be limited to self-governing nations. The principal features of this covenant are simply stated in the insert on this page.

Plenty of time will be afforded for the discussion of this covenant before its final submission for ratification in connection with the peace treaty which will doubtless be agreed upon as soon as the vexed questions confronting the conference can be settled. In the meantime President Wilson has requested congress to delay discussion

of the question until he can have opportunity to explain the various provisions of the covenant and the reasons back of them.

While the provisions of the covenant are simple and intelligible to the layman, apparently providing a practical working basis for a useful league of democratic nations, the merits of the plan can perhaps be best judged by those who are well versed in international law as well as the fundamental law of the principal signatory nations. Prominent among men of this class is Ex-President Taft, at present touring the country in the interest of the establishment of a League of Nations, who is quoted as expressing strong approval of the plan, which, while not all that he had wished, is a great deal better than he hoped for and "contains within its terms provisions for its own growth." Prof. Reeves, of the University of Michigan, a recognized authority on international law, has strongly approved of the covenant, declaring it "a Monroe Doctrine of the world." The covenant as submitted is also apparently in accord with the views of Congressman Temple, of Pennsylvania, also a prominent authority on international law, as recently expressed in an address on "The League of Nations," before the Oakland County Lincoln Club, that a simple working plan capable of development to meet future needs was the ideal arrangement.

By the best critics this covenant is viewed as a compromise of the views held by the nations represented at the Peace Conference, and as such probably safer and more workable than the more extreme proposals of individual nations participating in the conference. That it received the unanimous approval of the committee which adopted it augurs well for its adoption without radical changes after full discussion in the many countries participating in the conference.

In such discussions it will be well for all to remember that the principles involved are in no sense partisan questions or issues, to the end that discussion and criticism of the plan may be constructive and contributory to the development of sound public opinion, rather than destructive as appealing to partisan prejudice. The covenant as framed is the result of the strong sentiment among the common people of the nations of the world for some means to better insure the future peace of the world, rather than the views of the political leaders of the belligerent countries, which sentiment is reasonably certain to prevail regardless of political propaganda in any of the signatory nations.

Freight Rates and Good Roads

THE effect of increased freight rates on the cost of road building is a good example of increased transportation costs on every industry. At a hearing before the central railroad traffic committee recently held in Chicago, Engineer Bateman of the Michigan Highway Department, presented figures showing the increase in the cost of road building caused by the increase in freight rates on gravel and cement which was made effective last June. These figures showed the cost of one stretch of gravel road under construction to have been increased from \$18,720 per mile to \$26,520 per mile, while under the proposed further advance in rates the cost of road building under similar circumstances would be increased to \$41,000 per mile, or more than double the cost previous to the advance in rates made last year. Similarly the cost of the eighteen-foot concrete Dixie Highway was increased by last year's advance in freight rates on gravel and cement from \$24,000 per mile to \$32,000 per mile, and under the further proposed advance the cost under similar circumstances would be increased to \$52,000 per mile. At the same hearing the road commissioners showed that the proposed increase would increase the cost of the highways designated for improvement in the county this year by approximately \$100,000, or nearly one-seventh of the federal aid which will be given for road improvement in the entire state during the year.

Fortunately the representations made to the effect that the proposed further increase of freight rates on road materials would practically halt road improvement, together with other influences, including the Federal Department of Labor, has induced the railroad administration to abandon the proposed increase in rates on these materials, unless a further general increase in rates becomes necessary. But this example of the effect of transportation rates on road building will serve to emphasize the economic importance of the pending railroad problem.

Cooperative Live Stock Marketing

NO other line of cooperative farm effort has met with such uniform success as the cooperative live stock shipping associations. In another column of this issue will be found a report of a year's business of one of these associations which has been in successful operation

for three years. The secretary of this association advises us that the work rates on the cost of the association requires about two days of his time each week. In addition to this he lists the stock to be shipped as telephone notices are received from time to time during the week.

The great economy of this method of live stock marketing is illustrated by the fact that the secretary, devoting less than one-half of his time to the work, gives the members of the association a service to which five live stock shippers formerly devoted their entire time, and from which they obviously had to get sufficient profit to pay for their time in giving a shipping service. The secretary of the association says that the net return to the seller will average at least twenty-five cents per hundred pounds more than under the old plan. Aside from that, he is relieved of the necessity of driving a good bargain with a sharp live stock buyer who is always on the lookout for easy money. The member's live stock is delivered at the shipping points with the full assurance that he will receive the fair market price for the animals delivered less the actual cost of transportation and minimum handling charges. So great has been the success of these organizations that they are being rapidly organized in all sections of the state, with the prospect that the great bulk of the live stock of Michigan will be handled through these shipping associations.

Some of these associations are purchasing feeds and other supplies in a cooperative way and will undoubtedly prove to be the nucleus for much more comprehensive cooperative efforts in their community. There is no better place to start in the cooperative marketing business than by the organization of a live stock shipping association in the average Michigan community.

National Federation of Farm Bureaus

A MEETING of the delegates of State Federation of Farm Bureau Associations to consider the organization of a national federation was held at Cornell University, Ithaca, New York, on February 12. Michigan was represented at this convention by R. G. Potts, of Washington, Macomb county, first vice-president of the Michigan Farm Bureau; Dr. Eben Mumford, Director of Extension Work of the M. A. C., and C. A. Bingham, Birmingham, acting secretary of the Michigan Farm Bureau.

S. L. Strivings, President of the New York Federation, called the meeting to order. In his address of welcome he emphasized the present need of an organization which will sound the true voice of agriculture. Such an organization must bring together the strongest agricultural leaders from every state. Vice-President Farley of the New York Federation, was then called to preside over the session.

Delegates were present from the following twelve states: Delaware, Illinois, Iowa, Massachusetts, Michigan, Missouri, New Hampshire, New York, Ohio, Pennsylvania, Vermont and West Virginia.

Mr. C. B. Smith of the States Relation Service, United States Department of Agriculture, addressed the convention in part as follows: "Six years ago a meeting of this kind would have been impossible. No one would have given thought to such a proposition. The farm bureau movement should be nationwide, but strong county organizations are the first essential. The county farm bureaus should be as permanent as is our school system. They should be kept free from politics and should reach all of the people in every agricultural county of the country."

(Continued on page 311).

Principal Features of World Covenant

- Membership in the League limited to self governing nations.
- Each member nation entitled to three representatives, but only one vote.
- The President of the United States to call the first meeting of the League.
- A permanent secretariat to be maintained at the seat of the League.
- Affairs of the League to be directed by an executive council of nine representatives, one each from the United States, Great Britain, France, Italy and Japan, and four from other nations to be selected by the body of delegates.
- Publication of all future treaties and abrogation of secret treaties inconsistent with the terms of the covenant.
- Establishment of an international court of justice and arbitration for the settlement of international disputes, arbitrated disputes to be decided within six months.
- War not to be resorted to without submission of disputes to arbitration, nor for three months after an arbitration award, and in no case against a member of the League which complies with such arbitration award.
- Provision for trade blockades against any nation defying council.
- Provisions for a permanent labor bureau and a permanent military and naval commission.
- Territorial guarantees and guarantees of freedom of transit to all member nations.
- General supervision by the League of the trade in arms and ammunition.



Leasing Live Stock on Shares

By Frank H. Williams

IT was in 1904 that I purchased my first Holstein. I had visited the Agricultural College and looking over those fine specimens of pure-bred stock then decided that I wanted one cow to start my herd. I paid the enormous price, at least it seemed so to me, of \$125, and when she was shipped to Allegan I took her up the back streets in the dark for fear of the criticism of my neighbors. When my farmer friends found I had paid \$125 for one cow, the almost unanimous verdict of the street was that I should be sent to the asylum. In fact, so much was said that I was almost convinced of the truth of my neighbors' sayings. I was at that time Judge of Probate in Allegan and for awhile considered the question of filling my own name on a blank and sending myself to the asylum at Kalamazoo.

It is not my desire in this article to trace the development of my herd. It is enough to say that in 1911, I found my herd had increased to such an amount that I had to place stock out on shares on account of the lack of room to care for them. Farmers in our vicinity would not pay fancy prices for pure-bred stock. It was almost impossible to find any kind of a market for them. The necessity of finding an outlet for my stock produced the plan of placing the cattle out on shares much on the line of the contract I will give later.

As I look back and see the value at which the stock was appraised under our contract I can see where advantage came to both parties. My first contract was made in February, 1911, with a farmer, a good care taker, who lived about six miles from my farm. Six head of cattle were appraised at \$390 and a contract was made for the care of them for five years. In December, 1912, my partner decided to leave the farm and an auction sale was held at Allegan. To our surprise we found the farmers were more willing to pay a fairer price for the stock than we thought they would. After deducting all expenses and the appraised value of the stock, we each had a profit of \$364.82.

My farm is about three miles west of Allegan and as I drove back and forth, I noticed a young boy trudging his way into school every day. It was nearly a four-mile walk for him and I often asked him to ride with me, and naturally he and I talked pure-bred stock. Wayne Merchant was only fifteen years old but he had ideas in reference to farming and live stock which interested me. In addition, he had industry and perseverance which led him to walk through winter snows and spring and fall rains four miles to school. Wayne became interested in my plan and finally we agreed to become partners. As he was a minor, I had his father join with him in the contract.

I have had many requests for my form of contract from other breeders in the state and in order that your readers may have the benefit of it, I give it in full.

"This agreement made and entered into this sixteenth day of March, A. D., 1912, between Frank H. Williams, of Allegan, Michigan, of the first part, and Wayne Merchant and Marion Merchant, of the township of Trowbridge, county of Allegan and state of Michigan, to the second part. Witnesseth:

FRANK H. WILLIAMS, Farmer-Banker, of Allegan, Michigan was born in 1864, studied engineering at the University of Michigan in 1883-4, and returned to his father's office to study law; was admitted to the bar in 1885. Mr. Williams has held public office and been prominent in lodge affairs for years. From 1897 to 1908 he served as judge of probate of Allegan county. In 1909 he was elected President of the First State Bank of Allegan and is still serving. Since 1905 Mr. Williams has devoted considerable of his time to farm problems, more particularly the breeding of pure-bred dairy cattle. During this time he has been active in encouraging many young farmers to breed better cattle and aided them in financing the business. His plan of aiding young farmers to become breeders of pure-bred cattle should prove of interest to many of our readers who are interested in similar problems.



1. First party agrees to place with second parties the following pure-bred Holsteins:

Allegan Lena De Kol, Heifer No. 172272, born Sept. 6, 1911, value \$50; Allegan Houwtje Ykema, Heifer No. 172273, born Jan. 8, 1912, value \$50; Allegan Maple Crest Pontiac Male 91-318, born Sept. 3, 1911, value \$35, for the term of five years from this date.

2. Parties of the second part are to feed and care for the stock in a good and workmanlike manner, and as pure-bred stock should be cared for; to keep a proper record of breeding and birth. To keep a pure-bred Holstein sire at all times for improvement of the stock, and to consult with first party whenever a change of sire is deemed advisable.

3. To keep a record of the milk production of each cow and the test thereof, and furnish a yearly statement of the same to first party.

4. No stock shall be sold except by agreement of both parties, and on terms and condition to be approved of by both parties.

5. In case of the death of any of the stock above mentioned in paragraph one, the loss shall fall entirely upon the first party but in case of the death of any of the increase of such stock the loss of the same shall be equally divided between the parties.

6. All proceeds from the sale of the increase of stocks, or from the stock mentioned in paragraph one, over the

appraised value thereof, as therein specified shall be equally divided between the parties hereto at the time of such sale.

7. At the termination of this agreement, the stock on hand shall be appraised and settlement made on the following basis: First party shall be paid the appraised value of the stock as stated in paragraph one, less the appraised value of any stock that may have died. The increased value of such original stock, and the increase of all the progeny therefrom shall be equally

divided between the parties hereto.

8. In case of disagreement as to the value the same shall be determined by arbitration. At the time of settlement each head of stock shall be valued and the same shall be divided between the parties hereto on the appraised valuation, said second parties shall have their first choice of one head, and first party a second choice and so on until the entire stock is divided. The difference, if any there be, shall be paid by one to the other in case.

9. It is expressly agreed that in case other stock shall be added, the same shall be appraised and placed under the same conditions as the stock mentioned in paragraph one.

In witness whereof, the parties have hereto set their hands the day and year first above written.

(Signed).

Later we placed with him a male calf valued at \$30 and another heifer, Allegan Pontiac Lena De Kol, appraised at \$110. In April, 1917, the contract was settled between our selves. Fortunately we were not obliged to call in an appraiser under the terms of the contract, we had sold two bulls from the herd which had made us a profit of \$110. The settlement which Wayne and I made at the end of five years, I am giving in detail. It will be noted that at the time of settlement only one head of stock remained of the original lot. One cow died of lung fever and one bull had been sold. There was remaining of the stock which I had furnished on the contract the heifer, Pontiac Lena De Kol, appraised at \$110, and heifer No. 2 of the contract, appraised at fifty dollars.

Settlement of F. H. Williams with Wayne Merchant and Marion Merchant, April 5, 1917.

No. 1 Allegan Houwtje Ykema, No. 172,273, born Jan. 8, 1912.....	\$ 175
No. 2 Allegan Pontiac Lena De Kol No. 194061, born Oct. 26, 1912....	175
No. 3 Allegan Maplecrest Ykema Houwtje No. 249288, born Feb. 25, '14	125
No. 4 Allegan Maplecrest Sir Lena born May 9, 1914.....	75
No. 5 Allegan Aaggie Lena No. 307767, born March 8, 1915	125
No. 6 Allegan Maplecrest Aaggie Pontiac No. 307768, born May 4, 1915	100
No. 7 Allegan Maplecrest Merc Yek No. 364509, born March 13, 1916..	110
No. 8 Allegan Maplecrest Merc Lad No. 203448, born March 23, 1916	40
No. 9 Allegan Heifer calf, daughter of No. 1, born March 10, 1917.....	100

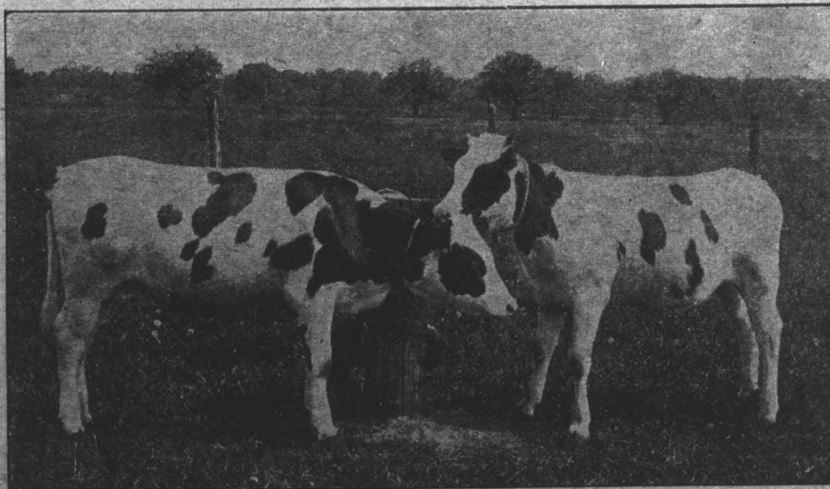
Total\$1,025

Investment computed as follows:

No. 1 appraised at	\$ 50
No. 3 appraised at	110
Registration	9
Breeding	40

Total\$209

Profit	816
One-half	408
Merchant takes Nos. 1, 2, 3, 4, 7 and 8 at	\$700
Deduct profit	408
Leaves due Williams	292
Williams takes Nos. 5, 6, 9.....	325



Young Pure-bred Cattle Are a Growing Security.

The contract was made with Wayne Merchant when he was fifteen years old. He is now twenty-one and is the owner of nine head of pure-bred cattle and gives evidence of being in the future a very successful breeder. He is very well satisfied with the result of his contract. I am also, because it is better than any kind of a loan that I can make. Then, too, such contracts have an element of chance which all farm activities furnish and which I believe we all enjoy. The three head which I took off Wayne on the settlement I had no difficulty in placing with another farmer on a similar contract.

The great trouble which most breeders have is in the disposal of their bull calves. I have been able to lease the

(Continued on page 316).



Multiplexing the Telephone

Marvel has followed marvel since Alexander Graham Bell invented his first simple telephone, the forerunner of the millions in use today.

In these last four decades thousands of Bell engineers have developed a system of telephonic communication, so highly perfected that the same crude instrument which at the beginning could hardly carry speech from one room to another can now actually be heard across the continent. This is because of the many inventions and discoveries which have been applied to intervening switchboard, circuits and other transmitting mechanism.

The vision of the engineers has foreseen requirements for increased communication, and step by step the structure of the art has been advanced—each ad-

vance utilizing all previous accomplishments.

No one step in advance, since the original invention, is of greater importance, perhaps, than that which has provided the multiplex system, by which five telephone conversations are carried on today simultaneously over one toll line circuit, or by which forty telegraphic messages can be sent over the one pair of wires. As in a composite photograph the pictures are combined, so the several voice waves mingle on the circuit to be again separated for their various destinations.

By this wonderful development the Bell System obtains for the public a multiplied usefulness from its long distance plant and can more speedily and completely meet the needs of a nation of telephone users.



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Barley: Wis. Ped. No. 5 and Oderbrucker.
Peas: June, Chang, Ogema.
Spring Speltz.
Robust Beans.
Spring Rye.
Soy Beans.
White Cap and Smoky Dent Corn.
Wis. Ped. No. 25 Corn, grown within 80 miles of Lake Superior.

EDW. E. EVANS, West Branch, Mich.

The Greatest Need of Railroads is Credit

At Least This is What Railway Age Says in the Following Article.

THE fact cannot be too strongly emphasized that the pending railroad problem is essentially that of devising means of re-establishing and maintaining railroad credit. The problem of credit, in turn, is fundamentally that of adopting some plan under which the railways can be returned to the permanent management of their owners with a reasonable certainty that they will be able to raise the large amounts of new capital which will be required for the adequate development and increase of their facilities. The problem of devising means of securing the most economical operation consistent with good service is inter-locked with that of re-establishing credit, but to some extent the two can and ought to be considered separately.

The railways can be enabled to raise adequate new capital only by insuring that under good management they will be given opportunity to secure sufficient net income to pay a reasonable return both upon their old and their new capital.

It is contended by some persons, including members of the Interstate Commerce Commission, that before government operation was adopted the railways were allowed to charge rates that yielded reasonable profits. Elaborate statistics are cited to prove this. The incontrovertible facts are, however, first, that for several years before government operation was adopted the expansion of railway facilities was rapidly declining; and, second, that the facilities became inadequate to the demands of the country's business. Some take the view that the companies became unable to raise sufficient new capital because of abuses in their financial management. But the abuses, so far as they were real, were confined to a comparatively few companies, while the decline in the expansion of facilities was general. The growing inability of the railways as a whole to raise adequate capital was due mainly to a faulty policy of regulation; and the legislation under which they are restored to private management must, if adequate expansion of their facilities is to be renewed, establish principles and methods which will insure that they will be able to pay a more certain, and many of them a larger, return.

Various plans for accomplishing this have been suggested. One is that the government shall guarantee a fixed percentage of return for all roads on some basis of valuation. The conclusive argument against this is that it would destroy all incentive to enterprise and efficiency. No plan under which the owners of each individual property will not lose by inefficiency in its management and gain by efficiency will foster good management.

Another proposal is that the government, on some basis of valuation shall guarantee each company a minimum and a maximum percentage of net return. If the minimum is not earned the deficit shall be paid from the public treasury, and any excess earned over the maximum shall be paid into the public treasury. This plan would not destroy the incentive to efficiency, and might not seriously impair it if the maximum allowed was fixed reasonably high. Its most objectionable feature is that some roads almost certainly would not earn the minimum, that the government would have to make up their deficits, and that this would create financial relations between the government and these railways which would foster agitation for government ownership of them. Gov-

ernments have made guarantees of net earnings to railways in many countries. Wherever the railways have failed to earn the guaranteed amounts there has been agitation for the governments to acquire them, and in most of the cases this agitation has been successful.

The plan proposed by the Association of Railway Executives sets forth that "the statute itself should provide the rule of rate making, and should require that rates be not only what is called reasonable, but adequate and sufficient to enable the carriers to provide safe, adequate and sufficient service." That this ought to be the rule, and that it is desirable to have it established by law, seems clear. But serious differences of opinion might arise regarding the way in which it should be interpreted and applied. In spite of the decline in the development of the railways which has been constantly and rapidly going on for almost ten years, the bodies that have regulated them are still contending, in effect, as already noted, that they have been so regulated that they could have adequately expanded if they had been disposed to. Just how these bodies think they can rationally argue that people with capital carefully refrained from putting it into an industry the returns earned in which made it an attractive industry in which to invest we do not understand.

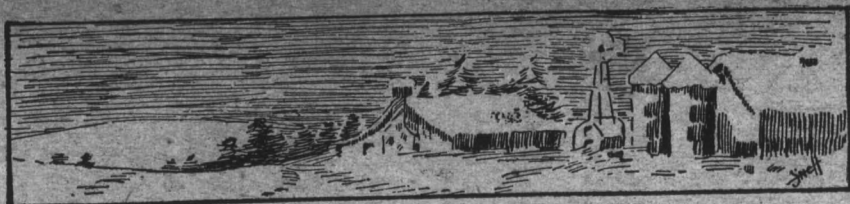
The principle by which most of the rate regulating bodies actually have been guided has been that of reducing and keeping rates as low as could be done without having them declared confiscatory by the courts. The Association of Railway Executives suggests that a large part of the control of rate making be transferred to a Secretary of Transportation, with the thought that a purely administrative official would act, not on the principle of near confiscation, which has guided most of the regulating commissions, but on the principle of public expediency. We believe it is sound doctrine that the administrative and judicial functions now performed by the Interstate Commerce Commission should not be delegated to the same body, but many persons fear that a Secretary of Transportation would be influenced by consideration of politics as well as considerations of public expediency.

Another plan which is being advocated is about as follows:

Divide the railways of the country into, say, ten geographical groups, the boundaries to be determined by operating and traffic conditions. Provide by law that the rates in each territory shall be so fixed as to enable the railways of that territory as a whole to earn an average net operating income on the aggregate book cost of their road and equipment of, say, five and a half per cent. Some roads in the group would earn less than this average, some more. When a railway earned in excess of say, six and three-fourths per cent, the excess under this plan, would be divided, part being paid as a bonus to its employees and part being paid into the public treasury.

The book cost of road and equipment is not an entirely satisfactory basis on which to compute the total net operating income allowed to be earned, but it is the best at present available, and has been used in important rate advance cases. This plan would have several advantages. First, it would not destroy the incentive to efficient management. Third, it would nullify the old argument that

(Continued on page 290).



New Life for Old Trees

By C. B. Ford

THE question of the profitability of restoring an old orchard to its former productive condition is not always of first consideration, for every farm should have enough fruit trees to provide an abundance of good fruit for home use. If the trees are partially sound and have only suffered through neglect and uncongenial soil conditions it is comparatively easy to shape a course of management that will restore them to a productive and healthy condition within a few years. On the other hand, if the trees are mostly dead, if there are large limbs broken down and split, and if there are large decayed cavities in trunks, the cost of getting them in shape will vastly exceed the value of the few crops of fruit that they produce.

From a commercial point of view the trees should be fairly uniform and complete. If only a few of the trees remain, it may be considered very doubtful expediency to invest the labor and plant food necessary to put them in shape to produce crops of fruit. If the land is cheap, or so situated that it may be utilized conveniently for poultry, sheep or swine runs, it may be profitable to bring the few remaining trees back to life and depend upon the twofold use of the land for a few years until young trees can be started on other parts of the farm. On the writer's farm an old apple orchard that had been neglected by the former owner was restored to a productive condition by giving the trees a thorough pruning and scraping during the winter and spring and utilizing it as a night pasture for dairy cattle. After seeding with clover and timothy this six-acre orchard afforded considerable grazing and the droppings of thirty dairy cattle helped to supply the plant food needed by the trees. The varieties were Greenings, Baldwins and Northern Spies. For several years these trees have produced a net profit of more than \$100 per acre, although a large portion of the original planting were removed and others were in a serious stage of neglect.

In order to make the work profitable the trees must be of standard varieties. One cannot afford to invest labor and lose the use of the land in attempting to restore trees that will produce nothing but worthless fruit after they have been renovated. Of course, healthy trees may be top-worked to desirable varieties, but at the same time this is hard work and presents many risks and difficulties, so that the orchard must be in pretty good condition in other ways in order to make the work profitable from a commercial point of view. Trees situated near the build-

ings and in out of the way places about the farm should be grafted to varieties adapted for family uses.

Examine the Trees Before Beginning.

Before starting any systematic plan of renovating an old orchard one should make a critical examination of the trees and determine to what extent they have been attacked by insects and disease. Among the most important enemies of the orchard are San Jose scale, oyster-shell louse and apple-tree canker. All of these can be held in control, but to get rid of them requires considerable labor and expense. It is, therefore, better not to undertake the work unless one is thoroughly convinced that it will ultimately pay fair profits, both financially and from a standpoint of having fine fruit for home use.

The first step toward accomplishing the desired results consists in giving the trees a thorough pruning. The first work should consist of removing the larger broken limbs along with the wood that is diseased and actually dead. After the work is completed and trees have regained normal condition all interfering branches and those that render the tree unsymmetrical may be removed. In remodeling old trees special pains should be taken to shorten the heads. In order to keep the bearing surface within range of the spraying machine, heading in is often the only method. This part of the work should be accomplished with care, and unless one has a knowledge of the principles which underlie the work he had better employ an expert to assist him. Better results will usually follow if the work is distributed so that the trees will be brought to the desired shape and condition in two or three years. In some instances the desired results have been accomplished in a single year, but it is always safer to give the trees time to gradually regain their normal condition by the time the last work is performed.

Getting Rid of Diseases and Pests.

After the first pruning the trunk and main branches should be given a thorough scraping. This work can be performed efficiently with an old hoe, or with a scraper, which can be bought for about twenty-five cents. The removal and burning of the old broken bark does away with a large number of fungus spores; besides it is a favorite breeding place for all kinds of orchard pests. In this way we not only destroy the pests, but their hiding places are also obliterated at one operation.

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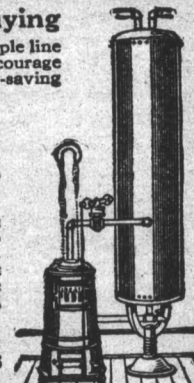
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New Life for Old Trees

(Continued from page 285).

chanical injuries, by careless pruning, or by failure to protect wounds after pruning. If the orchard has been carefully handled there will be but few cavities to fill. If, however, the trees have suffered neglect the lives of the remaining trees may be prolonged for years if their cavities are cleaned and filled. This work consists of cleaning out the decayed matter, and thoroughly sterilizing the cavity with commercial lime-sulphur at the rate of one gallon to eight gallons of water, filling the space with cement, and leaving the surface in such a condition that the bark will readily heal over the edge of the cement. Care should be taken to level over the edges of the cement so that the bark will heal over the edge of the wound, sealing up the cavity as closely as possible.

If the trees are to be top-worked with new varieties this work should be started early in the spring after the first pruning so that it may be distributed along with the pruning during two or three years. As grafting will require the removal of a certain number of branches it should be done before all the pruning is performed in order that one may intelligently select the best positions for the grafts.

The best all-round treatment for San Jose scale and oyster-shell louse consists of spraying the trees early during the first spring with a thorough application of lime-sulphur wash applied in as warm a state as possible. Canker may then be taken care of more effectively by the spring applications of Bordeaux mixture. In the control of scale, thoroughness is the important thing, and it is necessary to leave a film of the spray mixture over the entire surface of the bark, especially at the ends of the branches. Severe pruning facilitates spraying, and the work is extremely simple where the trees have been severely cut back.

Soil Management Also Helps Trees.

In the management of the soil the first step toward bringing an old orchard back to life consists in plowing the ground and getting it into condition to grow cover and fertilizing crops. The usual way of plowing round trees is more injurious than not plowing at all, for it ruins the growth of the trees and cuts off many of the important roots. These roots that grow close to the surface of the soil are the great absorbents of nourishment, whether they are roots of trees, plants or shrubs that yield fruit. This is a habit common to plants and trees to throw out a system of roots near the surface of the soil, where they will take up and readily appropriate the fertilizing elements with which they come into contact, to the purpose of developing the stems, or fruit of the growing plant. If we will examine the surface soil around any tree where the ground has not been plowed or disturbed for a number of years, we will find that a system of roots has been developed close to the surface. If these roots are cut off nature quickly starts a new growth, and in the meantime the tree loses a certain amount of vigor and productivity.

From these facts we can see at once that if we plow an old orchard we must plow very shallow for a number of feet away from the tree rows. With a plow properly set and a good, steady team, it is not a difficult piece of work to plow an orchard and when up to within a few feet of the tree row the plow should be adjusted so that it will not cut more than two or three inches of the surface and not disturb the

roots. When an orchard is plowed every year or two from the time it is set out the surface roots are kept down to a depth where they will not be injured by the plow unless run extremely deep close to the tree rows.

Fertilizer and Cover Crops Important.

After the orchard has been plowed, the next problem is that of cover and fertilizing crops and how to grow them to the best advantage. This work must be governed largely by the condition of the trees and the amount of available plant food in the soil. As a rule it is better to grow some of the leguminous crops in order to gather the supply of nitrogen from the atmosphere instead of buying it from the fertilizer works. To bring the soil up to a condition to grow nitrogen-gathering crops frequently means the plowing under of other green-manure crops to establish a base of humus to work with, and the liberal use of lime to correct soil acidity caused by plowing under the green-manure crops. By the intelligent use of green-manure crops and the application of lime and mineral plant foods it is possible to get the soil in shape to grow these fertilizing crops. After this advantage is once gained it is comparatively easy to adopt a system of cover and fertilizing crops that will furnish about all the nitrogen the trees can economically utilize, and by applying purchased phosphorus and potassium enough to support a good growth of cover and fertilizing crops the trees can be kept in condition to produce good crops of fruit, and so far as plant food is concerned, at a greatly reduced cost.

PLOW EARLY FOR CORN.

MOST farmers realize that in preparing land for corn the earlier the land can be plowed in the spring the better. There are, of course, exceptional years when very early plowing is not desirable, but these exceptions are rare. Consequently it is generally wise practice to plow the land as early as possible. The fact that many farmers fail to get this done is not so much because they do not believe in early plowing as it is because of a failure to organize their work properly. Of course, there are seasons when no man can plow early, but again it may be said that these seasons are rare.

Early plowing makes possible a good seed bed. The soil is given time to settle together below, which is a very important principle, the weeds are held back and the farmer has more time in which to prepare a thorough pulverized surface. Late plowing means either clods or the necessity of turning under a large growth of weeds too late for its proper decay. Usually it means both of these things and the impossibility of preparing a good seed bed.

The only cases where early plowing is not desirable are on those seasons and on those soils in which the land runs together after plowing. A soil lacking in organic matter may readily be beaten down by spring rains after it is plowed, so that it becomes very hard. On the average soil, however, such a condition is not to be expected, and the early plowing means a much better seed bed than can possibly be prepared where the plowing is done late.

The common cow is the cow for the man who is not a better dairyman than she is dairy cow.



This Year's Feeding Problem

THOSE who have taken considerable pains in compounding their feeding ration, do not only supply their cows with the proper amount but the proper proportion of food nutrients, find that the problem today is somewhat different. Heretofore, the carbohydrates, represented in Michigan largely by the corn plant and timothy hay, have been so cheap compared with the protein that we did not hew to the line very close in getting exactly the proper amount of these essentials—starch and sugar. Since the war began, however, the market price of fats and sugars—carbohydrates—has advanced so out of proportion to the price of proteins that we cannot afford to have an excess of carbohydrates in the ration if we want to make the ration as economical as possible.

To illustrate: When corn meal was worth \$1.00 a hundred, and corn silage \$3.50 a ton, it didn't matter so very much if in compounding a ration we fed enough corn meal or enough corn silage so that we had an excess of carbohydrates because by feeding this excess we acquired a small amount of protein and this protein would be cheap enough, if furnished from this source, so that it mattered little if there was a slight waste of starch and sugar. On the other hand, the protein in cottonseed meal, oil meal, gluten feed, etc., was comparatively high and we fed just a sufficient amount of these high-priced foods to get the required amount of protein in the ration. Now, however, it won't do to waste starch and sugar by feeding an excess of corn meal or corn silage. We better hew to the line more closely in this respect and be a little more liberal in the purchase of those foods which are so rich in protein.

There is another principle to be considered now that starch and sugar cost comparatively so much in comparison to protein. The animal can use starch and sugar only as heat and energy producers in the body. Carbohydrates if fed in excess cannot be converted by the animal into protein to be used in the production of muscle, living organism, or an animal product containing protein. If we feed starch and sugar in excess of the necessary amount to produce heat and energy in the body it is absolutely wasted. It passes through the body as a waste material. But it is a physiological fact that if we feed protein in excess of the required amount to build up the

living tissues of the animal and produce the animal product containing protein, like the case of milk, for instance, then the animal has the power of using this excess protein for the production of heat and energy, provided there is a deficiency in the ration of starch and sugar.

This is well worth considering if we want to have the most efficient ration at the least possible cost and, as I say, the market value of these food products has changed so that it makes it worth while for the feeder to take these scientific facts into consideration. Today in combining a ration it is wise to lean toward an excess of protein rather than an excess of carbohydrates. The careful compiler of a ration tries to put into the ration a sufficient amount and no more, of the necessary food constituents and he always should, but it is difficult sometimes with the food on hand to do this. There is no particular harm done to the animal in either instance, of feeding an excess of carbohydrates or of protein. It simply makes a more expensive ration and a waste and must be charged up on the expense side of the ledger. It shows better judgment today to feed a little extravagantly of cottonseed meal, oil meal, gluten feed or wheat bran than it did before when corn meal and like carbonaceous foods were worth only one-third of what they are today. It does not seem to be thoroughly understood by many people that if you feed an excess of starch and sugar it is absolutely wasted, but if there is a slight deficiency of starch and sugar and an excess of protein that this protein can be converted into heat and energy food and used for that purpose by the animal.

One feeder says that cottonseed meal is worth \$65 per ton, where it used to be worth \$35. Oil meal is worth practically the same; it used to be worth \$40 per ton, and so it would seem to them to be economic to scrimp on these foods, and yet, when we consider that corn meal and oats and other carbonaceous foods have not only doubled but have trebled in value, and when we realize that if we feed them in excess there is absolute loss, while if we feed protein in excess this can be converted and used for the same purpose as starch and sugar, and it is not difficult to understand that we should not scrimp on these high-priced foods, but if anything, we should scrimp on the carbonaceous foods.

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GOOD AS CAN BE GROWN
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INDIANA SILO

Let One Buy
You Another



BUY an Indiana Silo this year. It will more than pay for itself, and buy another for you next year. The two will earn every year the price of several acres of prime farm land—even at present high prices.

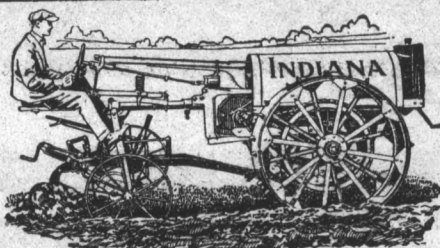
The Indiana Silo is the corner-stone on which many ambitious farmers have founded their fortunes.

It pays better than most silos because it makes better silage, allows less waste, stays in better condition, lasts longer. That is why 60,000 are in use—many more than any other make. Ask Indiana Silo owners.

Write for our easy payment
plan and descriptive booklet.

INDIANA ALL-ROUND TRACTOR

The World's Tractor



THIS tractor was built to fit the needs of the all-round farmer—made by men who have been farmers themselves. One man runs it and does two men's work. Replaces horses at all kinds of farm work on any size farm. Weighs no more than one large horse. That's why it really replaces horses, and really saves money for the farmer. It's a tractor that will plow, harrow, drag, drill, cultivate, mow and pull a binder. Gives you all the power you want but wastes none. Uses the horse implements you already have without expensive hitches. Farmers are selling horses to buy this tractor.

Write for the folder that tells
what it can do on your farm.

THE INDIANA SILO COMPANY

826 Union Building . . . Anderson, Ind. 826 Indiana Building . . . Des Moines, Ia.
826 Silo Building . . . Kansas City, Mo. 826 Live Stock Ex. Bldg., Ft. Worth, Tex.



Survey Booms Tractor

ILLINOIS farmers report that the value of horses displaced by their tractors represents about three-fifths of the cost of the machines. They estimate the cost of plowing an acre of ground with a tractor approximately as follows: Two-plow outfit, with gasoline, \$1.58½; with kerosene, \$1.33½; three-plow outfit with gasoline \$1.41½; with kerosene, \$1.22½; four-plow outfit, with gasoline, \$1.54½; with kerosene, \$1.25½.

The cost for plowing and other field operations with a tractor are practically the same as with horses, except for man labor. This averages lower with a tractor than with horses, assuming that wages are the same in each case.

In computing the cost the figures given, which are from a report of a survey made by the United States Department of Agriculture, include depreciation. It was impossible to determine at that time the life of the latest model tractors, since none had been worn out. But the estimates of tractor owners reporting fixed the life of a tractor at between seven and a half and eight seasons of forty-five ten-hour days. At that, ninety per cent of the farmers reporting said they had found the tractor to be a profitable investment.

After carefully calculating the rapidity of depreciation and the increase in the number of repairs needed as the machine aged, the department figures that repair charges should exceed four per cent of the original cost of the ma-

chine by very little for average work.

An earlier survey, made in the corn belt, showed that only eighty per cent of the tractor owners had found their machines profitable. That the machines are growing in favor indicates that farmers are using better judgment in buying, getting machines that are suited to their farms, and are becoming more expert in driving and caring for them. Manufacturers often have contended that their machines were wrongfully discredited because of the purchaser's lack of knowledge and sound judgment in using them. This problem will work itself out, however, as tractors become more numerous and experienced drivers more easily obtained.

Seventy-one per cent of the farmers reporting were using three-plow outfits, indicating that that type has been found decidedly the most practical under corn belt conditions.

Of course, it was not possible to make an exact comparison between the cost of doing work with tractors and doing it with horses, since on the farms where tractors are kept some number of horses are generally retained. In this respect a benefit which is not included in the report of the Illinois survey is generally named by tractor owners, namely, that using a tractor for the heavy plowing in the spring makes it possible to keep more brood mares, for the tractor relieves them from the heavy pulls when they are heavy with foal.

Muck Farmers Organize

INTERESTS of the muck farming industry of Michigan which heretofore have been left entirely in the hands of the individual farmer, were mobilized into a powerful unit with the organization of the Michigan Muck Farmers' Association at the Michigan Agricultural College during Farmers' Week, February 3-7.

More than one hundred members of the newly organized association returned to their homes after completing plans for uniting to secure legislative action and agricultural extension work, which are deemed vital to the prosperity of the muck land industry. The association decided upon a campaign to acquaint the people of the state with the agricultural possibilities of Michigan's swamp lands.

The birth of this association emphasizes the increasing importance that is being attached to the development of the millions of acres of muck land in the state. Until recently little attention has been given to muck land problems and it was not generally appreciated that the muck farmers were unable to utilize agricultural information as developed from the up-land point of view.

Resolutions favoring the adoption of the new drainage law now pending before the state legislature were adopted by the association and the request was made for immediate provision of funds for research, extension and demonstration work on the swamp lands of the state.

The association appealed to the Federal Land Bank of St. Paul, Minn., to bend its efforts toward providing government loans on muck lands. Assurance that such change in the federal

banking provisions will likely be made soon was received by the convention from federal banking officials.

Endorsement of the work of Ezra Levin, muck crop specialist of the Michigan Agricultural College, was given in a special resolution by the muck farmers. The delegates also requested that a short course for muck farmers be established at the Agricultural College and conducted each year during the winter term of school.

Opinion of the meeting was that a special sub-division of the agricultural work at the state college should be concerned with the problems of muck. The peat experiment stations of Europe were cited as examples.

J. C. Merriman, of Deckerville, was elected president of the new state association; C. E. Downing, of Vermontville, vice-president; Ezra Levin, of M. A. C., secretary; Richard Kapetyn, of Dorr, state treasurer.

EDUCATING THE ILLITERATES.

SENATOR HOKE SMITH and Congressman Bankhead, have introduced a bill in congress. It provides an appropriation for training teachers and close cooperation between the states and federal authorities to educate native illiterates and non-English speaking in our language and citizenship.

Brought within the reach of the printed word, these persons will be worth at least five dollars a week more to themselves and to the nation as workers, which increased earning power alone would provide two billion dollars a year more toward paying the interest on our war debt and help to amortize it as well.

ONE-SHAPE GRINDERS

IT PAYS TO GRIND ALL GRAINS

Look to the Grinders. They do the work! Bowsher's Cone-Shape grinders are the correct principle in Feed Mill construction. They mean larger grinding surface close to center of shaft; thus more capacity, lighter draft, longer life.

"Desire to express my appreciation of the long-lasting, trouble-proof Bowsher. Have used a No. 4 ten years with less than one dollar per year for repairs." E. W. Wall, Jacobusburg, O.

10 sizes; 2 to 25 H. P. Write for free catalogue.

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THE TOWER SYSTEM OF CULTIVATION

The World Needs Better Work

Our Tools Insure It. Save all the corn this season—increase your corn crop—make more money by using a system of cultivating in which the roots of the plants are not disturbed.

Make a good seed-bed, well-pulverized, all hollows filled, plant good seed; follow with our cultivator according to directions.

THE TOWER CULTIVATOR

Is Complete For All the Season.

No other cultivator is needed. Easily handled; more acres can be cultivated per day than with other styles. Kills weeds. Resists dry or wet weather; brings earlier maturity. Take our advice as experts and you will grow more corn. Be sure when you buy that the name TOWER is on the Cultivator Tongue. Write for free booklet "Reasonable Reasons Why."

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SHEEP

Shropshire Sheep

For Sale—My entire flock of about 70 registered Shropshires at a bargain. All in very good flesh and of the very best breeding. HARRY E. SAIER, Seedsman, 109-111 E. Ottawa St. Lansing, Mich.

To The Kids of Mich. I have 75 beautiful registered Hamshire and Shropshire ewes that will have lambs this spring. I wish to sell them to you and buy back the ram lambs next fall at a mighty good price. Start now in a small way. Liberty Bonds taken. Write at once for particulars.

HOPE KORN FARM, S. L. Wing, Owner.
Kinderhook, Mich.

200 Bred Ewes Choice natives, coming two years, bred to Shrop Rams, in lots to suit.

ALMOND B. CHAPMAN, South Rockwood, Mich.

FOR SALE SHROPSHIRE LAMBS, ewes or rams.

ARMSTRONG BROS. R. 3 Fowlerville, Mich.

For Sale Bred Reg. Shrop. Ewes at a reasonable price also ewe lambs.

H. F. MOUSER, R. 6, Ithaca, Mich.

OXFORD Down Ram lambs, also a few ewe lambs. Berkshire both sexes. Booking orders for fall pigs.

CHASE STOCK FARM, R. 1, Marietta, Mich.

Bred Ewes Cotswolds, Lincolns, Shropshires. Rams and ewe lambs. Papers with each.

LEROY KUNEY, Adrain, Mich.

12 Head of young reg. Lincoln ewes for sale all bred for Apr. lambing; prices reasonable.

D. T. KNIGHT, R. 1, Marietta, Mich.

NOW Cheaper Power

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10-Year Guarantee Kerosene Gasoline **ENGINES**

You get more power from a gallon of 12 cent Kerosene than from a gallon of 25 or 35 cent gasoline in any gasoline engine. No cranking, no batteries. Easy to start. Easy to operate. All Sizes and Styles, 1½ H.P. to 22 H.P.

Free Book Before you arrange to try any engine, read my latest and finest 8-color book. Tells all what you want to know about engines. Written so you can understand it. Write for low prices now.

OTTAWA MFG. CO.
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CONSERVING LIVE STOCK.

LOSSES of live stock from diseases accident and other causes, probably three-fourths of which are preventable by proper preventive measures and modern veterinary practice, amount to enormous sums each year—in 1915 they were estimated as reaching two hundred and twelve million dollars. This sum, say specialists of the United States Department of Agriculture, would provide the entire American Expeditionary Force of two million men with meat for nearly a year. To these losses may be added others which, though indirect, are nevertheless as important. The discouragement of stock raising is one indirect loss, and this in turn retards the development of diversified agriculture.

Cooperation is Needed.

Although much is being accomplished in the control and eradication of destructive animal diseases, the best results can be fully realized only through closer cooperation between the live stock owner and those who are in position to give him assistance. The stockmen who fail to realize the necessity of fighting the unseen enemies of live stock by sanitation and the use of modern preventive methods that science has provided must be made to see the importance and profit which will come as a result of changing their conditions, say the department experts.

A better understanding of feeds and feeding practices will prevent many of the common disorders of the digestive and respiratory tracts which are common among all classes of live stock. Losses from such accidents as horn wounds, bruises, wire cuts, harness sores and broken legs, in most instances, are properly chargeable to neglect or carelessness.

Select Breeds to Suit Climate.

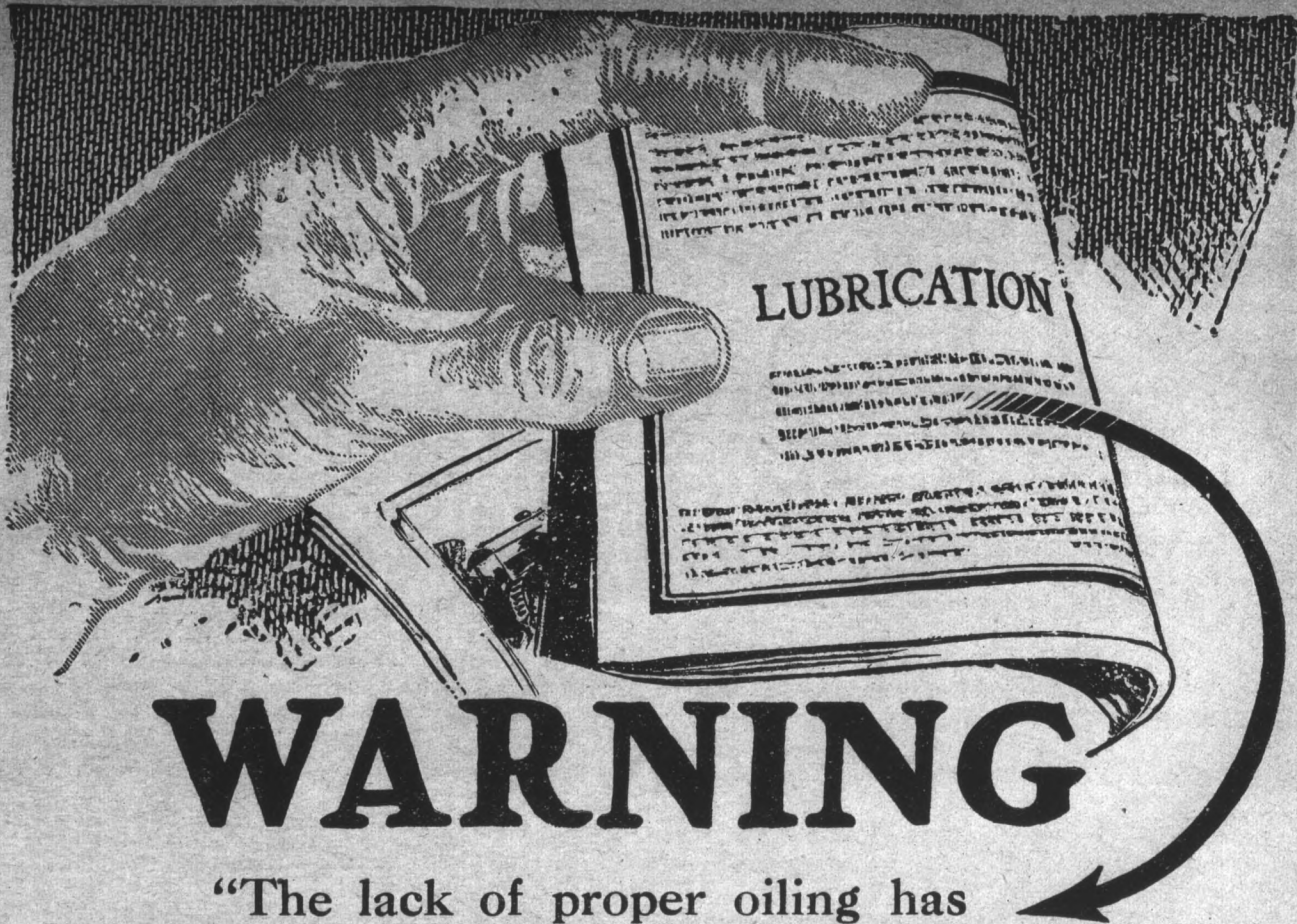
The selection of breeds adapted to the climate and local conditions under which they must exist, as well as the selection for the foundation stock, is important in maintaining the health. Heavy beef and dairy types are better suited to withstand the trying conditions of cold climates, while the lighter, less fleshy breeds thrive better in warmer localities. Mountain types are better adapted for hilly grazing lands, close-wooled sheep for cold regions, and the open-fleeced breeds for warmer climates.

As soon as the animals are suspected of being affected with disease, especially if it is thought to be a communicable disease, they should be separated from healthy animals and be held in quarantine until this condition has been determined and remedied.

The proper handling of animals has an important bearing upon maintaining their health and resistance to diseases. Good equipment and high-grade stock are not enough. The animals should be handled by an attendant who has certain natural qualifications for his work. He should by all means have an inherent fondness for live stock and possess intelligence, good judgment and even temper.

Specialists at Hand.

Every state agricultural college maintains a corps of specialists who are willing and well qualified to help stockmen promote the health of their live stock. The United States Department of Agriculture is constantly giving out important information in the form of bulletins, which are available on request, and in every state has representatives employed in combating animal diseases or some other important activity connected with agriculture or stock raising. The state veterinarian is also ready to give advice and assistance in the diagnosis and control of outbreaks of disease.



WARNING

"The lack of proper oiling has destroyed more machinery and created more expensive repairs than any other cause"

THE above warning is printed in the official catalogue of one of the leading manufacturers of tractor engines.

He then drives home the point that "a machine well-oiled runs easily and is extremely durable."

No tractor, truck or automobile manufacturer or agent will stand responsible for their machine doing its work right, if the owner neglects proper oiling.

Heat does not break Havoline Oil

You can safely use Havoline Tractor Oil. It is and does everything that an honest, scientific lubricant should be or can do. It is always uniform. It stays put. There is a grade of Havoline that fills every lubricating need for any tractor, truck or car, no matter what its make, type, age or condition. You need never shift from Havoline. It saves repairs, replacements, trouble, and idle days.

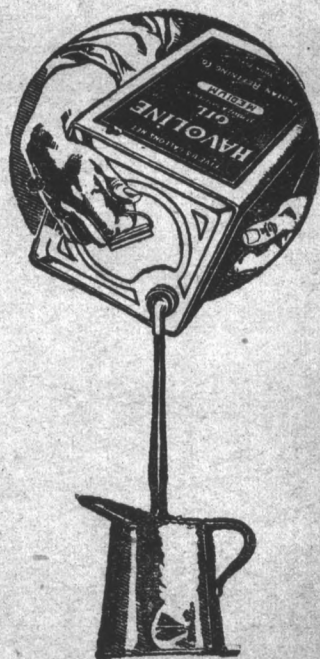
Your dealer will tell you just what grade of Havoline will answer your own requirements. Ask him today.

*Havoline greases are compounded of
Havoline Oil and pure, sweet tallow.
Clean to handle and correct in body.*

Indian Refining Company, New York

Incorporated

Producers and Refiners of Petroleum



HAVOLINE OIL

REG. U.S. PAT. OFF.

"It makes a difference"

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When to Apply Limestone

Legumes: Since these crops are most sensitive to lack of lime in soil, apply lime preceding them and get the quickest return for your money.

Clover and Alfalfa: If these are to be seeded in wheat or rye, spread lime after plowing and work into soil when seed bed is prepared.

If to be seeded in oats and barley, apply lime in the spring and work into the soil.

When Alfalfa and clover is seeded without a nurse crop apply lime as soon as ground is broken so that it may be thoroughly worked in by seeding time.

Vetch and Rye: When vetch is seeded with rye, apply lime right after plowing. Never apply pulverized lime to wet soil. Lime is more effective when it becomes thoroughly mixed with the soil. Moisture makes lime lumpy and lumps are more difficult for the soil to work upon.

SOLVAY
PULVERIZED
LIMESTONE

—is a superior product. Its higher percentage of carbonates and magnesia—its fine pulverization—make it more effective.

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We shall be glad to quote on Arcadian Ammonia Sulphate, (20.8% Nitrogen.)

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START RIGHT

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FOR 25 years the choice of thousands of successful Michigan farmers because Apex Brand Seeds are—

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- Exactly suited to Michigan's soil and climate.
- Carefully selected, thoroughly re-cleaned, and tested by a former assistant seed analyst.
- Uniform in quality—the same high quality year after year.
- Backed by Michigan's largest exclusive field seed house.
- And because they have given the utmost satisfaction for over 25 years in Michigan.

Write us today for the name of the dealer nearest you who can supply you with Apex Brand Seeds.

Caughey-Jossman Co.
Detroit, Michigan

APEX BRAND
Re-Cleaned and Tested
FIELD SEEDS



THE GREATEST NEED OF RAILROADS IS CREDIT.

(Continued from page 284).

rates must not be fixed high enough to enable the average road to earn an adequate return for fear the stronger roads would earn an excessive return.

From the standpoint of roads which long have been earning a high percentage of return, however, this plan would be objectionable and perhaps unjust. Furthermore, the fixing by law of specific average and maximum rates of return which the companies would be allowed to earn might in the long run prove to be unwise. Nobody knows exactly what average return is needed by the companies now, and the return required might diminish, or might substantially increase, because of national or international financial developments for which they were not responsible. But, after all, human action, including legislation, should be based on probable and not merely possible developments. People do buy bonds which run twenty years or more and pay a fixed rate of interest, in spite of the fact that the general rate of interest may decline or advance, and it ought to be possible to estimate fairly accurately the average and maximum returns the roads as a whole should have.

It seems to us that the best solution of the pending problem of railway credit consistent with leaving unimpaired the incentives to efficient management would be found in legislation embodying the following principles: First, the railways should be encouraged, under government supervision, to so coordinate their operations as to limit the obvious wastes of competition while preserving as much competition as is necessary to promote emulation in operation and in improvement of service. Second, "the statute itself should," as the Railroad Executives plan says, "provide the rule of rate making, and should require that rates be * * * adequate and sufficient to enable the carriers to provide safe, adequate and efficient service." Third, the statute, as an auxiliary guide in rate regulation, should specify a minimum average rate of return on property investment—not less, surely, than five and a half per cent—which the railways, as a whole, or groups of railways, must be allowed by regulating authorities to earn, and perhaps fix a maximum return, any earnings in excess of which must be divided on some basis between the company earning them and the government. Fourth, some federal regulating authority should be given power to supervise the issuance of securities and the making of expenditures chargeable to capital account. Provisions such as these are, we believe, required to re-establish railway credit on the basis on which the public welfare demands that it shall be placed.

FOR TRACTOR FACTS.

SIGNS which observers at M. A. C. take to mean an increasing use of the tractor in Michigan farming, have become manifest on the campus with the opening of a new tractor school by the Department of Farm Mechanics. More than one hundred young men have enrolled to acquaint themselves with the details of operating and keeping up tractors. The course, which was designed by the college to assist the practical farmer in learning to operate and repair trucks and tractors, began a short time ago.

Skim-milk is less digestible than whole milk. The safety lies in light feeding.



1919 Book
Lowest Prices

SENT FREE!

—Write Today!

For 1919 Galloway is making greater offers than ever before. With the war over and Peace here, the American farmer must feed the world. My low, direct to you factory prices on highest grade implements give you wholesale savings. Don't pay two and three prices for your farm machinery.

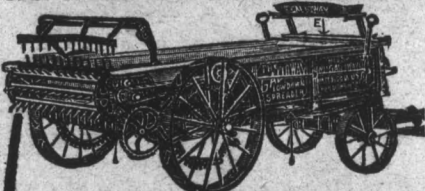
BUY DIRECT FROM THE FACTORY
Get your implements straight from Galloway's factories. I cut out all waste and lost prices by selling direct. One million satisfied customers use Galloway implements and save big money. You can do the same. Write today for Galloway's 1919 book.



NEW 1919 MODEL SEPARATORS

1919 model is ready. Have all the latest and best improvements. Over three hundred thousand in use. Thousands sold annually. Each one sells from one to a dozen more. Is closer skimming, easier cleaned and more sanitary than any other separator built. All parts run in constant spray of oil. No sharp edges to break up globules. Four good sizes. 375 lbs.—500 lbs.—750 lbs.—950 lbs.—at four low prices.

Latest 1919 Model SPREADERS



The best ever for 1919. Has 11 great exclusive spreader improvements that put the Galloway in a class by itself. Steel-beater, wide spreading V-rake—automatic stop—clean out push board—roller feed—chain drive—endless apron with force feed—cut under front wheels, short turn—is extra light draft—handles more manure for less cost on man, team, and pocket book than any other spreader built.

Magneto Equipped 1919 ENGINES

Galloway's 1919 new model engines are more powerful, more economical than ever. 2 1/2 to 12 H.P. Portable or stationary. Has valves in head, no lost energy. Big bore, long stroke and heavy weight. Special built-in magneto supplies blue hot spark, needs no batteries. Easily started, no cranking, cylinder and water pot frostproof. Burns any fuel. Heavy or light work models for the lightest to the heaviest, toughest job on your farm.

BOOK FREE—Write Today!

Get your copy of Galloway's money saving book for 1919. Buy all your farm supplies at wholesale—direct from Galloway's factories. Use this book as your buying guide. We ship from our immense factories at Waterloo or big warehouse stocks in Chicago, Kansas City, Council Bluffs, St. Paul and Winnipeg. Write today to **William Galloway Company,** 187 Galloway Station, WATERLOO, IOWA.



WHY A NEW CENTURY THRESHER?

—Because the New Century has certain advanced features of construction that place it in a class all alone. These features make it a champion grain saver and cleaner.

BUILT IN FOUR SIZES

The New Century is built in four sizes. The two smaller sizes are particularly suited for use with the small tractor. All are equipped with such notable features as Universal Rotary Straw Rack, Open Web Conveyor, etc. Our catalog tells you all about the construction of the New Century. Get your copy today.

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Home Office, Mansfield, Ohio



England to Make Potato Flour

IT has recently been announced by the Ministry of Food that the shortage of tonnage and the heavy demand upon it make it imperative to utilize British food resources to the utmost, and, accordingly, the Food Ministry has made arrangements for the establishment of mills for the production of potato flour, which, it is hoped, will be on a large scale. This industry, although a new one in Great Britain, has been established for many years on the continent; for example, Germany before the war had five hundred potato flour factories in operation, whereas it now has over two thousand. This alone would demonstrate the possibilities of the enterprise in this country.

For some time the Ministry of Food has been conducting experiments in making potato flour, and these have resulted satisfactorily. The Food Controller has signified a willingness that this project should be undertaken by private firms, and an endeavor is being made for individual concerns to take it up, the Food Ministry standing ready to give all assistance necessary in the organization work.

Stated briefly, the process of manufacture consists of working the potatoes and passing the potato mash over hot rollers, on which it forms a thin film. This film is removed from the rollers by a scraper in the form of flakes, which can be kept for a considerable length of time, and then turned over to the mills for converting into flour. It is estimated that the percentage of the potato flake extracted is twenty per cent of the weight of the raw potatoes.

In order to eliminate unnecessary labor and transportation the Ministry of Food has placed certain limitations on the factory sites, and it is proposed that factories be situated, as far as possible, in the localities where potatoes are grown. Machinery and raw materials for the production of potato flour are to be provided by the Ministry of Food. At the present time there are flaking machines enough in Great Britain to handle the work, since ordinary flour mills can convert the flakes into flour. In case there should be any necessity for importing machinery, the Food Controller will arrange that shipping priorities be given to permit its importation.

The financial arrangements for this undertaking have been worked out, and at present they are awaiting the official sanction of the British Treasury Department. The Food Ministry, however, is confident that these arrangements will be approved, as submitted, within a very short time.

Great Britain before the war imported a large portion of its potatoes, which were largely consumed for food, but in view of the U-boat campaign and the decrease in imports the country was forced to produce its own. Great Britain now has an overproduction of potatoes, and the formation of this industry provides a means for the consumption of this oversupply. The establishment of this industry would provide employment through the winter for labor available on the land in summer, and the process is one in which women can be almost exclusively employed, with the exception of stoking and other heavy work. This new industry will prevent the loss of raw materials, and will insure their production, which will also have a tendency in stabilizing the potato market.

Why There Is a Scarcity of Hudson Super-Sixes

No Open Cars to Be Built for Months—Hudson Closed Car Demand Exceeds Production

No automobiles were to have been built after January 1st.

Then, all of a sudden, the ban was lifted.

It produced a confusion the trade had never experienced. For months all makers had been turning out all the cars they could, regardless of the immediate market for them. By spring it was believed automobiles would be so scarce that buyers would accept less wanted makes if they could not get the car of their choice.

Then cars that had not sold freely during the summer and fall would have a ready market when the more desirable makes were out of the way. For one thing—

There Would Be No Hudsons Then

That was one of the expected conditions. Super-Six sales all season, just as they have for three years, absorbed the factory output. Hudson dealers were not able to get cars for future needs. It looked as though they either would have to close up shop or take on one of the less wanted lines.

But withdrawal of manufacturing restrictions assured a limited quantity of Hudsons. Less wanted cars after all, would have to meet Super-Six competition.

Hudson production is now concentrated on closed models, for which there is an excess demand. Some dealers have a limited number of open models—though not enough to meet early spring requirements.

You either must take one of the open cars they now have or wait until late spring if you get a Super-Six Phaeton.

Note Why Hudson Is so Popular

For three years the Super-Six has held undisputed leadership among fine cars.

Remember how it first established itself on the speedway and in countless endurance tests. Rivals refused to admit Hudson had developed a new type motor with greater power and endurance.

Yet those amazing records were made commonplace by later Super-Sixes. Thousands of owners made just as wonderful demonstrations with their own cars, when you consider the conditions, as were those under official test. Every car made converts to the Super-Six. Today 60,000 are in service.

It Created Styles that Others Followed

Hudson created the Sedan and the Touring Limousine. Now more expensive cars have followed and cheaper cars, too, are effecting models of Hudson type.

The seven- and the four-passenger Phaetons are pattern cars for so many other makes, that if it were not that the Super-Six is always a year or more in advance of others, one might be confused in recognizing the true arbiter. Two new types are now ready—the Coupe—a four-passenger—and the Cabriolet for three.

Why Delivery Is Possible Just Now

The Super-Sixes now available in open car types are all that can be had for several months. It will be June before full factory production can be resumed.

With the first promise of spring open cars become the favorite type. If you delay, and an open Super-Six is your choice, you will probably find all have been sold. Then you may have to wait until late spring.

The demand for all closed model Super-Sixes is so great that you must speak promptly to assure delivery. With some models this may mean quite a while.

Hudson Motor Car Company

Detroit, Michigan

Its White Triangle and Price are Two of Motordom's Most Distinctive Marks of Value. The Seven-Passenger Phaeton sells at \$2200

(1003)

Western Canada's "Horn of Plenty" Offers You Health & Wealth

Western Canada for years has helped to feed the world—the same responsibility of production still rests upon her. While high prices for Grain, Cattle and Sheep are sure to remain, price of land is much below its value. **Land capable of yielding 20 to 45 bushels of wheat to the acre can be had on easy terms at from \$15 to \$30 per acre—good grazing land at much less.** Many farms paid for from a single year's crop. Raising cattle, sheep and hogs brings equal success. The Government encourages farming and stock raising. Railway and Land Co's. offer unusual inducements to Home Seekers. Farms may be stocked by loans at moderate interest. Western Canada offers low taxation, good markets and shipping; free schools, churches and healthful climate. For particulars as to reduced railway rates, location of land, illustrated literature, etc., apply to Supt. of Immig., Ottawa, Can., or **M. V. McInnes, 178 Jefferson Ave., Detroit, Mich. Canadian Government Agent.**

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 Farm Lands at Low Prices
 The Wheat Belt of America

9 CORDS IN 10 HOURS

RUNS EASY No Backache **SAVES DOWN TREES** **EASILY CARRIED** **weights only 45 lbs.**

BY ONE MAN. IT'S KING OF THE WOODS. Saves money and backache. Send for FREE catalog No. 844 showing low price and latest improvements. First order gets agency. **Golding Sawing Machine Co., 161 West Harrison St., Chicago, Ill.**

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A few counties open for resident farmers, as exclusive selling representatives for high-grade line of Star-O-line Building Products. Liberal arrangements for men who are well known in their locality and enjoy the confidence of their neighbors. No capital investment required. Write for full particulars. Address **Building Supply Department M-100 White Star Refining Co., Detroit, Mich.** Manufacturers Extra-Quality Motor Oil and Star-O-line Products

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Mailed free to any address by the Author

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 118 West 31st Street, New York

America's Pioneer Dog Remedies

SEED CORN

12 varieties, sack gathered, Northern grown, shipped upon approval. Our 112-E holds world's record yield for Northern variety. Free cir. **C.H. & J. Graves, Antwerp, O.**

SATISFIED USERS wrote this Ad for Us-

**Their Experience
is worth real
Money to YOU!**

I have had several spreaders on my farm, but there are none like yours. I could not farm without it. Last fall I put six acres to wheat, first putting on 30 loads of manure. This spring I put on 20 loads more. You just ought to see that wheat. The manure made it stool out very good, and it will give 35 bushels per acre. If I had not used the Spreader this spring I am sure I would not have gotten over 15 bushels. Your spreader is one of the best investments you can put on the farm.
C. E. HUPRICH, Ohio.

I would not be without your Spreader, because it saves so much labor, puts the manure on the ground evenly, and I can spread any kind of straw or cornstalks. I believe my spreader will pay for itself in two seasons. With the proper use of manure on my place and using lime, I have increased the yield of my farm 25% in six years.
E. M. PHILLIPPE, Virginia.

Your Spreader has given entire satisfaction. I can recommend it to anyone needing a spreader. It is the lightest draft spreader I ever used. I handled mine in top dressing corn with two horses and I like it fine.
S. A. WUICK, Missouri.

I purchased one of your Spreader eight years ago and it has spread all of my manure from fifty head of stock during that time, and as a labor saver it has easily paid for itself more than five head of stock that any farmer having more than five head of stock cannot afford to be without a manure spreader by hand. he is especially fond of spreading manure by hand, which I am not.
C. E. HOUGH, Connecticut.

I have owned three spreaders in my time. The first two I didn't think much of. Then I got one of yours and now I am more than pleased with the spreader proposition. I find by hauling manure in the winter time on clover sod and letting the rains leach it down before plowing it under will oftentimes double the corn yield or even wheat. Where I wheat last year I got 600 bushels of wheat, an average of 50 bushels per acre. A farmer that owns ten acres can't afford to be without a spreader.
WILL HENSIL, Ohio.

THESE letters answer every question you may have about the New Idea Spreader. We will gladly send you the writers' addresses and copies of similar letters from many others, if you want further proof. These letters, like the New Idea itself, stand every test. They prove that you yourself should have a

NEW IDEA

Registered U.S. Pat. Off.

THE ORIGINAL wide spreading spreader that revolutionized old-fashioned methods—that has always been the leader. Has solid bottom with chain conveyors. Pulverizes thoroughly and spreads evenly. Drives with heavy sprockets and chain—no gears. Low down, light draft. Loads and pulls without undue strain on man or team. When you buy insist on the "New Idea"—the machine you are sure of. If you don't know our dealer, we'll send you his name and a copy of a splendid book on soil fertility. Send your name today.

New Idea Spreader Co.
Spreader Specialists
Coldwater, Ohio

THE FAMOUS "101 RANCH" ENDORSES THE NISCO

Gentlemen:

Bliss, Okla., December 15th, 1918.

We are very much pleased with the three NISCO Spreaders. We have used several other makes, but seeing your advertisement, decided to investigate your spreader. After looking them over, we ordered three of them and have them working every day along with three others.

Your puller much easier and does much better work than the others. We are pleased to recommend your NISCO Spreaders, as we are convinced that they are the best we have ever used.

Yours truly,
MILLER BROS., "101 RANCH"

The largest diversified Farm and Ranch in the United States.

**Don't
Get
Caught
Like this!**

Evidence and proofs by the thousands where the reading of our FREE book has shown the way to cure lame and useless horses. Every bottle of Save-The-Horse is sold with a Signed Guarantee—to cure SPAVIN, Ringbone, Thoropin, Shoulder, Knee, Ankle, Hoof or Tendon—or money refunded. Horse works. Our FREE Book telling you how to diagnose and treat 58 kinds of lameness, copy of Guarantee and Veterinary ADVICE—ALL FREE.

TROY CHEMICAL CO., 320 State St., Binghamton, N. Y.
Druggists Everywhere sell Save-The-Horse with CONTRACT, or we send by Parcel Post or Express paid.

ABSORBINE

TRADE MARK REG. U.S. PAT. OFF.

Reduces Bursal Enlargements, Thickened, Swollen Tissues, Curbs, Filled Tendons, Soreness from Bruises or Strains; stops Spavin Lameness, allays pain. Does not blister, remove the hair or lay up the horse. \$2.50 a bottle at druggists or delivered. Book 1 R free.

ABSORBINE, JR., for mankind—an antiseptic liniment for bruises, cuts, wounds, strains, painful, swollen veins or glands. It heals and soothes. \$1.25 a bottle at druggists or postpaid. Will tell you more if you write. Made in the U. S. A. by W. F. YOUNG, P. O. F. 268 Temple St., Springfield, Mass.



"TIX-TON MIX" with salt the year around keeps flock healthy and free from worms and ticks. Saves you big money—\$1.00 sample box by parcel post will make 100 lbs. of salt. Write for club offer—booklet on "Nature and Care of Sheep." PARSONS TIX-TON CO., Grand Lodge, Mich.

Cull Beans For Sale Carlots or bag lots. Owosso, Mich.
YOUNG-RANDOLPH SEED CO.



Early Tiling is possible this year

This open winter with but little frost makes it possible for you to tile earlier than usual. Don't wait till the last minute—start now to haul

American Vittrified Salt-Glazed Tile

Write for booklet, "Add More Acres to Your Farm." It tells why American Tile lasts longer.

American Sewer Pipe Co.

Michigan Branch Jackson Mich.
Drain Tile Sewer Pipe
Building Blocks
Vittrified Tile Sills

Clip Your Horses

Heavy coats of hair reek with perspiration and filth. Horses are more liable to colds and the usual spring ailments. A good horse clipping machine costs little and lasts a lifetime. The Stewart No. 1 is the ideal modern machine—only \$9.75. You can get it by sending \$2.00 and paying the balance on arrival. Or write for 1919 catalog containing complete line of machines.

CHICAGO FLEXIBLE SHAFT COMPANY
Dept. A177, 12th Street and Central Ave., Chicago, Ill.

WE WANT VETCH. SEND US SAMPLES
YOUNG-RANDOLPH SEED CO., Owosso, Mich.

Yankee Resourcefulness

By J. H. Brown

THE farmers of this great and glorious country, (some of them too old to know or do much, according to Dr. Osler), have worked it and the tumbleweed hit the notch on high gear and couldn't make the brake work later on. Finally Jack wonders in helping out in the war. Frost came along and hit it one below the belt and Ben's tumbleweed stopped growing in this life.

When the first fake notice came along that the old kaiser was letting the wind out of his gas bag, Ben heard the first crack by way of the big country, and even the girls away doing whistles in Battle Creek. He and his son were in the corn field husking seed



The Workers in Stanley Grange Community Fair.

left for the father and mother and the kids to run the farm the best they knew how. And the way they made good on the job will never be fully understood by the city man, who was more or less inclined to blame the farmer for being too slow, sometimes.

The farmer helped win the war as much and even more, than some city fellows we know. We have in mind just now one prominent pioneer farmer of Calhoun county who tried to do his share on the farm the past year, although he and his wife had already finished an apprenticeship of over a half century of active service.

And in the late fall this farmer Ben W. Phillips, who has been a long-time active officer and worker in the Grange was appointed to take charge of the community fair that has been an annual occurrence in that locality for a number of years.

We attended the fair and found that it was just as interesting as ever, in spite of the war. There was a large crowd and each one was asked to pay an admission fee of a few cents. The money was taken in, including both admission fees and sale of some exhibits at auction that afternoon, was turned over to the Red Cross.

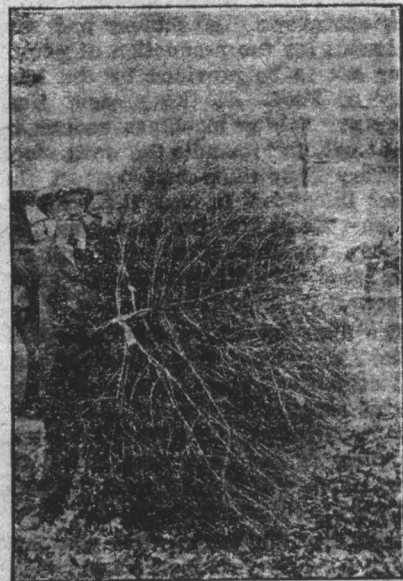
After dinner we took a picture of some of the Grange workers in the school house grove across the road from the Grange Hall. In front stands some of the young girls of the Grange in their Red Cross garb. The manager stands beside the large telephone pole.

In the road lies a large tumbleweed that Ben Phillips grew on his farm and hauled to the fair with his gas tractor. When Ben drew nigh to it and straightened up its lifeless form it towered above his head, as the second picture shows.

In spite of the scarcity of help on his farm last summer Ben and his son planted a large acreage of corn and cultivated the rows as regularly as the moon changed. Along late in the month of August the corn was laid by for a spell to mature. It was during this little vacation that this big tumbleweed saw its only chance and took

ears to sell to buy another Liberty Bond. They both started for the house on high gear and climbed the roof in no time, each with a hammer in his good right hand.

"Curfew shall not ring tonight," declared Ben, "but by the great horn spoon we'll make it ring good and plenty now." So they both drew nigh to the big farm dinner bell and Ben swung his hammer baton in a wild flourish and hit the rim one as a sort of introduction. During the next hour or so they played marches, waltzes and



A Mighty Tumbleweed Has Fallen.

quicksteps, a dirge for the old ex-kaiser and a gallop for the boys in France.

When the benediction was played on the bell rim it was drawing nigh to chore time. That old farm dinner bell sweat drops of something all night, for the roof was wet as sop the next morning. In approximate propinquity to noon the next day Mrs. Phillips pulled a fine lot of baked potatoes out of the oven, and then went through the motions of calling the men to dinner. She yanked the bell rope several times but there was nothing doing at the other end in the usual way. The bell was resting from its labors of the day before and was too tired to even snore.



ALBION-MARENGO COOPERATIVE COMPANY HAD BIG YEAR.

At the annual meeting of the stockholders of the Albion and Marengo Cooperative Company, the reports indicated a very prosperous year. The election of directors resulted in the choice of Minard Farley, G. W. Smith, Frank Butler, Walter Ray, Elmer VanSickle, Charles Kimmer, H. G. Bliss. The board elected the following officers: President, G. W. Smith; vice-president, Minard Farley; manager, Elmer VanSickle; secretary-treasurer, H. G. Bliss.

Some figures giving an idea of the company's big business will be of interest. During the past year the company has shipped 28½ cars or decks of live stock from Marengo, and 106½ cars from Albion, making a total of 135 cars, consisting of 980 cattle, 5,533 hogs, 571 veal calves, 2,522 sheep and sixteen goats.

Two cars were shipped to Chicago, 33 decks to Buffalo and 100 decks to Detroit. These shipments brought in a total of \$305,940.99, or \$1,000 for every working day in the day.

The books of the company on February 1 showed a balance of \$385.87 in the insurance fund and \$358.06 in the general fund. The company has a membership of 271, an increase of seventy for the year. Live stock has been shipped for 421 people, or for 150 more people than the whole number of members.

EXPORT TOOLS AND FERTILIZER.

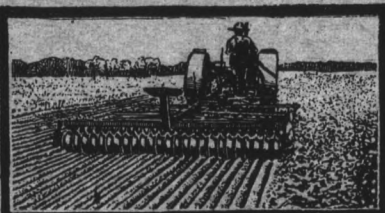
IMMEDIATE action by the War Trade Board is expected to lead to export business with Denmark in farm tools and machinery and automobiles. Under a new agreement with the War Trade Board, export licenses for 260,000 tons of fertilizer, valued at approximately \$3,900,000, will be granted this year. Every effort will be made by the Danish government to use the 375,000 tons of Danish shipping recently released from Inter-Allied control in the shipment of fertilizer in an effort to deliver this entire amount in the coming two months, in time for the spring planting.

Previous to the new agreement the United States, because of ship shortage, permitted the export of only 33,000 tons a year. As a result the 200,000-odd farms in Denmark are in sore need of acids for the enrichment of the soil, and the farmers, who have made great profits during the war, are anxious to invest in fertilizer.

It is understood that for the most part the fertilizer to be sent abroad will be of the South Carolina rock variety, now selling aboard ship on the Atlantic seaboard at about \$15 a ton. American traders in this country hope to retain the business, and through the activity of Danish exporters there is reason to believe that closer trade relations between the two can be sustained.

It is believed that through the export of farm essentials American manufacturers will be able to establish strong markets for farm machinery, including tractors, and that lighter types of trucks and passenger cars can be sold in Denmark. A strong trade in cash registers and various types of electrical supplies has already been established.

As You Sow -



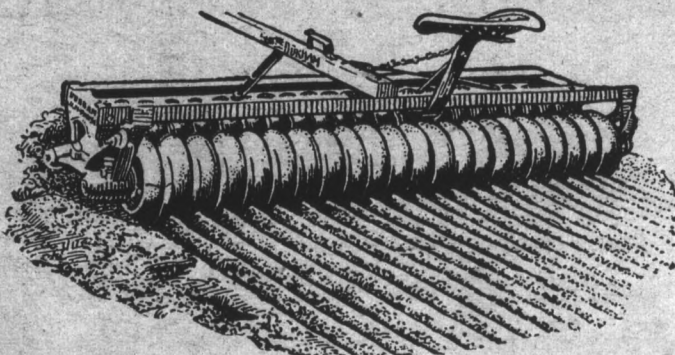
This field directly adjoining the one at the right was put in ideal shape for seeding by one operation with the double disc harrow and the Dunham Cultivator-Packer pulled by a tractor.

All Drawings Made from Photographs

DUNHAM CULTIVATOR-PACKER

TRADE MARK REG.

The only difference between these fields was in the use of the Dunham Cultivator-Packer for fitting the seed bed. Soil, seed, fertilizer and other conditions were the same and yet look at the tremendous difference in the condition of soil and in the final yield.



Why should you put this year's crops in a seed bed full of clods or peppered with air spaces in which plant roots can find no food. Why should you let a crop become stunted for lack of moisture when here is a remedy for all of these troubles, tested and proved by agricultural authorities?

The Cultivator-Packer is successfully used on all crops—wheat, oats, corn, alfalfa, cotton, rice, sugar cane, sugar beets, flax, potatoes, etc. The Cultivator-Packer will crush every lump, releasing great quantities of plant food which would otherwise be lost. It will firm out air spaces and pack loose soil around the seed, thus attracting moisture, causing quick germination and giving immediate nourishment to the first rootlets. At the same time the Cultivator-Packer stirs the surface forming the mulch which will retain moisture in dry seasons.

Make your 1919 Seed beds worthy of a better harvest with the Dunham Cultivator-Packer.

Talk with any John Deere dealer about the Cultivator-Packer. Ask him for copy of the 56-page illustrated booklet Soil Sense.

CULTIVATOR-PACKERS FOR SALE BY
JOHN DEERE DEALERS

THE DUNHAM CO.,
Berea, Ohio
(Suburb of Cleveland)



This wheat field yielded 46.3 bushels per acre. An increase of 16.8 bushels over the field at the right, due entirely to the use of the Cultivator-Packer in making a perfect seed bed.



After plowing, an attempt was made to fit this field by use of the disc harrow and peg tooth harrow behind the tractor. Compare with the field at the left where the same amount of work was done by a disc harrow and the Dunham Cultivator-Packer.

All Drawings Made from Photographs

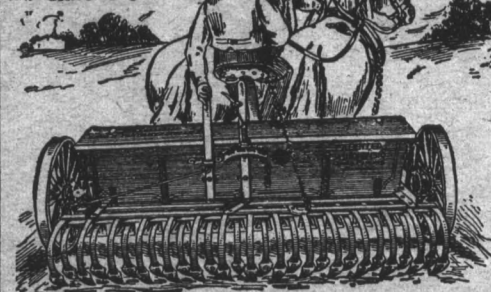
The yield from this wheat field was only 29.5 bushels per acre, yet it had exactly the same soil, same fertilizer and same seed as the field shown at the left. The Cultivator-Packer was not used.



You Shall Reap

FULL VALUE FOR EVERY DOLLAR WHEN YOU BUY THE GUARANTEE Spreader

Note how evenly material is being applied. Sold at an exceedingly low delivered price.



HERE ARE A FEW REASONS, only a few, READ THEM. Then write to us TODAY for our catalog. It's FREE. Pages 2 and 3 in our BIG SPREADER CATALOG is enough to convince you of the urgent need you have for this good big, strong, durable sprayer. Equipped with automatic covering and harrowing attachment and seven other patented features. Sold under a FIVE YEAR GUARANTEE. Send today for spreader catalog which is chucked full of spreader information. Tells all about lime, ground limestone and commercial fertilizers. Also tells "How to find out when your soil is in need of these fertilizers." Recently one of our customers wrote us stating this book saved him \$200. It may do as much for you. Write quick. Money saved is money made.

Guarantee Mfg. Co.,
Dept. B56, Mail Division
Woodsboro, Md.



Does the work of One Man, One Horse and 4 H. P. Engine

One Outfit That Meets All Power Needs

Here's power for practically every job on the farm. Plows, Disks and Harrows in preparing seed bed; cultivates row crops—astiride or between rows; uses standard tools; runs any small power machine easier, better, faster than other power outfits. Only practical tractor for small farmers, gardeners, fruit growers, etc. Efficient, economical. Write for Free Catalog and Demonstration Offer. No obligation.

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Distributors Dept. 121 Detroit, Mich.

Fistula & Poll Evil

Approximately 10,000 cases are successfully treated each year with Fleming's Fistoform. No experience necessary; easy and simple; just a little attention every 8th day. Price \$2.50 a bottle—your money refunded if it fails. Send for free copy of FLEMING'S VEST-POCKET VETERINARY ADVISER. Valuable for its information upon diseases of horses and cattle. 197 pages, 67 illustrations. Write today. Fleming Bros., Chemists 253 Union Stock Yards, Chicago, Ill.

MINERAL HEAVES COMPOUND CURES HEAVES

Booklet Free \$3 Package guaranteed to give satisfaction or money back. \$1 Package sufficient for ordinary cases. MINERAL HEAVE REMEDY CO., 463 Fourth Ave., Pittsburg, Pa.

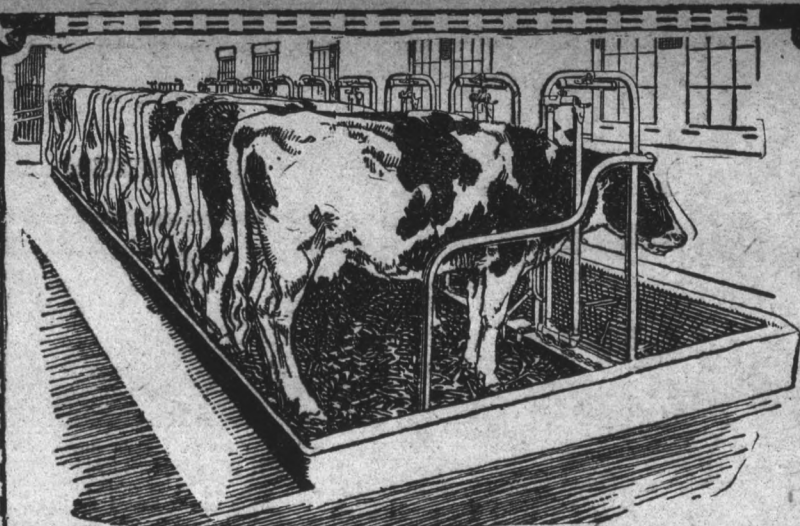
Ear Tags FOR STOCK

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. 145 W. Huron St. Chicago

FARM WAGONS

High or low wheels—steel or wood—wide or narrow tires. Wagon parts of all kinds. Wheels to fit any running gear. Catalog illustrated in colors free. Electric Wheel Co., 35 Elm St., Quincy, Ill.

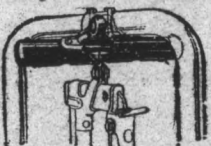
Please Mention The Michigan Farmer When You Write to Advertisers



Keep Cows In Line At the Gutter and You'll Keep Your Cows Clean

THE cow in a STAR Stall can be always kept in line at the gutter. This means a clean cow-bed and a clean cow; it saves you much of the work in cleaning out the barn day after day. The litter falls in the gutter, where it's easily taken care of. The STAR Alignment Device provides for this. It lengthens or shortens the cow bed instantly. As easily operated as locking the Stanchion.

This is just one of the many big work-saving features in STAR Equipment.



This shows the STAR Alignment Device with Stanchion in center position

Send for the STAR Catalog

Ask for Free STAR Barn Plans

and learn how easily and economically you can put STAR Equipment in any style barn. If you are thinking of building or remodeling, let the STAR Master Barn Designers send you free barn plans.

Write for the STAR Catalog No. 121

HUNT, HELM, FERRIS & CO.
HARVARD, ILL. Complete Barn Outfitters ALBANY, N. Y.

STAR

Equipment

The STAR Line
Barn Equipment
Litter Carriers
"Harvester" Hay Tools
Door Hangers
Garage Equipment
Coaster Wagons
Tank Heaters and
Other Farm
Specialties

What Peace Brings

The food demand has been increased by peace. Increased crops are again a world necessity. Home and foreign markets are sure to call for staple farm products at good prices.

A-A-C Fertilizers

offer you the means of increasing your crops at a handsome profit. If you have never used these fertilizers before, do so this year, for the prospective demand for farm products never was better. They are sold throughout the United States and abroad.

We sell fertilizer with or without potash as you prefer. The potash is soluble in water.

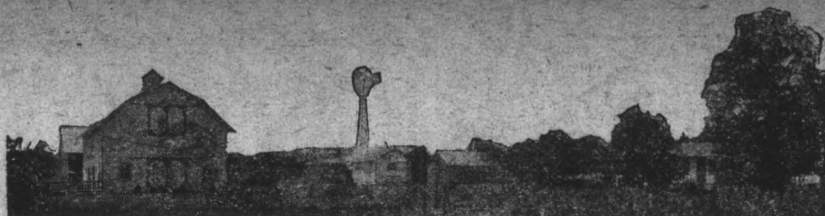
How to Get a Crop of Potatoes

is a small but very useful pamphlet on this important subject. We have sent out many thousand to interested farmers. It covers the fertilizing, growing and marketing of potatoes. This book should be of aid to you. If you haven't had a copy, be sure to send your name and address to any one of the offices named below, and it will be sent to you free.

The American Agricultural Chemical Co.

ATLANTA CINCINNATI DETROIT NEW YORK
BOSTON CLEVELAND JACKSONVILLE PHILADELPHIA
BALTIMORE CHARLESTON LOS ANGELES ST. LOUIS
BUFFALO COLUMBIA MONTGOMERY SAVANNAH, ETC.

Agents Wanted in Unoccupied Territory



Maple Sugar Makers

DECISION to conduct a state-wide campaign of education to develop a market for the highest quality of almost colorless syrup was reached at the annual session of the Michigan Maple Syrup Makers' Association at the Michigan Agricultural College on February 5-6 during Farmers' Week and the Housewives' Congress. The session was presided over by President A. B. Cook, of Owosso, and attended by nearly one hundred Michigan syrup makers.

The quality plays the most important part in the successful marketing of maple products was the declaration of C. F. Purinton, of Burlington, Vermont, treasurer of the Vermont Maple Syrup Makers' Association in his address before the convention. Michigan syrup makers expressed themselves as enthusiastic in their desire to adopt Mr. Purinton's suggestion of catering to the best market with a syrup pos-

sessing a "rare aroma" rather than flavor of the "distinctive maple tang" variety which was described as an "extract of bark, beetles, bugs and birds in dilution with the sap." Indications are that the public will soon be educated to this better grade of syrup with the result that the second grade will go largely into the manufacture of plug tobacco and other commercial uses.

Cooperation with the Michigan Agricultural College by E. C. Mandenberg, specialist in forestry extension, who outlined a plan before the conference to conduct demonstrations in any section of the state where syrup making is a permanent industry. Until the district organization of the state association is completed, A. B. Cook, of Owosso, will remain as president and F. H. Sanford of the M. A. C., will continue as secretary until the completion of the district organization.

Live Stock Men Discuss Sires

IF scrub sires are at all sensitive creatures, they were made most uncomfortable last week by what Michigan's foremost breeders and feeders of live stock had to say about them during the course of their annual convention at the Michigan Agricultural College. The live stock men were at one with each other on the question of the need in Michigan for legislation to do away with scrub sires. It was their expressed opinion that the scrub sire should be condemned—and that as far as they are concerned they will make every effort to see that it is condemned.

The sentiment of the Michigan Improved Live Stock Breeders' and Feeders' Association on this subject, was summed up in a resolution, as follows: "We heartily endorse the pending legislation to eliminate scrub sires."

Much stress was laid also upon the imperative need for further remedial legislation in the direction of cleaning up tuberculosis in Michigan herds. The declaration was made that this work would be hastened if the state government would do its full duty by providing something like more adequate compensation for tubercular animals sent to the block.

A partial list of the officers elected by the Michigan Improved Live Stock Breeders' and Feeders' Association and the various breed associations affiliated with it, follows:

Michigan Improved Live Stock Breeders' and Feeders' Association.

President, Colon C. Lillie, Coopersville; vice-president, Herbert Powell, Ionia; secretary, George A. Brown, East Lansing; assistant secretary, W. E. J. Edwards, East Lansing; treasurer, H. H. Halladay, Clinton. Executive committee, J. Fred Smith, Byron; Jacob DeGeus, Alicia; J. Lessiter, Orion; Earl C. McCarty, Bad Axe; Alexander Minty, Ionia.

Michigan Holstein-Friesian Association.

President, M. W. Wentworth, Battle Creek; vice-president, H. W. Norton, East Lansing; secretary-treasurer, Charles Daniels, Okemos.

Michigan Guernsey Breeders' Association.

President, E. J. Smallidge, of Eau Claire; first vice-president, Arthur M. Smith, Lake City; second vice-president, H. G. Roy, Albion; third vice-president, J. L. Snyder, East Lansing;

secretary-treasurer, C. C. Parnall, Ann Arbor.

Michigan Horse Breeders' Association.

President, Jacob DeGues, Alicia; vice-president, June Elliott, Onondaga; secretary-treasurer, R. J. Hudson, of East Lansing; executive committee, L. C. Hunt, Eaton Rapids; John Jacob, St. Johns; John Hawkins, Hudson; Henry McNamara, Alma; H. L. Foster, Parma.

Michigan Aberdeen Angus Breeders' Association.

President, Alex. Minty, Ionia; vice-president, Gale Gilbert; secretary-treasurer, Ward Hathaway, Ovid.

Michigan Poland China Breeders' Association.

President, P. P. Pope, Mt. Pleasant; secretary-treasurer, W. J. Clark, Mason; executive committee, John Jacobs, S. Johns; E. C. Leonard, St. Louis; L. L. Chamberlain, Marcellus.

PUT IMPLEMENTS IN REPAIR.

ALL users of farm implements should anticipate, so far as practicable, the necessity for repairs and replacements sufficiently in advance of the working season to make it possible to put their implements in good working condition before the spring operations begin. This is the gist of a telegram from the Secretary of Agriculture to E. W. McCulloch, of Chicago, Secretary of the National Implement and Vehicle Association. Secretary Houston's telegram was in response to one from Mr. McCulloch advising him that manufacturers of and dealers in all lines of farm operating equipment have agreed, in the interest of economy and conservation, to join in urging farmers to inspect their equipment and to order necessary parts in advance of the time they are needed.

Manufacturers and dealers declare that if they can know sufficiently in advance the needs of the farmers for repair parts, these parts can be supplied when they are needed. If the needs are not known to the manufacturers and dealers until the actual time for use, troublesome and costly delays are likely to be caused—delays that may be felt in decreased production at harvest. It means a big saving of time and money to have all of the machinery in condition to begin the season's work before the time comes.



CULL BEANS FOR FATTENING LAMBS.

I am fattening lambs for market. Am feeding clover hay and cull beans. Beans cost \$35 per ton. Which would be the best for me to feed with clover hay, beans at the above price, or corn at \$1.50 per bushel,

Bay Co.

D. F. C.

Both clover hay and cull beans are foods rich in protein. They are protein foods rather than carbonaceous. Taking into consideration the present price of carbonaceous foods, like corn and barley, this ration isn't far out of the way in starting young lambs on the road to market. However, there is a little excess of protein for a balanced ration and corn would help it out nicely, and I believe that you could well afford to buy corn to feed as a portion of the grain in finishing these lambs for market. I believe you would get a better finish. There is no grain equal to corn in putting the finish on fattening animals.

I would suggest that you mix at least one-third corn with your cull beans and gradually increase the corn until you are feeding two-thirds corn and one-third beans at the end of the feeding period.

C. C. L.

SELF-FEEDER FOR HOGS.

Can you tell me how to make a good serviceable self-feeder for feeding hogs? Is nitrate of soda that is three years old, as strong as when new? If not, how much has it lost in strength? Is acid phosphate a good fertilizer to use on clover sod for melons?

Wexford Co.

J. H. C.

We made self-feeders by knocking the bottom out of oil barrels and setting them in a plank box with a tight bottom, the sides of which are four inches high. In other words, this foundation or platform was made out of 2x6's, and 2x6's were used for the outside. This box was three feet square. The barrel was set in the center on pieces of 2x4, raising it two inches from the bottom and then the top of the barrel was braced to the corner of this platform. This gives good results.

Any carpenter can make a satisfactory self-feeder. All you have to do is to make a box tapering on the inside like a grain bin. Have the sides slope to the bottom so that they are about four inches apart and this put into a sort of trough, say a foot wide, that will give six inches of space on either side. This can be made as high and as long as one deems necessary. A cover can be made on either or both sides to be raised when it is filled with corn or other food, and then closed to protect from storms.

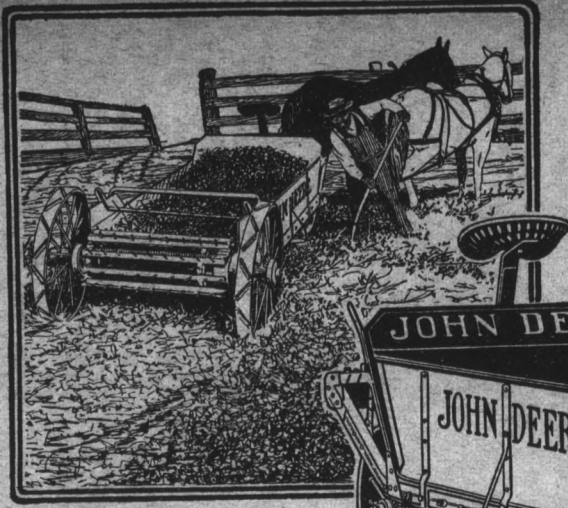
Nitrate of Soda.

Nitrate of soda will not lose any of its fertilizing properties by being held over unless it gets wet and ferments and this, I think, would be very unusual. It is safe to say that the nitrate of soda is just as good as ever.

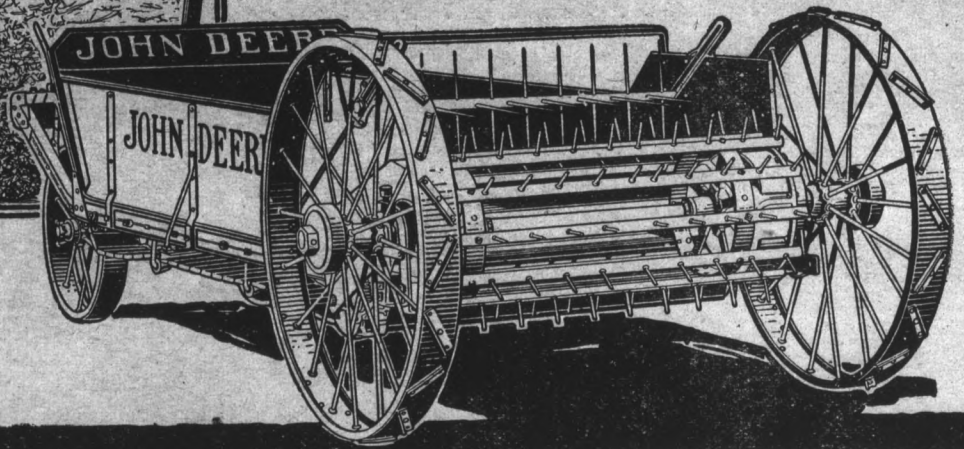
Acid Phosphate for Melons.

Acid phosphate is just the proper kind of fertilizer to use for melons, because phosphorus tends to hasten the production of fruit and seed, and that is what is wanted for melons. Of course, if you soil doesn't contain a sufficient amount of nitrogen it possibly would pay you to use a fertilizer containing both nitrogen and phosphorus, but the phosphorus is more essential.

C. C. L.



Makes Every Forkful Of Manure Count For A Bigger Crop Yield!



TO get full value from manure, load it from your stables into the John Deere Spreader and spread it at once, before any of its fertilizing qualities are lost. It takes only a few minutes' time to spread it and you save one handling of the manure. The same amount of manure fertilizes more land when spread with a John Deere Spreader than when spread by hand. It is distributed evenly, heavy or light, just as you want it. No bunches, no bare spots, every foot of the land is fertilized alike. Get the increased crops that follow the use of the

JOHN DEERE SPREADER

The SPREADER with the BEATER on the Axle

YOU will like the John Deere Spreader. It is easy to load—the box is low down. The high drive wheels lighten the draft and furnish plenty of traction, even on snow-covered or partly thawed-out fields.

The simplest spreader built—no clutches, no chains; only about half the parts necessary on the ordinary spreader. Main working parts are mounted on the rear axle, where they can't get out of alignment to cause binding, heavy draft or breakage.

The John Deere has a ball-bearing eccentric apron drive that never

needs oiling; a simple beater drive with enclosed gears that run in a bath of oil; a revolving rake that insures an even feed to the beater—no choking or bunching; an endless apron that never races going up hill or down.

With the straw-spreading attachment, furnished extra, the John Deere spreads straw perfectly; it gives you a two-in-one machine that one man can operate.

There is no farm implement on which you can realize so quickly on your investment as the John Deere Spreader.

JOHN DEERE

Moline, Illinois

GET QUALITY AND SERVICE



JOHN DEERE DEALERS GIVE BOTH

Only \$2 DOWN and One Year To Pay

For any Size—Direct from Factory

You can now get one of these splendid money-making, labor-saving machines on a plan whereby it will earn its own cost and more before you pay. You won't feel the cost at all.

New BUTTERFLY Separator

\$38 No. 2½ Junior—a light-running, easy-cleaning, close-skimming, durable, fully guaranteed separator. Skims 120 quarts per hour. We also make four other sizes up to our big 800 lb. capacity machine shown here—all sold at similar low prices and on our liberal terms of only \$2 down and a year to pay.

30 DAYS' FREE TRIAL! GUARANTEED Against Defects In Material and Workmanship

You can have 30 days' free trial and see for yourself how easily one of these splendid machines will earn its own cost and more before you pay. Try it alongside of any separator you wish. Keep it if pleased. If not, you can return it at our expense and we will refund your \$2 deposit and pay the freight charges both ways. You won't be out one penny. You take no risk. Postal brings Free Catalog Folder and direct-from-factory offer. Buy from the manufacturers and save money. Write TODAY.

ALBAUGH-DOVER COMPANY, 2165 Marshall Blvd., Chicago, Ill.

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Over 150,000 New Butterly Separators Now in Use.

FIELD SEEDS AT WHOLESALE PRICES

We save you money on your Seed Bill. Write for our Special Money-Saving Price List and get our reduced prices on Best Quality Guaranteed Seed. You should know about our low prices. Write at once and be convinced. Everything guaranteed equal to samples or money refunded. Don't pay double profits on Grass Seed. Our seeds are sold subject to government test. Have low prices on Seed Corn, Oats, Wheat, Spelts, Barley, Cane, Millet, Cowpeas, Rape, Vetch, Sudan Grass, Potatoes and all Farm and Garden Seeds. Don't order until you write for big 116-page catalog. Free samples and special low prices on seeds you require. Will send free 60-page book on Growing Alfalfa to those who ask for it. Write at once, as we can save you money.

A. A. BERRY SEED CO.,

Box 231 Clarinda, Iowa

TIMOTHY \$4.50 PER BU. UP
ALFALFA \$9.25 PER BU. UP
CLOVER AT LOW PRICES
ALSINE & TIMOTHY
Sargain Mixture
SAMPLES
And 116p Catalog
FREE

A Full Line of Quality Implements for You

Let us send you free our big 156-page book, "Better Farm Implements and How to Use Them." Full of valuable farming information. A book to which you will often refer. Worth dollars. Tells all about the complete line of John Deere machines listed below.

Binders, Grain and Corn	Hay Loaders
Buggies	Hay Presses
Corn and Cotton Planters	Hay Rakes
Corn Shellers	Hay Stackers
Cultivators	Listers
Alfalfa	Manure Spreaders
Walking	Mowers
Riding	Plows:
Two-Row	Walking
Feed Mills	Wheel
Grain Drills	Tractor
Grain Elevators	Stalk Cutters
Harrows:	Wagons
Disc	Farm Engines
Drag	Farm Tractors
Spring Tooth	

To get this valuable book, state the implements in which you are interested and ASK FOR PACKAGE MS-216.

Why a "B-V-T" Silo

is the Best Investment

Because it has been on the market EIGHT YEARS, without a SINGLE FAILURE.

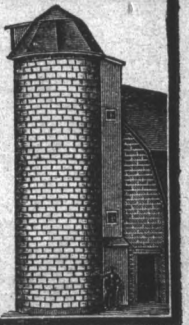
Made of famous Brazil Vitreous Fire Clay—ONE ton costs as much as FIVE tons of shale.

A "B-V-T" WILL LAST FOREVER

Will not freeze or crack. Keeps silage in perfect condition. You never have to rebuild a "B-V-T".

Send Today for Catalog D.

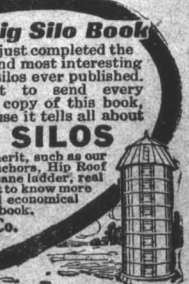
Brazil Hollow Brick and Tile Company
BRAZIL INDIANA



FREE Our Big Silo Book

We have just completed the biggest and most interesting book on silos ever published. We want to send every farmer a copy of this book, free and postpaid, because it tells all about NAPPANEE SILOS and their 25 points of superior merit, such as our Perfect Splice, Storm Proof Anchors, Hip Roof that gives more room, safe and sane ladder, real man sized doors, etc. If you want to know more about the most serviceable and economical wood silos made, get this FREE book.

Nappanee Lumber & Mfg. Co.
Box 61 Nappanee, Ind.



Get Our Windmill Book

Write Today! Learn why best pumping service is given by STOVER SAMSON Windmills. The original double geared, strongest, dependable. STOVER MFG. & ENGINE CO., 1224 Samson Ave., Freeport, Ill. Also Stover Good Engines, Feed Mills, etc. Free Catalog.

Mention the Michigan Farmer when writing Advertisers

MOHAWK TIRES VS SNOW DRIFTS

Right from the beginning we have built Mohawk tires to meet *unusual* road conditions, such as snow covered, frozen rut filled roads.

Most any tire today will make a fairly good showing if operated under ideal conditions. But, we believe that very few people operate their cars under ideal conditions all the time. We believe that Mohawk users want to go anywhere they wish regardless of road and weather conditions. So we have held to the policy of building Mohawk tires with the extra strength, the extra quality and quantity of materials and the extra care in building that will enable them to "make good" for everyone everywhere.

And they do. Mohawk tires have proven themselves—so surely, in fact, that 85% of the people who once buy Mohawk tires stand by them from then on, year after year—will buy no others. Our records prove it.

We claim no mysterious qualities or secret processes, or unusual "selling points" for Mohawk Tires.

We simply put into them the purest, highest quality rubber—the best and toughest fabric. They are built in an efficient plant by men who believe in their product and in an organization that is not encumbered with watered stock or bonded indebtedness—so that the money paid for them may buy fine materials and workmanship instead of paying for high interest and inflated profits.

For snow covered, frozen, rutted roads, we particularly recommend the Mohawk Non-skid Tread. Its scientifically counter-acts skidding and drive slipping and its tread is so tough it will stand the abrasive action of macadam, cement and gravel and the cutting action of sharp rocks, frozen ruts, crushed stone and car tracks.

When you need a new tire you can buy one that actually represents more value for your money if you ask for Mohawk.

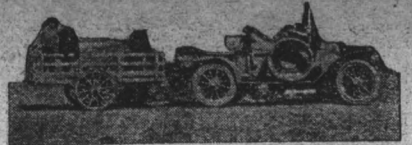
Good dealers almost everywhere sell them.

Mohawk Rubber Company

Akron, Ohio

New York Boston Chicago Atlanta Kansas City San Francisco

MOHAWK "Quality" TIRES



MAPLE SWEETS.

(Continued from first page).

mended by practical makers, as the sap dashes from end to end while driving, and the rough travel soon racks it to pieces. For this reason the tank should be circular in form and made of heavy tin or galvanized iron, with a reinforced wooden bottom. A tank holding from seventy-five to one hundred gallons is best for a one-thousand sand-tree bush.

If the sap could run directly from the tree to the evaporator the ideal condition would obtain, but obvious obstacles prevent this result. A storage tank is necessary to keep the evaporator going between loads of sap. Because stored sap quickly spoils a large tank is not best, as the maker should provide a proper sized evaporator to handle the run as it comes. It is a good idea to put a cake of ice in the storage tank when the weather is too warm, and to have the tank located on the north end of the house, which aids in keeping it cool.

A proper supply of fuel is a matter of the utmost importance in sugar making. A quick blaze is necessary to rapid boiling, and this can be obtained only with dry fuel. Wood is used almost universally, but in some sections coal is used to help out. The wood should be cut the season before, so as to be well cured and make a hot fire. About ten cords of mixed hard and soft wood will usually boil for a one-thousand-tree bush for the making season. For rapid boiling part of the wood should be cut short enough to go across the firebox.

Failure to skim the boiling sap, as well as use of the thermometer or saccharometer, is responsible for much poor grade maple products. No maker has a good enough eye for maple syrup to know when he has boiled the sap sufficiently, and his guess results in a poor season's product, when the use of one of these instruments would make his work accurate and his season's profits much greater.

Future Maple Demands.

The future of the sugar maker seems bright with hope if he will but attach to his work that dignity which rightly belongs to it. Pure and fine products of the maple tree hold an enviable position among luxuries in the homes of well-to-do people, and will continue to increase in value. To secure the benefit of this advance the grower requires not only to furnish his plant with modern equipment, but he must exercise the utmost care, as does the maker of choice butter, in every stage of the process of manufacture.

PACKERS DOING BIG BUSINESS.

ARMOUR & CO says: "Tremendous export business has been given to all packers during the past week, with the result that provision stocks are becoming absorbed rapidly by starving European nations. Domestic trade for provisions is also much better and is improving from week to week. Pork cuts are in better demand and at stronger prices. Continuance of this demand is expected. Heavy hog crop has been well marketed and receipts will be lighter.

"Beef trade shows considerable improvement over last week, cattle markets being very much higher. Live values have taken a very strong advance.

"Collections show the effect of slowing up in industrial conditions and labor disturbances and, in the south, influenza epidemic and cotton situation."

He is in no wise a public benefactor who keeps two cows to do the work of one.

Farms and Farm Lands For Sale

Gladwin Co. Mich.

Farms, Stock Ranches, Cut-Over Lands.

240 acre farm 3 miles from Gladwin, two story house barn 60x80 full basement, clay loam, well fenced, high producer, \$15,000. 320 acres 4 miles from Gladwin, 150 acres well cleared dark loam, plenty of buildings, flowing well, stock proposition \$15,000. 160 acre grain and stock farm, good buildings, clay loam, \$11,000. 80 acres, 25 cleared, small buildings, \$300 down, long time, \$2,000. 320 acre stock ranch, well fenced, watered by small lake, \$3,200. 400 acres, cut-over land suitable for farm or stock, \$3,600. Write for full description of my special farm bargains.

U. G. REYNOLDS, Gladwin, Mich.

McClure-Stevens Land Co.

We have for sale 15,000 acres of fine unimproved lands, well located, joining well settled locality, on easy terms. A tract of 160 acres, 5 miles from Gladwin, on daily mail route, all fenced with woven wire, 30 acres under fine state of cultivation, 6 acres in fruit. A Sheep Ranch of 310 acres, all fenced, well grassed over, living water, 700 acres cleared, 30 acres under fine state of cultivation with fruit, good buildings, 250 head of sheep, 4 stock ranches well grassed, fenced and watered with living water.

McCLURE-STEVENS LAND CO. Gladwin, Mich.

40-Acre Central West Farm, Near City, only \$900

Tillage pasture, wood, land adapted good crops corn, clover, potatoes, etc. Good condition house, lake in sight, convenient get bullies. 3 miles city, R.R. depot &c. Owner's other business forces sale and low price is \$900, easy terms. Details page 15 Bargain Catalog, copy free. Dept 101, STROUT FARM AGENCY, Ford Bldg., Detroit.

South Dakota Corn Crop

alone averaged \$1.58 per farm for all farms of the State and the grains made 2 1/2 times as much again. If you are interested get bulletins Department of Immigration, Chas. McCaffree, Commissioner, Capitol Q-84, Pierre, S. D.

THRESHING OUTFITS

FOR CO-OPERATIVE OR INDIVIDUAL USE

Below is only a partial list of Factory Rebuilt Engines.

9 H. P. J. I. Case	12 H. P. Nichols & Shepard	15 H. P. Port Huron
12 H. P. Port Huron	13 H. P. Russell	16 H. P. Nichols & Shepard
12 H. P. J. I. Case	14 H. P. Port Huron	16 H. P. Huber
12 H. P. Aultman Taylor	15 H. P. Advance	16 H. P. Rumely

WE ARE BUILDING A PORT HURON SEPARATOR SUITABLE FOR USE WITH ANY OF THE ABOVE SIZE ENGINES

An ideal threshing outfit at a reasonable price.

Write us for information about small separators, and complete list of these Special Priced Engines.

PORT HURON ENGINE & THRESHER CO.

Port Huron, Michigan

SOUTHERN FARM

for sale in most productive farming county in Alabama. 80 acres with improvements: fenced and cross fenced with woven wire fence; 35 acres cleared; good pasture; five room house, fire place, large living porch, three year old hip roof barn; good well; 3 1/2 miles from county seat; good pike road; near church and school; easy terms; will consider some good property in part exchange. RAY G. BURLINGAME, Box 811, Miami, Florida

A farm of 360 A. good soil, good house and other buildings, trout stream running through same 70 acres improved make a fine stock farm. Mrs. Emma Reames, R. 1, Falmouth, Mich.

For Sale, 80 A., 9 room house, barn, carriage house, etc., shade, water in house, gravel road, near school and church, \$5000. Box 25, R. 4, Lakeview, Mich.

The best farm bargains are in Southern New York. Tell us what you want, we have it. OWEGO FARM AGENCY, Owego, N. Y.

Rich Michigan Farms. Low prices. Easy terms. STAFFELD BROTHERS, 15 Merrill Building, Saginaw, Michigan

How to Breed Live Stock

Free Book

Get our wonderful free booklet, "How to Breed Live Stock". Reveals valuable information on the breeding and feeding of horses, cattle, swine and sheep. Shows pictures of breeding organs. Also describes our wonderful home-study course in Animal Breeding, Sterility, Disease-Prevention, Contagious Abortion, Artificial Breeding, etc., all taught in detail. Write today for free booklet and learn how to master scientific breeding at home. We have brought the school to the breeder. Get our free booklet. NATIONAL SCHOOL OF ANIMAL BREEDING, Pleasant Hill, Ohio. Dept. 402



MUCK LAND QUESTIONS.

BY EZRA LEVIN, SPECIALIST.
Oats on Muck Land.

I have some muck land on which I raised sugar beets very successfully. I have also raised hay, both alsike and clover and timothy, and have tried to raise oats in it, but it has always lodged to such an extent that we could not harvest it. I have been told to apply salt, but have never tried it.

Gratiot Co. C. K.

In a meeting of the Michigan Muck Farmers' Association last week, the matter of grains on muck was given considerable discussion. It was suggested that barley be tried instead of oats wherever possible.

The best practice of growing grains on muck would consider, first, thorough rolling; second, extra amount of seed; third, in general, the application of acid phosphate on muck which has had a manure application the year before the grain crop.

There is some evidence that salt is a benefit on muck lands, but not sufficient to recommend its use. It must be remembered that the excess straw growth and lodging of grains is caused by an excess of nitrogen being released in the muck. Anything that can be done to keep this nitrogen from being released too rapidly and holding back rapid growth is essential. Rolling accomplishes this purpose.

Of course, it must always be remembered that there are "mucks and mucks," and they vary just as widely as our highland soils. From enquirer's letter I judge that he has a loose, deep muck.

Treating Muck Land.

I have a few acres of muck land. What is the best method of treatment? If ashes, what amount?

Hillsdale Co. C. H. D.

Suggestions for fertilizing muck soils appeared in recent issues of the Michigan Farmer.

Unleached wood ashes contain from five to six per cent of potash and a large quantity of lime. Leached wood ashes contain about one per cent of potash. Muck farmers have applied from one hundred to one thousand pounds of wood ashes to the acre, depending upon whether it was used for intensive or general farming purposes. I assume that you want this for truck purposes.

Unquestionably you will get results from wood ashes on muck. Particularly if you have not applied any form of potash in several years.

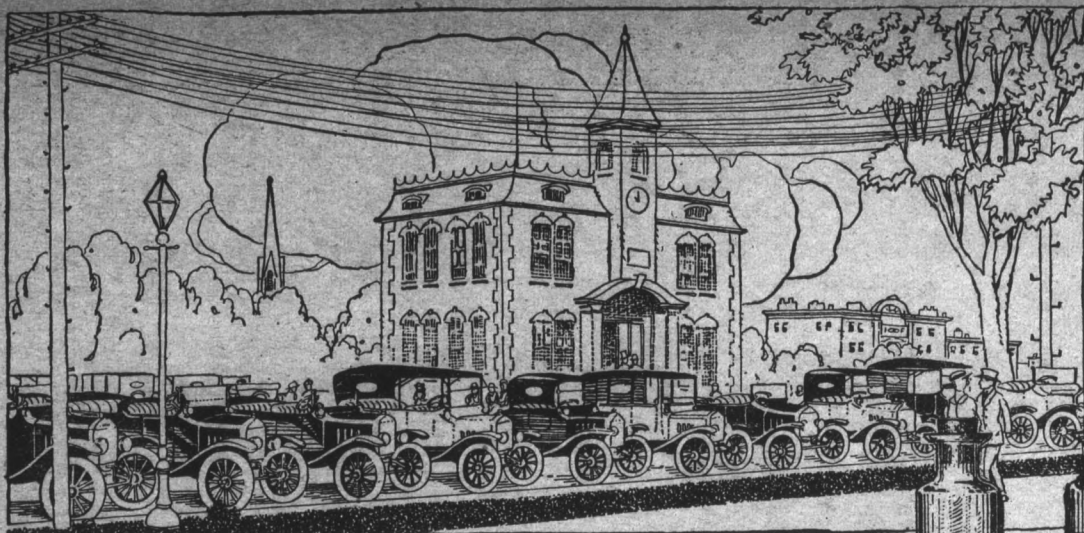
SUDAN GRASS.

I would like to ask a few questions about Sudan grass? How much seed to the acre? How many times can it be cut in a year. Does it make good hay? How long does it live? Does it grow good in Michigan?

Eaton Co. H. J. C.

This plant has never become very popular in Michigan. It belongs to the sorghum family and is a rank grower but it does not make as good hay as our common grasses and clovers. If cut at the right time and not too close it will sprout up again but the nature of the plant is nothing like alfalfa in this respect. I would not think it advisable to grow this crop only as a catch crop. I would prefer to use the plants that have been established as successful in this climate and that we know how to handle rather than to displace them by growing this crop. If for instance, it comes just right in our farm plan to sow something like this, it is a splendid thing to do so because we gain information that may be valuable later on but it is risky to sow too large a field to a crop we never have had any experience with. If I lacked hay I would much prefer to grow peas and oats or Hungarian grass or soy beans.

C. C. L.



New facts about lubrication every Ford owner should know

IN the cities, where some companies use great numbers of Ford cars and results of their use can be easily compared, it has been proved beyond any doubt that attention to lubrication is one factor of operation which will greatly reduce the cost of running a Ford.

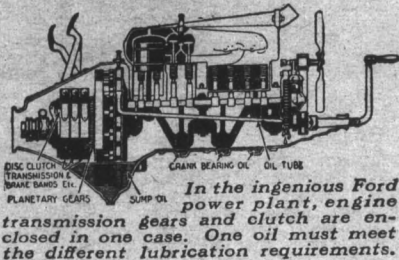
Scientific comparison of the costs of running various cars under similar conditions has proved that:

1. Mileage per gallon of gasoline can be increased.
2. Mileage per quart of oil can be increased.
3. Carbon deposits can be reduced to a minimum.
4. Repairs can be greatly reduced.
5. More power can be made constantly available.
6. Overheating, loose bearings, engine knocks, can all be practically eliminated.

How are these surprising results obtained? By using an oil which resists heat.

Ordinary oil breaks down

Ordinary oil breaks down quickly under the intense heat of the engine—200° F. to 1000° F.—forming a large proportion of its bulk in black sedi-



In the ingenious Ford power plant, engine transmission gears and clutch are enclosed in one case. One oil must meet the different lubrication requirements.

ment, which has no lubricating value.

Sediment crowds out the good oil on the metal-to-metal surfaces and prevents the oil from efficiently lubricating the fast-moving parts. Loose bearings are almost always the result of

using poor oil. Engine knocks, broken connecting rods, slapping pistons are an inevitable result.

After years of experimentation Veedol engineers evolved a new method of refining by which a lubricant is produced which resists heat. This, the famous Faulkner process, is used exclusively for the production of Veedol, the scientific lubricant.

How Veedol, the scientific lubricant, reduces the formation of sediment by 86% is shown by the two bottles illustrated above.

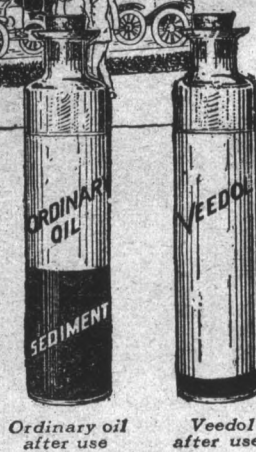
Buy Veedol today

Your dealer has Veedol or can get it for you. If he cannot supply you, write us for the name of the nearest Veedol dealer. Enclose 10c for copy of the 100-page Veedol book, which describes internal combustion engines and their lubrication. It will save you many dollars and help you to keep your car and tractor running at minimum cost.

TIDE WATER OIL COMPANY

Veedol Department

442 Bowling Green Building, New York
Branches or distributors in all principal cities in the United States and Canada.



Ordinary oil after use Veedol after use

Showing sediment formed after 500 miles of running



\$19.95 Sent on Trial Upward American Cream SEPARATOR

Thousands in Use giving splendid satisfaction justifies investigating our wonderful offer: a brand new, well made, easy running, easily cleaned, perfect skimming separator only \$19.95. Skims warm or cold milk closely. Makes thick or thin cream. Different from picture, which illustrates our low priced, Bowls a sanitary marvel and embodies all our latest improvements. Our Absolute Guarantee Protects You. Besides wonderfully low prices and generous trial terms, our offer includes our—

Easy Monthly Payment Plan

Whether dairy is large or small, do not fail to get our great offer. Our richly illustrated catalog, sent free on request, is a most complete, elaborate and interesting book on cream separators. Western orders filled from Western points. Write today for catalog and see our big money saving proposition.

American Separator Co., Box 1061, Bainbridge, N.Y.



WHITE BLOSSOM SWEET CLOVER

BETTER THAN RED CLOVER FOR SOILING AND A VALUABLE HAY CROP

Does not winter-kill. Succeeds on all kinds of soil. Better than red clover as a soil builder. Prepares the land for alfalfa and other clovers. Equal to alfalfa in feed value. We do not handle Southern seed, but offer choicest selections of Michigan grown; 99.75% pure; high germination, scarified, best in the world. Selling at about half the price of red clover seed, every farmer should investigate it. A Special Bulletin explaining cultivation and uses of this most valuable legume, sample of seed and our 1919 Seed Book free, on request. We are headquarters for Michigan Clover, Alsike, Vetch, Peas, Northwestern Alfalfa, etc.

THE C. E. DUPUY CO., Pontiac, Michigan

CLOVER

\$2 to \$3 Per Bushel Less Money Than Others Ask

Tested—Buckhorn Free—Guaranteed Satisfactory. Biggest values in Clover we ever offered. Don't fail to write us for Samples and Prices. We can save you many dollars on Clover Seed. Don't pay two profits. Buy from World's Largest Mail Order Seed House, and take advantage of our Bargain Prices. Have new recleaned Alfalfa, \$9.00 bu.; Sweet Clover, \$4.95; Timothy, \$4.50; Alsike and Timothy, bargain. Other seeds in proportion. No risk buying from an old established Seed Company. Your money back if you want it. Satisfaction our first aim. Clover crop short. Write before advance and compare our seed with the best. You will save money. Send today for free samples and big 116-page catalog. Everything guaranteed.

A. A. Berry Seed Co., Box 631A, Clarinda, Iowa

GRASS SEED

FREE SAMPLES Wonderful Value Wholesale Prices Profits Divided

with customers. Don't fail to investigate these bargains. Recleaned Timothy \$4.50 bu., Alfalfa \$8.50, Alsike Clover and Timothy, Sweet Clover and other Grass and Field Seeds at unusually low prices. All sold subject to State or Government Test under an absolute MONEY-BACK GUARANTEE. We are specialists in grass and field seeds. Located so as to save you money and give quick service. Send today for our big profit-sharing, money-saving Seed Guide which explains all, free. Buy now and save money. Write American Mutual Seed Co., Dept. 631 Chicago, Ill.

CLOVER AND TIMOTHY BARGAIN

Red Clover and Timothy mixed—the standard grasses cannot be surpassed for hay or pasture. Contains large per cent clover, just right to sow. Thoroughly cleaned and sold on approval, subject to government test. Ask for this mixed seed if you want our greatest bargain. Have Pure Clover, Sweet Clover, Timothy and all Field and Grass Seeds. Don't buy until you write for free samples and 116-page catalog.

A. A. BERRY SEED CO., Box 631, Clarinda, Iowa

SCOTT'S RED CLOVER

We are trying to furnish Red Clover entirely free from weed seeds and dead grains. The seed will go farther than ordinary seed besides adding greatly to the production. Ask for samples of Red and other seeds and catalogue telling "How to Know Good Seed".

O. M. SCOTT & SONS CO. 384 Sixth St., Marysville, Ohio

Save Half on Nursery Stock!

Buy Hardy, High-Grade Trees and Ornamentals Direct from Nursery. Save agent's commission. Big, new, handsome 1919 Catalog describes the best stock grown. Many specialties. All Guaranteed. Start an Orchard this year. Order early for spring planting. To be sure of spring supply write today—a postal will do. Catalog FREE.

CELERY CITY NURSERIES, Box 18 Kalamazoo, Michigan

Catalog FREE



10 Searching Questions About the Maxwell and 10 Frank Answers; Read Them, for They May Decide Your Choice of a Car

Q.—Reduced to one point what is the single greatest thing you can say about the Maxwell?

A.—It is reliable.

Q.—What makes it reliable?

A.—The chassis was designed five years ago to be extremely simple. Then we kept on making and making Maxwells all alike on this chassis year after year until now we have made 300,000 of them. Our policy is to do one thing well and thus obtain perfection.

Q.—Have you changed the original design any?

A.—Not in any single fundamental. We have added an improvement here and there from time to time—but no changes from our original program.

Q.—Have there been any great chassis improvements in the last 5 years?

A.—We believe not. There have been multi-cylinder cars and multi-valve cars; but in a car under \$1000 we do not believe them to be practical.

Q.—How much of the Maxwell car do you build?

A.—We believe that we manufacture more of the parts that go into our car than any other manufacturer.

Q.—Why do you do this—can you

not buy parts from others cheaper than you can build them?

A.—In some cases yes; but not so good as we can build them. In other cases no, for we operate 8 great plants, have an investment that runs into many millions of dollars, carry a tremendous inventory, have a rapid "turnover" and a large one. Besides, we make parts for cars other than our own including some that cost in excess of \$4000.

Q.—Has the Maxwell every modern equipment?

A.—Yes, even including the carrying of the gas tank in the rear.

Q.—Have you improved the appearance of the Maxwell any?

A.—Yes. We have made a vast improvement in the last few months—so much so that many persons thought we produced a new model. Note the illustration. This is drawn from a photograph without the slightest exaggeration.

Q.—How about parts?

A.—There are \$5,000,000 in parts carried by 2500 Maxwell dealers all over the United States.

Q.—Will you reduce the present price if I buy a Maxwell now?

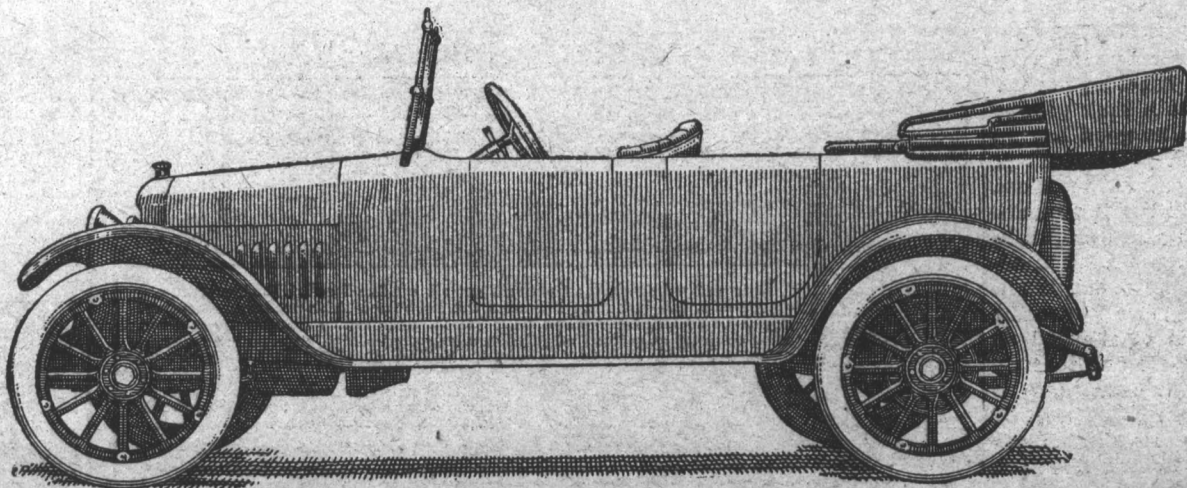
A.—No. The present price is guaranteed until July.

Price \$895 f. o. b. Detroit.

MAXWELL MOTOR COMPANY, Inc., DETROIT



*More miles per gallon
More miles on tires*

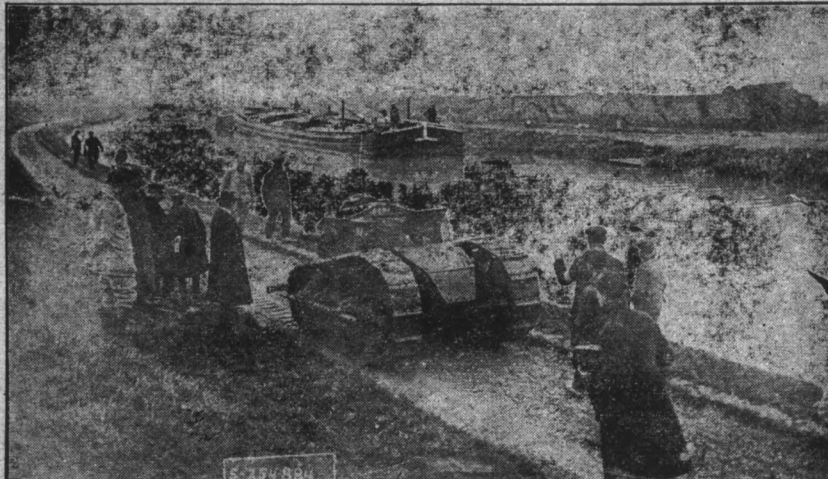




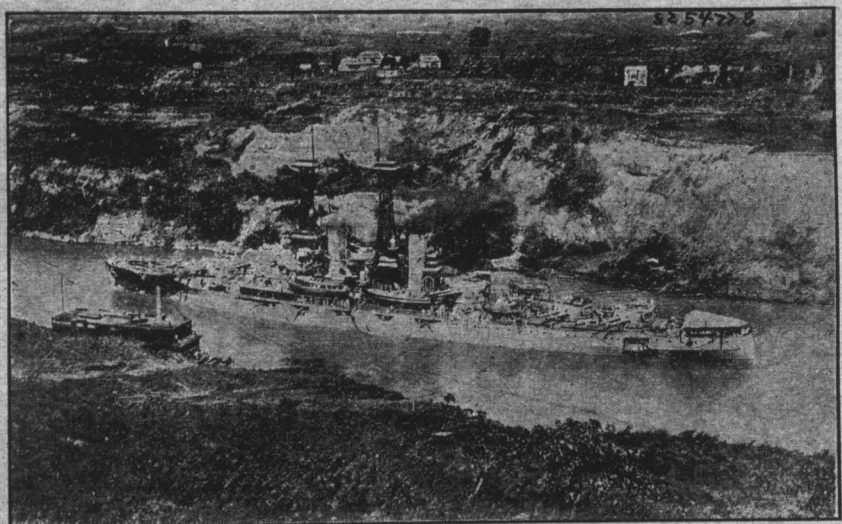
WORLD EVENTS IN PICTURES



Group of Leaders of the Russian Bolsheviks. Photo Taken at Convention of Deputies and Workingmen at Moscow.



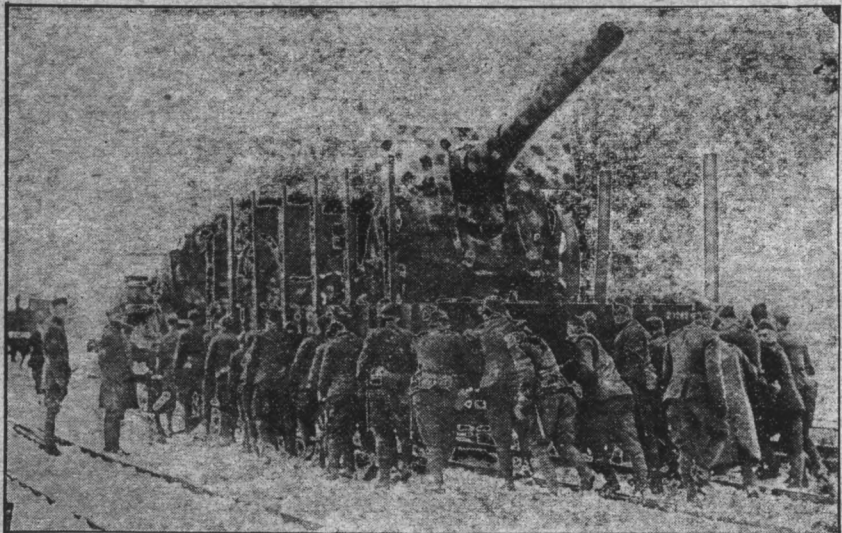
Baby Tank, Dismantled of its War-time Equipment, Hauls Canal Boat Loaded with Food Stuffs for the Interior of France.



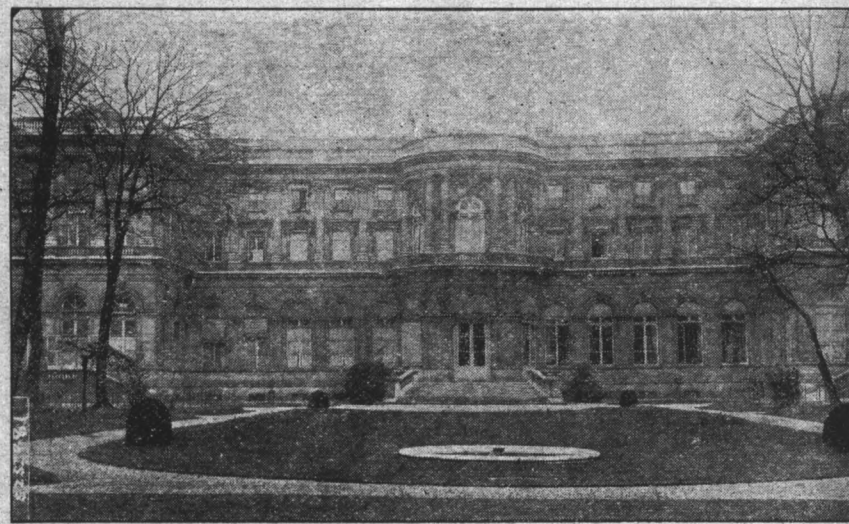
This Remarkable Photo Shows the U. S. S. "North Dakota," Passing through the Celebrated Culebra Cut of the Panama Canal.



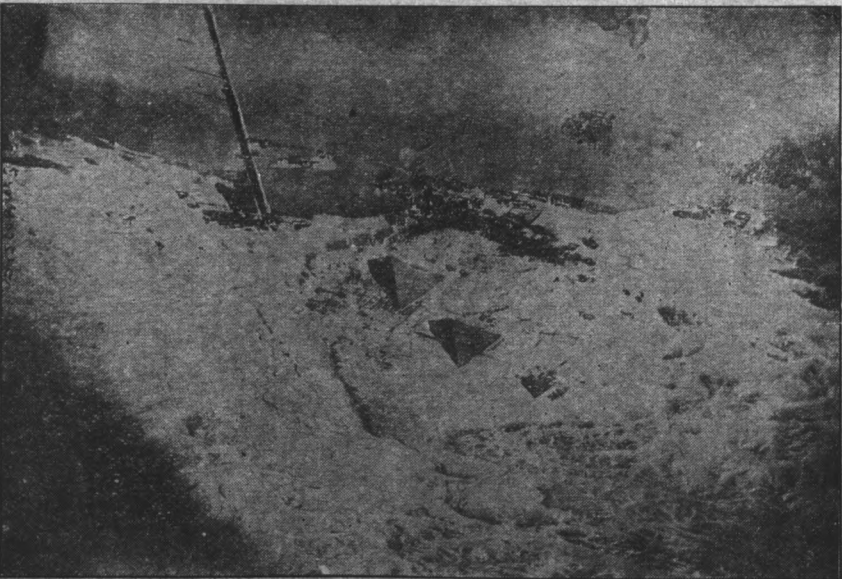
Soldiers of Famous "Rainbow Division" of New York on Sentry Duty at Niederbreisig, Germany, on the Bank of the Rhine.



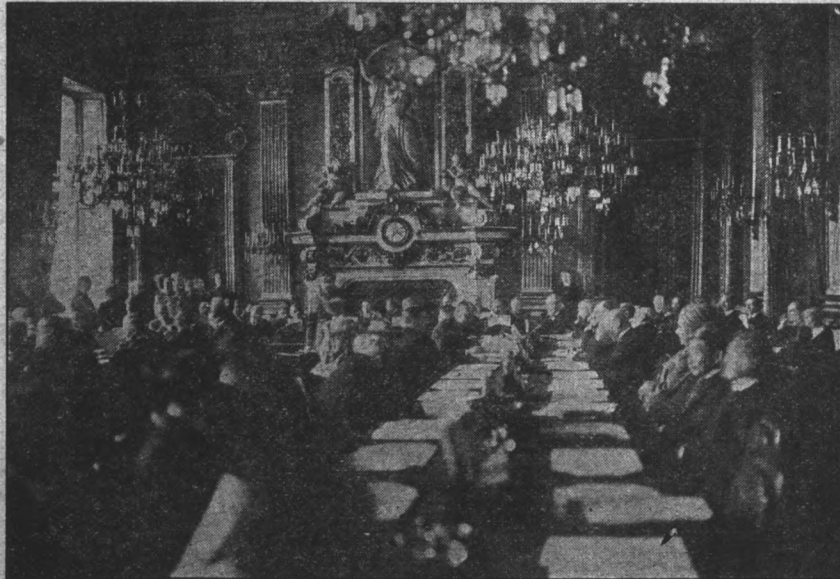
Scene in Freight Yard at Coblenz, Germany, Showing Americans Preparing to Unload German Gun Surrendered Under Terms of Armistice.



French Ministry of Foreign Affairs, Paris, where the Peace Conference is Now in Session.



Historic Pyramids at Gizeh, Egypt, and Surrounding Desert, Viewed from an Aeroplane. River Nile in Foreground.



Peace Delegates in Session at Peace Conference. President Wilson is Seated at Left-center Beside the Mantel.



5% Early-Deliv

EVERY industry in this country is facing conditions today unlike any it has had to meet in the past. The reabsorption of some three or four million men back into their regular work without throwing men in the present organization out of employment is one problem that must be solved. This is far more serious for some industries than for others. For the Harvester Company it means taking back nearly 5,000 men into an organization, which, as an essential industry, it maintained at a high state of efficiency throughout the period of the war. It is going to be no easy matter to do our plain duty by these boys, but we can and will do it. You can help us if you will, and profit by helping.

To assist in providing places for our boys who are now coming back, many of whom left the tractor factories to join the ranks, it will be necessary to bring about an immediate increase in tractor production. The tractors will be needed, but before we can handle any greatly increased number of them, we must move forward to the farms some thousands that have been ordered for delivery at various dates up to May 1st.

Too Many Say, "Ship My Tractor in April"

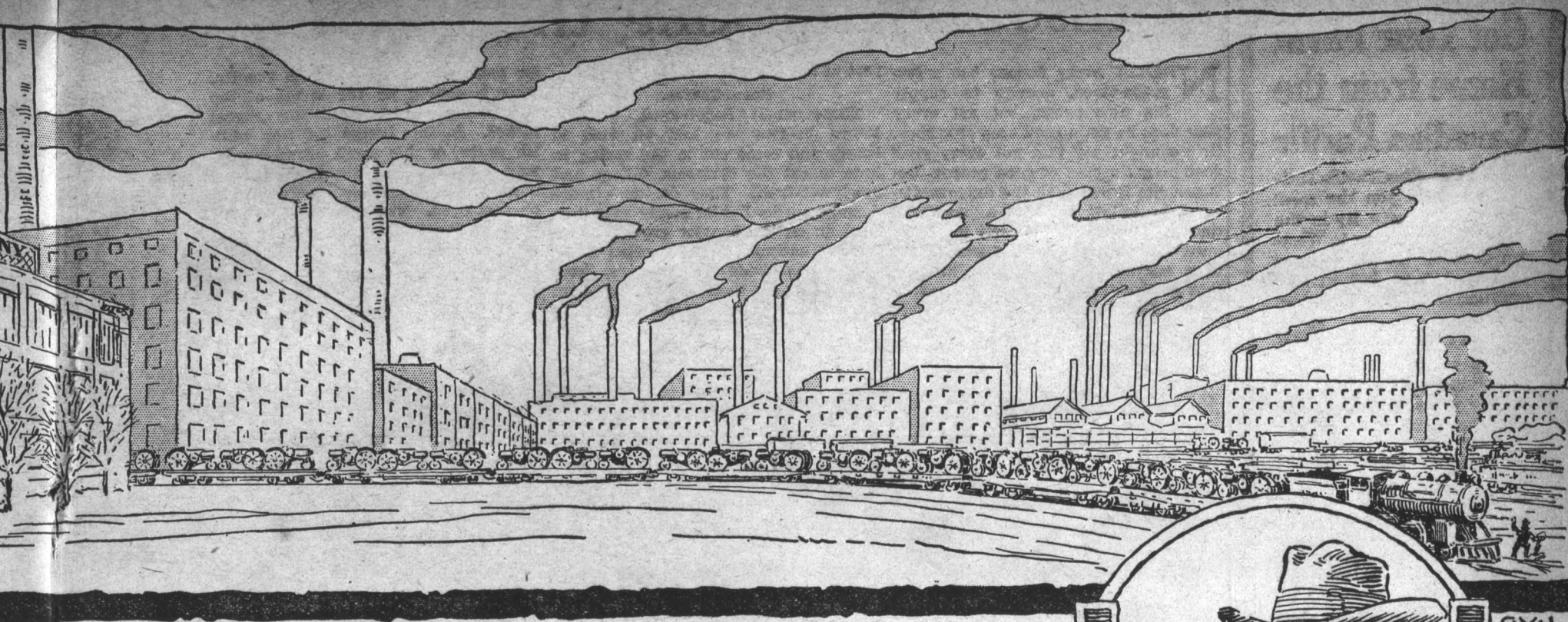
Many of you remember the difficulties connected with April shipments of tractors in past years. Do the best we could, we have never been able to supply the demand or make all deliveries as ordered. The need of tractors for Spring work comes at just the period in the year when great quantities of all kinds of Spring tools and implements are being rushed forward. Tractors cannot be moved as readily as implements.

Their size is against quick movement, and there is always more or less delay in securing flat cars. Railroad congestion must also be given serious consideration.

We naturally want to avoid these difficulties and escape the blame which we unjustly earn for being unable to fill late orders of tractors for Spring use. While we have already shipped 170 per cent more tractors this year than at the same time last year, yet the number of orders we are receiving for April shipment is so large that we shall not be able to make deliveries in time unless we can ship a large number of them at an earlier date.

Farmers who cannot take their tractors until later deserve as much consideration as those who must have theirs in April, which is the peak month for the work of spring seed-bed preparation. Many farmers have placed their orders for delivery in April who could just as well take their tractors now, thus avoiding any chance of disappointment in delivery and enabling us to take care of the later orders, which we could not otherwise handle.

INTERNATIONAL HARVESTER
CHICAGO (Incorporated in U.S.A.)



Delivery Discount

Our Early-Delivery Discount Plan

To you men who have already placed your orders for Mogul or Titan 10-20 tractors and who can accept deliveries immediately—and this applies equally well to those who have not yet ordered — we have the following proposition to make:

If you will take your Mogul or Titan tractor now instead of waiting for your specified delivery date we will reward your co-operation as follows:—

To those who will accept delivery of a Mogul or Titan 10-20 on or before March 8th we will give an Early Delivery Discount of 5 per cent from the price of the tractor. (This amounts to \$61.25 in the case of the Titan 10-20 and \$56.25 on the Mogul 10-20.)

After March 8th the following discounts will be given:

For delivery during week of March 10 to March 15 incl.	4%
" " " " " " 17 " " 22 "	3%
" " " " " " 24 " " 29 "	2%
" " " " " " 31 " April 5 "	1%

This discount will go a long ways toward paying the fuel bills of your tractor during this season.

By taking advantage of this Early Delivery Discount, you will not only be helping yourself, but will enable us more easily to put back to work all our boys in khaki and blue without breaking up our present organization.

You will find that you need a few weeks to get acquainted with your new tractor. The man who gets his tractor early can become familiar with it, so that when the first day of good plowing weather dawns he will be able to get in the field without a moment's lost time. In itself we should deem that a sufficient reason for taking early delivery, but when you add to this the early delivery discount authorized above, we are sure you will agree that the man who has placed an order

for a tractor cannot possibly do better than ask for immediate delivery. Likewise, those who are thinking of buying some time this spring can well afford to make up their minds immediately that their tractor is going to be a Mogul or Titan 10-20 and that they are going to have it sent out to their farms at once.

Now that you know the situation, may we hope that you will act upon it at once? We have tried to set it before you in a broad-minded manner; one that would be fair and beneficial to everybody concerned. We await your response confident that you will see the wisdom of accepting this offer.

Go to your dealer and tell him that you will accept immediate delivery of your Mogul or Titan 10-20 h. p. tractor, so he can make up his carload shipments without delay.



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(Incorporated)

Get Your Farm Home from the Canadian Pacific

THE Canadian Pacific Railway offers you the most wonderful opportunity in the world to own a farm in Western Canada. It will sell you land for \$11 to \$30 an acre or \$50 an acre under irrigation.

20 Years to Pay

You pay down 10% of the purchase price and have twenty years to pay in full at 6% interest.

\$2,000 Loan to Farmers

The Canadian Pacific Railway will loan to approved settlers on its irrigated lands up to \$2,000 in improvements with twenty years to pay back the loan at 6% interest.

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In Southern Alberta, we have developed the largest irrigation undertaking on the Continent. This district consists of some of the best land in Western Canada. An unfailing water supply is administered under direction of the Canadian Government—no conflict of law or authority over its use. This land is offered on same easy-payment terms as other lands. Prices ranging up to \$50 an acre.

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A Kalamazoo Direct to You



Insects Attacking the Grape

NEARLY every farmer has a few grape-vines, enough to supply his own needs, but not every year does he get a good crop of grapes. Or we might say that not every year does he get a crop of good grapes. Between the insects and the fungous diseases he is left with but a small portion of his crop. From early in spring until late in the fall first one insect then another is seen taking its portion of the fruit, leaves, blossoms or vines. He knows not what the insect

part of the day and hide by night.

Rose Chafer.

These small long-legged, grayish-brown beetles are half an inch in length and come out in the spring in time to eat the blossoms, foliage and newly-set fruit. They do much more damage on the lighter sandy soils than they do on the heavier ground. During the summer they are often found eating the buds and flowers, from which they get their name. They shun the sprayed plants or eat very little

for some distance back from the tip. This is caused by the inside of the twig being tunneled out for several inches. In this tunnel the tiny whitish grubs, of this small brown beetle, may be found. If the prunings are burned many of these creatures will be destroyed. The amount of damage done by these insects is not so great as they work in weakly or dying twigs.

Grape Root-worm.

This insect is not abundant in the state as yet. The small brown beetle,

SPRAY CHART FOR GRAPE INSECTS

Insect.	First Appearance.	Injury.	Control.
Climbing cutworms.	When buds swell.	Buds, leaves and blossoms.	Tanglefoot or cotton bands. Poison bran mash.
Steel-blue flea-beetle.	When buds swell.	Buds and upper surface of leaf.	Arsenate of lead, 4 lbs. to 50 gallons, when buds burst.
Rose Chafer.	When grapes blossom.	Blossoms and sets.	Arsenate of lead, 4 lbs. to 50 gallons. (Plus 1 gallon molasses). Repeat one week later.
Grape-berry moth.	Before grapes blossom.	Fruit.	Arsenate of lead, 3 lbs. to 50 gallons water or Bordeaux. 1. When fruit sets; 2, ten days later; 3, mid-July.
Grape-leaf hopper.	When leaves are expanded.	Under side of leaves.	Clean culture. Nicotine sulphate (40 per cent), one pint to 100 gallons of water.
Grape plume moth.	When blossoms cluster.	Webs, tips of shoots and leaves.	Arsenate of lead, 3 lbs. to 50 gallons when fruit sets, and also ten days later. Hand-picking.
Grape cane borer.	April to June.	Fruit and canes.	Cut out in spring, tunneled or dying canes, and burn.
Grape root worm.	When leaves are expanded.	Beetles on leaves, larva on roots.	Arsenate of lead, 3 lbs. to 50 gallons.
Spotted pelidnota.	When leaves are expanded.	Leaves.	Arsenate of lead, 4 lbs. to 50 gallons. Hand-picking.
Vine chafer (Anomala).	When leaves are expanded.	Leaves.	Arsenate of lead, 4 lbs. to 50 gallons. Repeat one week later.

is or how to combat it so goes about of them, but if the spray is sweetened the things that he does know about, with a little molasses they will eat it hoping that this dear the insects will with apparent relish.

Below is a chart showing some of the worst and most abundant grape insects and a few others that may be found, a little later, in the state. By consulting this chart one can tell just where each insect works, when it begins and how to combat it.

Climbing Cutworms.

There are several species of cutworms that pass the winter under rubbish and come forth some warm night in early spring to satisfy their hunger. They climb the grape-vine and feed on the opening buds and leaves, of which they are very fond. The vines may be stripped of buds and killed in a single night. During the day time they hide in the grass or rubbish near the base of the vine. This pest has been very bad at times in the grape-growing region of western Michigan.

Steel-blue Flea-Beetle.

Both the adults and the larvae feed on the buds, leaves and blossom clusters, doing a large amount of damage in a comparatively short time. The adults pass the winter in rubbish not far from the vines they love so well. They feed mostly during the warmer

Grape-berry Moth.

This pest is present in the state but as yet it is not very abundant, consequently the amount of damage is not as great as in some of the other grape-growing states. They web a cluster of grapes together and eat into the berries.

Grape Leaf-hopper.

This pest is quite abundant in the state and sucks the juice from the leaves, causing them to take on a mottled appearance. These tiny insects fly at the least disturbance and are hard to hit but they must be hit by the spray if good results are expected. The adults hibernate over winter under rubbish or in bunches of grass. Cleaning up and burning this rubbish late in the fall will deprive many of them of their winter quarters.

Grape Plume Moth.

These insects are common but not abundant in the state. The small yellowish-green larvae bind some of the smaller leaves together, making a little nest in which they feed and pupate.

Grape Cane-borer.

Early in the season the young shoots of the grape may be found to be dying

one-quarter of an inch long, eats irregular holes in the leaves while the larvae attack the roots.

Spotted Pelidnota.

This awkward yellowish-brown beetle looks similar to the "June-bugs" excepting that it is a little larger and its wing-covers are covered with large dots. It wanders around the vines feeding on the leaves.

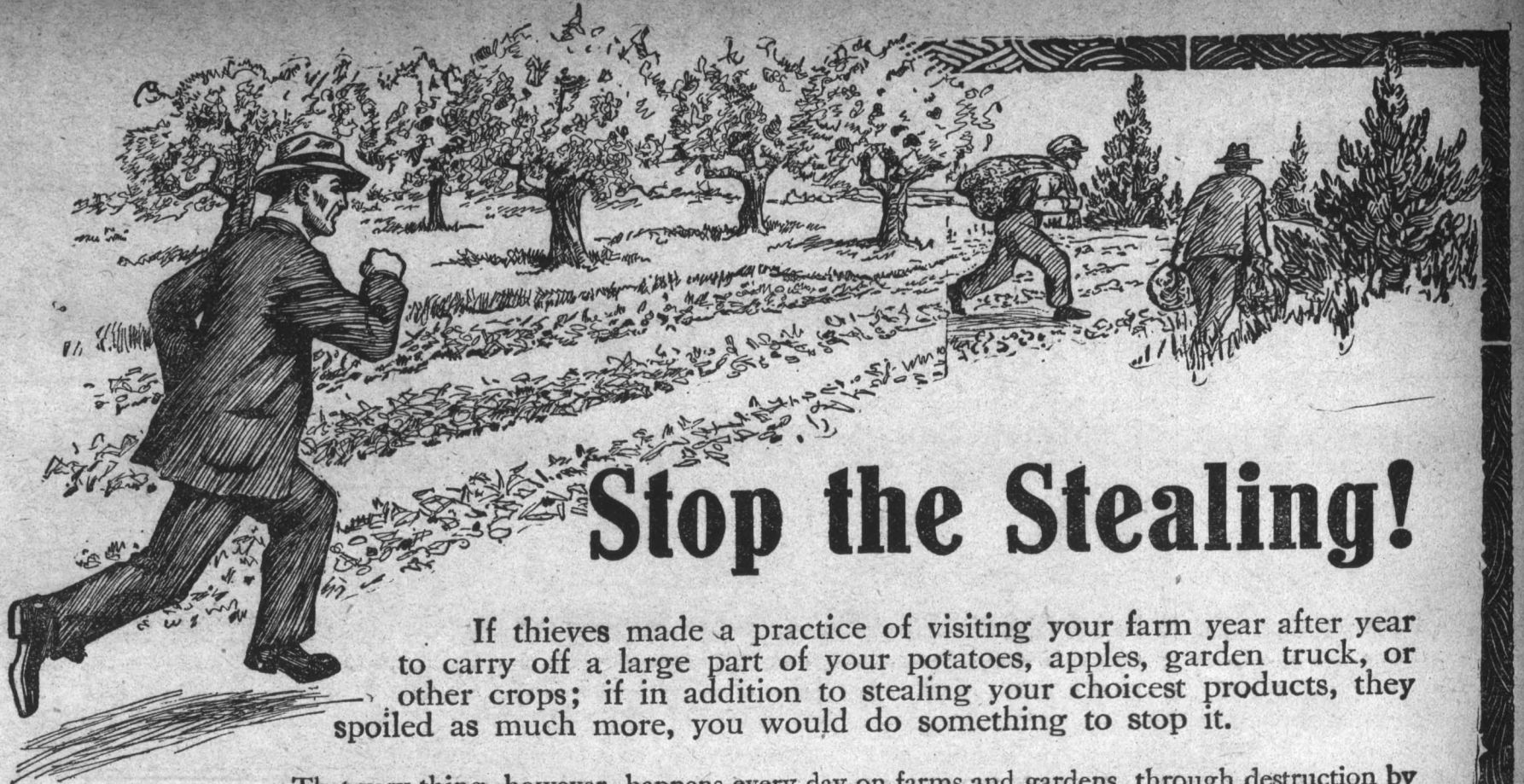
Vine Chafer. (Anomala).

They are a bright, straw-yellow in color and feed on the leaves. Their control is the same as for the Rose Chafer.

There are other insects that occasionally feed upon the grape but the amount of damage done is slight.

TRADE IN DEHYDRATED VEGETABLES.

The necessity of utilizing every inch of shipping space to the best advantage during the war made it impossible to ship sufficient fresh vegetables to France to meet the needs of the army. However, the cooperation of American manufacturers was secured, with the result that all cable requirements were filled at the allotted time, and there are now fifteen large dehydrating plants which have been supplying our overseas forces.



Stop the Stealing!

If thieves made a practice of visiting your farm year after year to carry off a large part of your potatoes, apples, garden truck, or other crops; if in addition to stealing your choicest products, they spoiled as much more, you would do something to stop it.

That very thing, however, happens every day on farms and gardens, through destruction by insects and plant diseases. The annual loss from this source is said to be over a million dollars.

It is not necessary to "raise enough for the bugs and yourself too" for you can save that part of the crop which used to go to the bugs, or which was lost through disease. *Spray with*

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"The Spray that Adds to Your Profits"

You can kill the profit-destroying leaf-eating insects and prevent the serious losses due to rot, rust and blight, by spraying with Pyrox.

You can do more with Pyrox than you can with Paris Green, Arsenate of Lead, or Bordeaux, because Pyrox is a *combined* insecticide and fungicide. This one spray serves two purposes.

You do not need to trouble with mixing or experimenting with different and unfamiliar materials. Just weigh or measure out as directed the proper quantity of Pyrox; mix it with water — and you are ready to begin spraying with a reliable insecticide and fungicide that has over twenty years of actual proven value to its credit.

You can take advantage of every hour when you use Pyrox, for you need not wait to slack lime or to dissolve chemicals. You need no elaborate equipment of mixing-tanks, barrels, tubs and platforms.

You want to be sure your crops will be protected against blight, rot and rust, and that at the same time destructive bugs and worms will be killed. You want to be sure that the foliage will keep healthy and green throughout the growing season, for that gives it greater vigor and enables the plant or tree to produce to its very limit. Every potato grower knows that it is during the last ten days of the growing period that the tubers increase in size most rapidly. Every apple grower knows that the last ten days the apples hang on the trees are those in which the fine color, size and waxy finish of the fruit are added. Those are the days which add to the reputation of Pyrox as a money-maker for potato grower and fruit grower.

Read what Mr. Arthur Gold, of the West Virginia Department of Agriculture, says about Pyrox for potatoes:

"The best crop of potatoes in this vicinity this year had four applications of Pyrox. The foliage was free from blight throughout the season."

And referring to results with apples, he adds:

"It has proven an excellent material in controlling apple scab, leaf spot, black rot, and blotch on apples, as well as codling moth and curculio. I can strongly recommend the use of Pyrox, believing it to be one of the very best combined materials to be used about the farm, garden or orchard."

Pyrox has been on the market for over twenty years and has stood the test of practical everyday use by practical everyday men. Why not try it and see if it will not do as much for you as it has already done for others?

Cut it out and send it!

Pyrox is sold by most Hardware, Implement and Seed Stores

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Golden Dent long grown and acclimated in Michigan. Deep kernels, large ear and stalk. A heavy cropper. In ear 70 lbs. \$5.00 Shelled per bu. \$4.00.

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Please mention the Michigan Farmer when writing to advertisers.

"Beyond the Frontier"

By RANDALL PARRISH

The way of egress was easy—a mere step to the flat roof of the kitchen, the dovetailed logs of which afforded a ladder to the ground. I had no object in such adventure, but a restless impulse urged me, and, almost before I realized my action, I was upon the ground. Avoiding the gleam of light which streamed from the open window of the room below, I crossed the garden, and reached the path leading downward to the shore. From this point I could perceive the wide sweep of water, showing silvery in the dim moonlight, and detect the darker rim of the land. There was fire on the point below the huts, and its red glare afforded glimpses of the canoes—mere blurred outlines—and occasionally the figure of a man, only recognizable as he moved.

I was still staring at this dim picture when some noise, other than the wind, startled me, and I drew silently back behind a great stump to avoid discovery. My thought was that someone had left the mission house—Cassion perhaps with final order to those on the beach—but a moment later I realized my mistake, yet only crouched lower in the shadow—a man was advancing from the black concealment of the woods, and crossing the open space.

He moved cautiously, yet boldly enough, and his movements were not those of an Indian, although the low bushes between us and the house shadow, prevented my distinguishing more than his mere outline. It was only when he lifted his head into the gleam of light, and took hasty survey through the window of the scene within, that I recognized the face of De Artigny. He lingered scarcely a moment, evidently satisfied with what he saw, and then drew silently back, hesitating a brief space, as though debating his next movement.

I waited breathless, wondering what his purpose could be, half inclined to intercept and question him. Was he seeking to serve my cause? To learn the truth of my relationship with Cassion, or did he have some other object, some personal feud in which he sought revenge? The first thought sent the warm blood leaping through my veins; the second left me shivering as if with sudden chill.

Even as I stood, hesitating, uncertain, he turned, and retraced his steps along the same path of his approach, passing me not ten steps away, and vanishing into the wood. I thought he paused at the edge, and bent down, yet before I found voice, or determination to stop him, he had disappeared. My courage returned, spurred by curiosity. Why should he take so roundabout a way to reach the shore? What was that black, shapeless thing he had paused to examine? I could see something there, dark and motionless, though to my eyes no more than a shadow.

I ventured toward it, creeping behind the bushes bordering the path, conscious of an odd fear as I drew closer. Yet it was not until I emerged from the fringe of shrubbery that even the faintest conception of what the object I saw was occurred to me. Then I stopped, frozen by horror, for I confronted a dead body.

For an instant I could not utter a sound, or move a muscle of my body. My hands clung convulsively to a nearby branch, thus supporting me erect in spite of trembling limbs, and I stared at the grewsome object, black and almost shapeless in the moonlight. Only part of the trunk was revealed, the lower portion concealed by bushes,

yet I could no longer doubt it was a man's body—a large heavily built man, his hat still crushed on his head, but with face turned away.

What courage overcame my horror, and urged me forward I cannot tell; I seemed impelled by some power not my own, a vague fear of recognition tugging at my heart. I crept nearer, almost inch by inch, trembling at every noise, dreading to discover the truth. At last I could perceive the ghastly features—the dead man was Hugo Chevet.

I scarcely know why this discovery of his identity brought back so suddenly my strength, and courage. But it did; I was no longer afraid, no longer shrank from contact with the corpse. I confess I felt no special sorrow, no deep regret at the fate which had overtaken him. Although he was my mother's brother, yet his treatment of me had never been kind, and there remained no memories to touch my heart. Still his death was from treachery, murder, and every instinct urged me to learn its cause, and who had been guilty of the crime.

I nerved myself to the effort, and turned the body sufficiently to enable me to discover the wound—he had been pierced by a knife from behind; had fallen, no doubt, without uttering a cry, dead ere he struck the ground. Then it was murder, foul murder, a blow in the back. Why had the deed been done? What spirit of revenge, of hatred, of fear, could have led to such an act? I got again to my feet, staring about through the weird moonlight, every nerve throbbing as I thought to grip the fact, and find its cause. Slowly I drew back, shrinking in growing terror from the corpse, until I was safely in the priest's garden. There I paused irresolute, my dazed, benumbed brain beginning to grasp the situation, and assert itself.

CHAPTER XV.

The Murder of Chevet.

WHO had killed him? What should I do? These were the two questions haunting my mind, and becoming more and more insistent. The light still burned in the mission house and I could picture the scene within—the three priests reading, or talking softly to each other, and Cassion asleep on his bench in the corner, wearied with the day.

I could not understand, could not imagine a cause, and yet the assassin must have been De Artigny. How else could I account for his presence there in the night, his efforts at concealment, his bending over the dead body, and then hurrying away without sounding an alarm. The evidence against the man seemed conclusive, and yet I would not condemn. There might be other reasons for his silence, for his secret presence, and if I rushed into the house, proclaiming my discovery, and confessing what I had seen, he would be left without defense.

Perhaps it might be the very purpose of the real murderer to thus cast suspicion on an innocent man, and I would be the instrument. But who else could be the murderer? That it could have been Cassion never seriously occurred to me, but I ran over in my mind the rough men of our party—the soldiers, some of them quarrelsome enough, and the Indians to whom a treacherous blow was never unnatural. This must have been the way it happened—Chevet had made some bitter enemy, for he was ever prodigal of angry word and blow, and the fellow had followed him through the night to strike him down from behind. But

why did De Artigny fail to sound an alarm when he found the body? Why was he hiding about the mission house and peering in through the window?

I sank my face in my hands, so dazed and bewildered as to be incapable of thought—yet I could not, I would not believe him guilty of so foul a crime. It was not possible, nor should he be accused through any testimony from my lips. He could explain, he must explain to me his part in this dreadful affair, but, unless he confessed himself, I would never believe him guilty. There was but one thing for me to do—return silently to my room, and wait. Perhaps he had already descended to camp to alarm the men; if not the body would be discovered in the morning, and a few hours delay could make no difference to Hugo Chevet.

The very decision was a relief, and yet it frightened me. I felt almost like an accomplice, as though I also was guilty of a crime by thus concealing my knowledge, and leaving that body to remain alone there in the dark. Yet there was nothing else to do. Shrink, shuddering at every shadow, at every sound, my nerves throbbing with agony, I managed to drag my body up the logs, and in through the window. I was safe there, but there was no banishing from memory what I had seen—what I knew lay yonder in the wood shadow. I sank to the floor, clutching the sill, my eyes staring through the moonlight. Once I thought I saw a man's indistinct figure move across an open space, and once I heard voices far away.

The priests entered the room opposite mine, and I could distinguish the murmur of their voices through the thin partition. These became silent, and I prayed, with head bowed on the window sill. I could not leave that position, could not withdraw my eyes from the scene without. The moon disappeared, the night darkening; I could no longer perceive the line of forest trees, and sitting thus I fell asleep from sheer exhaustion.

I do not know that I was called, yet when I awoke a faint light proclaiming the dawn was in the sky, and sounds of activity reached my ears from the room below. I felt tired and cramped from my unnatural position, but hastened to join the others. The morning meal was already on the table and we ate as usual, no one mentioning Chevet, thus proving the body had not been discovered. I could scarcely choke the food down, anticipating every instant the sounding of an alarm. Cassion hurried, excited, no doubt, by the prospect of getting away on our journey, but seemed in excellent humor. Pushing back the box on which he sat, he buckled his pistol belt, seized his hat, and strode to the door.

"We depart at once," he proclaimed briefly. "So I will leave you, here, to bring the lady."

Pere Allouez, still busily engaged, murmured some indistinct reply, and Cassion's eyes met mine.

"You look pale, and weary this morning," he said. "Not fear of the voyage I hope?"

"No, Monsieur," I managed to answer quietly. "I slept ill, but shall be better presently—shall I bear my blankets to the boats?"

"The engage will see to that, only let there be as little delay as possible. Ah—here comes a messenger from below—what is it, my man?"

The fellow, one of the soldiers whose face I did not recall, halted in the open door, gasping for breath, his eyes roving about the room.

"He is dead—the big man," he stammered. "He is there by the woods."

"The big man—dead!" Cassion drew back, as though struck a blow. "What big man? Who do you mean?"

"The one in the second canoe, Monsieur; the one who roared."

"Chevet? Hugo Chevet? What has happened to him? Come, speak up, or I'll slit your tongue."

The man gulped, gripping the door with one hand, the other pointing outward.

"He is there, Monsieur, beyond the trail, at the edge of the wood. I saw him with his face turned up—Mon Dieu so white; I dare not touch him, but there was blood where a knife had entered his back."

All were on their feet, their faces picturing the sudden horror, yet Cassion was first to recover his wits, and lead the way without. Grasping the soldier's arm, and bidding him show where the body lay, he thrust him through the door. I lingered behind shrinking from being again compelled to view the sight of the dead man, yet unable to keep entirely away. Cassion stopped, looking down at the object on the grass, but made no effort to touch it with his hands. The soldier bent, and rolled the body over, and one of the priests felt in the pockets of the jacket, bringing forth a paper or two. Cassion took these, gripping them in his fingers, his face appearing gray in the early light.

"Mon Dieu! the man has been murdered," he exclaimed, "a dastard blow in the back. Look about, and see if you find a knife. Had he quarrel with anyone, Moulin?"

The soldier straightened up.

"No, Monsieur; I heard of none, although he was often rough and harsh of tongue to the men. Ah! now I recall, he had words with Sieur de Artigny on the beach at dusk. I know not the cause, yet the younger man left him angrily, and passed by where I stood, with his hands clinched."

"De Artigny, hey!" Cassion's voice had a ring of pleasure in it. "Ay! he is a hothead. Know you where the young cock is now?"

"He, with the Chief, left an hour ago. Was it not your order, Monsieur?"

Cassion made a swift gesture, but what it might signify I could not determine, as his face was turned away. A moment there was silence, as he shaded his eyes, and peered out across the water.

"True, so I did," he said at last. "They were to depart before dawn. The villain is yonder—see; well off that farthest point, and 'tis too late to overtake him now. Sacre! there is naught for us to do, that I see, but to bury Hugo Chevet, and go our way—the King's business cannot wait."

They brought the body into the mission house, and laid it upon the bench. I did not look upon the ghastly face, which the young priest had covered, but I sank to my knees and prayed earnestly for the repose of his soul. For a moment I felt in my heart a tenderness for this rough, hard man who in the past had caused me much suffering.

Perchance he was not altogether to blame; his had been a rough, hard life, and I had only brought him care and trouble. So there were tears in my eyes as I knelt beside him, although in secret my heart rejoiced that De Artigny had gone, and would not be confronted with his victim; for there was no longer doubt in my mind of his guilt, for surely, had the man been innocent, he would have sounded an alarm. It was Cassion's hand which aroused me, and I glanced up at his face through the tears clinging to my lashes.

"What, crying!" he exclaimed, in apparent surprise. "I never thought the man of such value to you as to cause tears at his death."

"He was of my blood," I answered

\$25,000,000

Swift and Company

6% TWO AND ONE-HALF YEAR GOLD NOTES

Dated February 15, 1919

Total Authorized Issue \$25,000,000

Due August 15, 1921

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Interest payable, so far as may be lawful, without deduction for Federal income taxes not in excess of 2%, as provided in the trust indenture

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Net earnings for the year ended November 2, 1918, after interest charges and reserves for federal and foreign taxes, amounted to \$21,157,277.44 and for the past five years have averaged nearly \$20,000,000. Sales for the past year exceeded \$1,200,000,000 as compared with \$400,000,000 for 1913.

The trust indenture requires the maintenance of current assets to an aggregate amount equal to at least one and one-half times current liabilities, including these notes, and provides that no new mortgage may be created against present assets and property.

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The Company's statement as of November 2, 1918, showed a valuation of its real estate and improvements of \$79,247,567, based on actual appraisal, using values current January 1, 1914 (pre-war prices), and net current assets of \$134,483,446.07.

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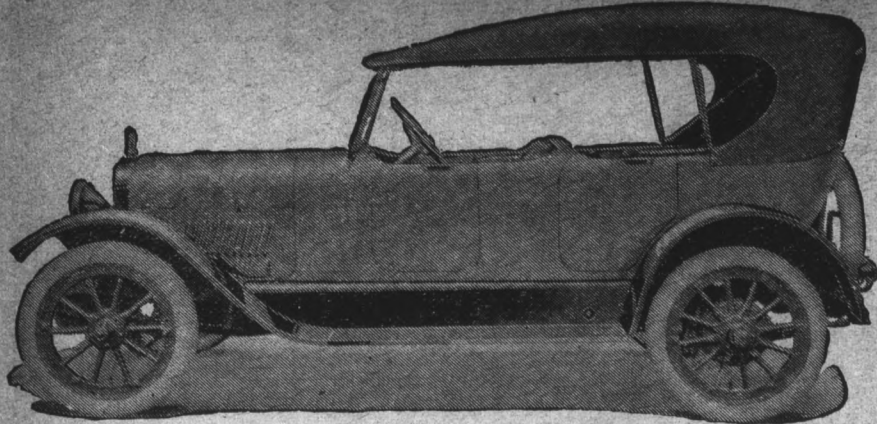
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"Beyond the Frontier"

soberly, rising to my feet, "and his murder most foul!"

"Ay! true enough, girl, and we will bring to book the villain who did the deed. Yet we cannot remain here to mourn, for I am on the King's service. Come, we have lost time already, and the canoes wait."

"You would go at once?" I asked, startled at his haste, "without even waiting until he is buried?"

"And why not? To wait will cost us a day; nor so far as I can see, would it be of the slightest value to Hugo Chevet. The priests here will attend to the ceremony, and this handful of silver will buy him prayers. Puff! he is dead, and that is all there is to it; come along, for I will wait here no longer."

The man's actions, his manner, and words were heartless. For an instant I stood in revolt, ready to defy openly, an angry retort on my lips; yet before I found speech, Pere Allouez rested his hand on my shoulder.

"'Tis best, my child," he said softly. "We can no longer serve the dead by remaining here, and there are long leagues before us. In the boat your prayers will reach the good God just as surely as though you knelt here beside this poor body. 'Tis best we go."

I permitted him to lead me out through the door, and we followed Cassion down the steep path to the shore. The latter seemed to have forgotten all else save our embarkation, and hurried the soldier off on a run to get the boats in the water. The pere held to my arm, and I was conscious of his voice continually speaking, although I knew nothing of what he said. I was incapable of thinking, two visions haunting me—the body of Hugo Chevet outstretched on the bench in the mission house, and Rene de Artigny far away yonder on the water. Why had it happened? What could ever excuse a crime like this?

On the beach all was in readiness for departure, and it was evident enough that Moulin had already spread the news of Chevet's murder among his comrades. Cassion, however, permitted the fellows little time for discussion, for at his sharp orders they took their places in the canoes, and pushed off. The priest was obliged to assume Chevet's former position, and I would gladly have accompanied him, but Cassion suddenly gripped me in his arms, and without so much as a word, waded out through the surf, and put me down in his boat, clambering in himself, and shouting his orders to the paddlers.

I think we were all of us glad enough to get away. I know I sat silent, and motionless, just where he placed me, and stared back across the widening water at the desolate, dismal scene. How lonely, and heart-sickening it was, those few log houses against the hillside, and the gloomy forest beyond.

The picture slowly faded as we advanced, until finally the last glimpse of the log chapel disappeared in the haze, and we were alone on the mystery of the great lake, gliding along a bare, uninhabited shore. I was aroused by the touch of Cassion's hand on my own as it grasped the side of the canoe.

"Adele," he said, almost tenderly. "Why should you be so serious? Can not we be friends?"

My eyes met his in surprise. "Friends, Monsieur! Are we not? Why do you address me like that?"

"Because you treat me as though I were a criminal," he said earnestly. "As if I had done you an evil in making you my wife. 'Twas not I who hastened the matter, but La Barre. 'Tis not just to condemn me unheard, yet I have been patient and kind. I thought it might be that you loved another—in truth I imagined that De Artigny had cast his spell upon you; yet you

surely cannot trust that villain—the murderer of your uncle."

"How know you that to be true?" I asked.

"Because there is no other accounting for it," he explained sternly. "The quarrel last evening, the early departure before dawn—"

"At your orders, Monsieur."

"Ay, but the sergeant tells me the fellow was absent from the camp for two hours during the night; that in the moonlight he saw him come down the hill. Even if he did not do the deed himself, he must have discovered the body—yet he voiced no alarm."

I was silent, and my eyes fell from his face to the green water.

"'Twill be hard to explain," he went on. "But he shall have a chance."

"A chance! You will question him; and then—"

He hesitated whether to answer me, but there was a cruel smile on his thin lips.

"Faith, I do not know. 'Tis like to be a court-martial at the Rock, if ever we get him there; though the chances are the fellow will take to the woods when he finds himself suspected. No doubt the best thing I can do will be to say nothing until we hold him safe, though 'tis hard to pretend with such a villain."

He paused, as if hoping I might speak, and my silence angered him.

"Bah! if I had my way the young cockerel would face a file at our first camp. Ay! and it will be for you to decide if he does not."

"What is your meaning, Monsieur?"

"That I am tired of your play-acting; of your making eyes at this forest dandy behind my back. Sang Dieu! I am done with all this—do you hear?—and I have a grip now which will make you think twice, my dear, before you work any more sly tricks on me. Sacre, you think me easy, hey? I have in my hand so," and he opened and closed his fingers suggestively, "the life of the lad." (Continued next week.)

IN A SUNKEN SUBMARINE.

ONE of the most remarkable experiences of the war is that of a British stoker petty officer, who escaped from one of our submarines which sank some time ago in home waters through an accident. Alone, in almost complete darkness, with the gradually rising water, receiving electric shocks, and towards the end suffering from the effects of chlorine gas and a badly crushed hand, he worked for nearly two hours keeping his head to the last, and at the seventh attempt to open the hatch succeeded in escaping. When the vessel began to sink he remained on board to see that the men were out of the engine room. Then his only hope of escaping drowning was to shut himself in that room. He conceived the idea of opening the hatch and floating to the surface, but he found that the tremendous pressure of the water outside prevented him moving the hatch. He had always accepted the theory that the pressure inside a sunken air-locked vessel could be greater than that outside. So to increase the pressure inside he opened a valve and admitted more water. When he considered the pressure sufficient to blow him out he opened the hatch, but it instantly closed again. With his shoulder, and exerting all his strength, he lifted the hatch but again it slammed to, crushing his fingers. With difficulty he released them, and once more opened the valve and admitted water until the engine room was flooded right up to the coaming of the hatch. The air in this confined space was under tremendous pressure, greater than that of the water outside, so he was able to open the hatch, was shot out, and rose rapidly to the surface, where he was picked up by a destroyer.

Woman and Her Needs

New Garments from Old

A Story of What Was Accomplished in the "Transformation Shop" of a Michigan Farm Home.

ALWAYS buy good material. It pays in the long run." My mother's oft repeated advice rang in my ears as I turned from a counter full of half-cotton dress materials. Everywhere I found the same conditions. Prices on "all-wool" were exorbitant, and the part-cotton materials, slimy and unsatisfactory in every respect. Against my better judgment I bought a dress pattern from a piece of material which the clerk insisted was "most all wool." A slim purse had won the day over the memory of mother's advice. The dress has not been a great success.

But what is one to do? Make over your old clothes, bought when good material was not so expensive. Prices will be lower after a while. It is more economical to reconstruct the old garments for your own wear than to cut them up for the children. If you must buy material of inferior quality now, make it up for the growing children, not for yourself. I will admit that it takes courage to rip apart an out-of-date tailored suit and expect to get it together again fit to wear in nineteen-nineteen; however, it can be done. I have proved it.

Three successful transformations have been wrought in our sewing-room during the past few weeks which

gore was made into a straight back panel to correspond with the front. Two side pleats turning backward from the front and two turning forward from the back panel lap over side panels cut from the remaining back gore. It was possible to make only a semblance of pleats at the top because of the narrow gores. So these were stitched flat from the belt to a point fifteen inches from the bottom. From there the original flare made real pleats possible. Each pleat was stitched close to the edge to insure its staying in place and the finished skirt is as narrow and straight-hanging as the present fashion demands. With the pleats stretched out it measures two-and-a-half yards around the bottom. When well pressed the skirt looked like new and as well tailored as the original.

Possibilities in a Well-tailored Jacket.

Fortunately the suit had been made by a good tailor and the foundation of the coat with its padding could be used by altering the size. The front panels, which were stitched to the canvas, were left without ripping. Trial after trial was made to alter the lines of that jacket. At length one of

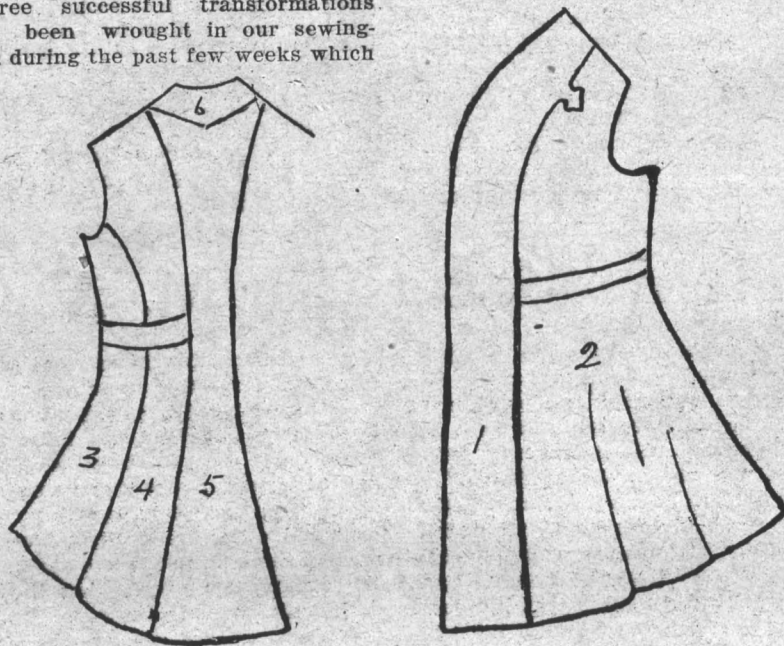


Diagram A—Back and Front of Suit Before Reconstructing.

deserve special mention. We thought we had come to the bottom of the chest, that there was nothing left to be made over. However, disappointment over my new dress of "most all wool" set me to searching with good results.

I found a suit of mother's that had been made more than fifteen years ago. Many times it had been taken out and examined, only to be laid aside again. The idea of doing anything with it was so manifestly impossible. The skirt had eleven gores very narrow at the top and flaring at the bottom. The jacket was made from narrow, shaped pieces, the only sizable pieces of cloth in the entire suit being the leg-o'-mutton sleeves and the two back gores of the skirt. The material was excellent, a fine firm piece of Scotch serge in a shade resembling taupe.

We decided that a pleated skirt could be made from the narrow gores. The skirt was ripped apart and the work begun. By pinning each gore to the belt so that it hung straight with the thread of the goods, we found it possible to fold them into pleats with one straight edge. One of the back

us had the brilliant idea of making the backs out of the front and fronts out of the back pieces. It worked!

Diagram A shows the original plan, B the coat with new location of old parts, bearing same numbers. Nos. 2 and 4 exchanged places. Nos. 3 and 4 retaining their same relation to each other, necessarily were shifted from left back to right front, which brought No. 3 directly under the arm. (See B). Two pieces of No. 2 very nearly covered the back. No. 5 was wider after the edges were pressed out. It was turned upside down. Being too short, it was cut in two, and the lower half was let down to the bottom of the jacket, which left a two-inch vacancy at the waist-line. No. 6 was cut shorter and turned point up to cover this vacancy. It was a simple matter to cut the sleeves over a new pattern.

Now that a coat on new lines was at last in evidence, there still remained several difficulties to be overcome. There was no collar. The old belt had been used on the skirt, and there was a V-shaped opening at the bottom of the back panel. My first thought was to use plush for a collar and belt, but when I went to buy it, could find noth-

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ing to harmonize with the suit in color. Past experience has taught me to look elsewhere when the dress-goods department fails to supply my needs. With a vague idea of tapestry in dull colors, I made inquiries in the drapery department. Here I found a silk brocade intended for curtains, in

a shade of silver-brown which blended beautifully with the taupe of my suit. Moreover it was fifty-six inches wide and cost but \$3.00 a yard, an agreeable contrast to the less suitable plush at \$15 a yard. Two-thirds of a yard of the brocade made collar, belt and muff, and filled in the opening at the bottom of the back panel.

In the process of transformation the suit was made smaller to fit the new owner, consequently the worn portions of the old silk lining were cut out and it was possible to use it again. A silk braid, one inch wide, sewed just within the bottom and front edges of the coat covered the soiled and thin edges of the old silk lining.

A muff to match completed the costume. A two-inch strip was cut from

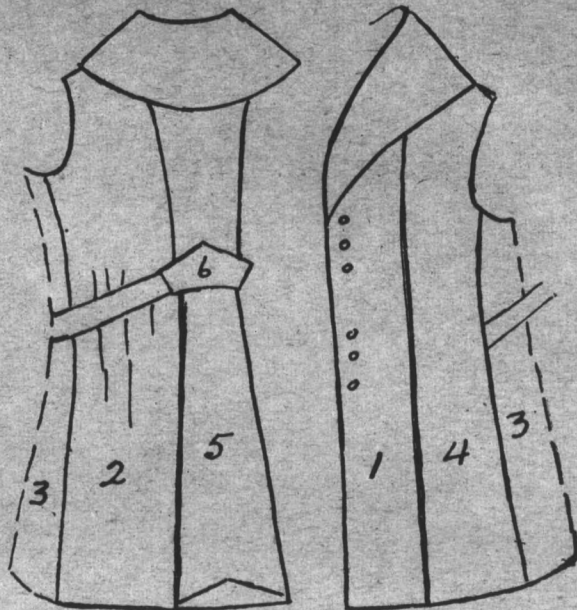


Diagram B—Back and Front of Suit as it Looked When Put Together Ready for Fitting.

As it lay in the chest, a suit of the style of several years ago, it was valueless. Today I have a suit which everyone thinks is new. The time and labor I count well spent, for I could not buy such material now at any price. The actual money spent was as follows:

Two-thirds of a yard of brocade.....	\$2.00
Four spools of silk thread.....	.56
Five yards of silk braid.....	.95
One yard soutache braid for loops in place of button-holes.....	.03

Total\$3.54

each end of a small brown fur muff, leaving a center five inches wide. A piece of brocade was shirred onto either side of the fur center and gathered into cuffs made from the best of the

I could not buy a suit to equal it for \$50. (The story of the transformation of the other garments will appear in an early issue).

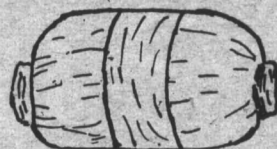


Diagram C—Muff to Match Suit.

"Home-Makers" at M. A. C.

THE home-maker who thinks her work is unimportant and is sighing for some "real place in the sun," should have been at East Lansing during "Home-Makers" week. Mark you, we are "Home-Makers" now—housekeepers are paid domestics. If any tired, discouraged, pining-to-do-some-big-thing woman could have attended those lectures, and not gone away with the feeling that her job is about the biggest and most important one in the whole, wide world—well, she is absolutely hopeless, that is all. And she deserves to be doleful and melancholy and down in the mouth.

For certainly the business of home-making as portrayed by the women who lectured is so big a one as to need a veritable captain of industry to run it. There isn't a thing that a home-maker doesn't need to know if she is to be a success, from how to lay the fire in the kitchen range to how to mark the ballot at the primaries next March. For now that we have the vote we must use it, whether we want to or no, or else we fail in our important role of home-makers. Everything that happens now adays touches our home, even if the event takes place in darkest Russia. So you see how important it is that we have something to say about what is happening in our own township.

But to get down to things right in the home. There is the matter of feeding the family. No woman who listened to the lectures on balanced rations for the family could go back home and be content just to get meals in the good old hit-or-miss fashion. After having heard how necessary it is to look into the subject of drainage and see that our daily diet contains the proper mixture of fruits and vegeta-

bles, cereals and meat or meat substitutes, not forgetting the quart of milk daily for each child, we are not coming back home and load the table three times daily with potatoes, baked stuff and salt pork, entirely omitting fruit, spinach, greens, lettuce, celery, tomatoes and other fresh vegetables, and feeding the milk to the live stock, with the comfortable excuse that the children don't like milk anyway.

Instead, we are going to be awake to the fact that our family is a little more important than our pure-bred stock. We are going to make it a point to raise pure-bred children, and as the first step in eliminating bad teeth, constipation, headaches and bad temper, we are going to feed them right. We got our start at the lectures, and we are going to follow it up by writing the Department of Agriculture at Washington and the Extension Department at East Lansing for all the bulletins they can send us on the subject of a correct diet, not alone for babies and small children, but for father and mother as well. Both the department at Washington and the one at East Lansing are only too anxious to mail you free literature. But of course, they can't do it if they haven't your address.

We are not going to stop with feeding the family right, however. We are going to see that the house they live in is sanitary. If it is built over a vegetable cellar from which arises the odor of decaying vegetables, we are going to clean things up. For we learned that damp, musty cellars are good old hit-or-miss fashion. After a menace to health. We are going to having heard how necessary it is to look into the subject of drainage and plumbing and draw plans for that new house we are to have some day. It

may be a long day before we get it, but meantime our study on how to do things right is going to give us a lot of ideas for fixing up the old house.

We are going to look into the water supply and see to it that no epidemic starts from our well. If we never had a real vegetable garden—and it is surprising how many farmers never do raise salad vegetables—we are going to have a little patch this spring. For we found out we could grow iron and phosphorus in our back yard and all sorts of medicinal acids, for which we have been paying the doctor a dollar a bottle. When we know that we can get all the iron we need in a small serving of spinach every day, and that lettuce and carrots and other vegetables are rich in it, we aren't going to pay some patent medicine company a dollar for fifteen cents worth of iron. We'll buy a package of carrot seeds for ten cents and raise enough iron for the entire neighborhood.

But if we do all these things we will find ourselves pretty busy women. And important ones, too, for the health and mental vigor of our entire family depends upon how well we do. And surely that is of greater value to society than heading committees and lecturing or doing some of the "important" public work that many of us have been sighing to do. Our work doesn't seem important, it is so common. But all the same, if all the cooks and home-makers should go on strike the wheels of industry would stop even more quickly than when the I. W. W. starts rampaging.

It's a great big work, a necessary one, and one that we should regard as a privilege instead of a rather sordid job. That is what the leaders tried to show us, and if they didn't succeed with you, it is a sign you need a long vacation. You are too tired to see things in their true perspective.

DEBORAH.

CONTRIBUTED RECIPES.

Creamed Liver.

When morning appetites call for a hearty meal, this will be found an appetizing breakfast dish. Cut two pounds of liver into small pieces, cover with cold water for ten minutes and drain. Heat three tablespoons of butter and put in the liver, season with salt and pepper, and cook slowly for ten minutes, browning it on all sides, then take up the liver and put it where it will keep warm. Put one piece of onion in the frying pan with some fat, and cook for one minute. Add three teaspoons of flour and cook, stirring until it begins to froth. Draw pan from fire, add one pint of warmed milk to it, and stir carefully. Let it come to a boil; put the liver in this sauce and serve very hot.

Potato Cakes.

Do not throw away left-over mashed potatoes, but make them into potato cakes as follows: Stir into cold mashed potatoes enough beaten eggs and hot milk to make them quite stiff, add salt, pepper and a little minced onion or parsley. Mix well, make into flat cakes, dust with corn meal and fry brown. This makes a good supper or breakfast dish.—Mrs. M. A. P.

For Busy Mothers.—Make your little one's every-day dresses open all the way to the bottom like an apron, and you will find this saves much time when ironing them, and they are much easier to put on.—Mrs. J. J. O'C.

To Start a Fire.—I keep corn cobs soaking in kerosene oil in a covered tin pail; one cob when lighted will kindle a fire quickly and with less danger than if the oil is poured directly on the wood.—Mrs. N. T.

Moth Preventive.—Balls of cotton dipped in oil of cedar and placed in boxes and drawers are a good moth preventive, and unlike the detestable moth balls, the cedar oil imparts a delightfully clean and fresh odor.—M. A. P.

The Best Is None Too Good

The American Housewife has demonstrated by her splendid loyalty during the past year that she is entitled to the best in the land.

No one has been more severely tried than she through the enforced use of inferior flour and substitutes, but she certainly "made good."

Now that conditions are changing and gradually working back to normal it is possible to manufacture the pre-war high patent flour.

This is certainly good news to the discriminating woman who desires to provide her family with the very best of wholesome, healthful, palatable food.

Lily White

"The flour the best cooks use"

may now be obtained in the old-time high quality grade.

No better flour has ever been made and mighty few have even nearly equaled it.

Light, white, flavory bread may again be baked and LILY WHITE FLOUR has been made particularly for this class of work.

In fact LILY WHITE FLOUR is sold under the guarantee that the purchase price will be cheerfully refunded if you do not like it as well or BETTER than any flour you have ever used for every requirement of home use.

When ordering Flour, say LILY WHITE, "The flour the best cooks use" and insist on having it.

Your baking troubles will be over.

VALLEY CITY MILLING COMPANY.

GRAND RAPIDS, MICHIGAN

MICHIGAN FARMER PATTERNS.



No. 2691—Girls' Dress. Cut in three sizes, 12, 14 and 16 years. Size 14 will require $4\frac{1}{4}$ yards of 36-inch material. Price 10 cents.

No. 2692—Girls' Dress. Cut in four sizes, 6, 8, 10 and 12 years. Size 10 will require $5\frac{1}{4}$ yards of 27-inch material. Price 10 cents.



No. 2685—Boys' Suit. Cut in four sizes, 3, 4, 5 and 7 years. Size four will require three yards of 44-inch material. Price 10 cents.

No. 2704—Girls' Coat and Cap. Cut in five sizes, 4, 6, 8, 10 and 12 years. Size 8 will require $2\frac{1}{4}$ yards of 44-inch material for the coat, and $\frac{3}{4}$ yard of 27-inch material for the cap. Price 10 cents.

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A human interest life history of one of America's most famous men. Theodore Roosevelt made popular the strenuous life and typified the American spirit of intense thought and action. He made good through dogged determination.



Our 400 page book gives intimate insights into his character, his aspirations and his triumphs. It is written by J. Mowbray, the well-known historian and traveler, who had occasion to know Col. Roosevelt well. An inspiring story of an inspiring man. Profusely illustrated—handsomely bound in cloth.

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How to grow crops that fatten your pocket-book

At the present cost of seed you want a yield that will pay you well. An investment in Planet Jr. tools is good-crop insurance. They enable you to cultivate so thoroughly that you get bigger and better crops. And they operate so rapidly and easily that you save both time and labor. Their substantial construction makes them last a lifetime and pay for themselves over and over again. They are savers at every stage of the sowing and cultivation—just what every farmer and gardener needs! Fully guaranteed.



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No. 4 Planet Jr. Combined Hill and Drill Seeder, Wheel-Hoe, Cultivator and Plow is a special favorite, and there are more of them in use throughout the world than any other seeder made. Opens the furrow, sows all garden seeds (in hills or drills), covers, rolls down and marks the next row all at one operation. Hoes, plows, and cultivates all through the season. A hand machine that will pay for itself in time, labor and seed saved in a single season.



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Illustrates Planet Jrs. doing actual farm and garden work, and describes over 55 different tools, including Seeders, Wheel-Hoes, Horse-Hoes, Harrows, Orchard, Beet- and Pivot-Wheel Riding Cultivators. Write postal for it today!

Our Boys' and Girls' Page

Boys and Girls at M. A. C.

OF all the many hundreds of visitors who flocked through the halls of the Michigan Agricultural College during Farmers' Week and Housewives' Congress, none received a more cordial welcome, and none were accorded a greater measure of respect than two hundred and twenty-five boys and girls who came upon invitation of the Boys' and Girls' Club Department of the College. The young people were "achievement" members of the young people's clubs—boys and girls who had carried out their club work in full and filed reports with the state leaders. Among them were a half-dozen state champions, and members of a number of prizewinning demonstration teams.

The demonstration teams were one of the hits of the club exhibits of the college exposition. One of these was the championship canning team from Coldwater—Helen Hadley, Alice Ross and Ruby Butler; another was the sewing team—Ruth Weiss, Marvel Sieckman and Alice Wachowicz, from Buena Vista, in Saginaw county; a third was the hot school lunch team from Coopersville. The members of this were Jennie Hinken, Ester Lou Cook and Minnie Van Allsburg. A hot school lunch team was also present from Scotts, in Kalamazoo county. The members of this were Lucille Goldsmith, Louise Smith and Alice Hayward. A boys' poultry demonstration team was another feature. The members of this, who were Eland Spotts, Clifford Geddings and Fay

Welding, came from Hillsdale. The boys put on, for the instruction and edification of their elders, a series of demonstrations in the practices of culling pullets and hens, identifying breeds and making feed hoppers.

While in East Lansing the young people were banqueted and feted, treated to shows and expositions, and given a talk by the governor. A visit was also paid by them to the legislature, now in session at Lansing.

But to the grown-ups in attendance, the records made by the members of the clubs themselves were of most interest. As doers of deeds, the two hundred and twenty-five young men and women—the farmers of tomorrow in Michigan—would probably have been able to excel any other similar number of junior citizens within the state. While in East Lansing, Ray M. Turner, state leader of junior extension, and Miss Anna M. Cowles, leader of girls' clubs, compiled a list of the accomplishments of their guests. These showed that among the two hundred and twenty-five there were forty-six who owned Liberty Bonds; one hundred and thirty-four who owned War Savings stamps; one hundred and three who had bank deposits; eighteen girls who had earned money to buy their kitchen equipment; fifteen who owned pigs; eight who owned sheep; twenty-five who owned poultry; nineteen who owned calves; six members of this, who were Eland Spotts, Clifford Geddings and Fay

Pig Clubs Help Nation

AMERICAN boys and girls were not slackers when it came to answering the nation's call for an increased production of food. About two million boys and girls were connected with the agriculture and home economics clubs last year. Of this number more than eighty thousand were enrolled in pig clubs, organized and conducted by the United States Department of Agriculture and state agricultural colleges. Of the number who completed the year's work and made reports, seventy-one per cent raised pure-bred pigs. Their records show that they know how to put fat on porkers, for more than twelve thousand pigs belonging to these juvenile club members made an average gain of 1.14 pounds per day, which is considerably above results obtained on most farms.

Under the supervision of forty-nine department specialists, in addition to county agents and local club leaders, these boys and girls are learning the fundamentals of hog raising and are becoming interested in agriculture. They are taught all phases of the hog industry and are making good in raising pigs and making economical gains.

Fathers Learn from Sons.

Many of the club members are teaching their fathers how rapid and economical gains can be made in raising pigs. The members of the two De Kalb County, Indiana, pig clubs, under the direction of the local county agent, are making big records in fattening

have been able to almost double the results obtained by their fathers within the same length of time and feeding pigs of the same litter. The boys used self-feeders, and the fathers did not, and the pigs which were allowed to select their own feed made gains of two pounds a day. The club members have proved beyond question the merits of the self-feeder, and hog raisers in the locality of many years' experience are beginning to copy the boys' methods. As a result of the club work, the county agent reports many fathers and sons are now planning to go into partnership and raise pure-bred hogs.

Find Self-Feeders Profitable.

As a result of an increased pork production campaign carried on by county agents and farm bureaus in Maine, 745 self-feeders were built last year and 2,600 more hogs were raised in the state than during the previous year. Farmers who used self-feeders kept more hogs than they would otherwise, which suggested that the self-feeder be made the basis of a campaign for more pork. Building "bees," or demonstrations were conducted and self-feeders were built with the help of the boys and their parents, and particular emphasis was placed on the advantage of using self-feeders in connection with pasturing hogs.

Putting Pounds on Porkers.

That boy and girl pig club members are making big records in fattening



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I want you to see for yourself what a wonderful healing preparation CORONA WOOL FAT COMPOUND is. I want to prove to you on your own horses and cows and WITHOUT A CENT OF COST, how quickly it will heal and cure Galled and Sore Shoulders, Sore Necks, Collar Boils, Barb Wire or Other Cuts, Wounds, Scratches, Split Hoofs, Sore and Contracted Feet, Sore Teats on Cows, Etc.



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The Corona Man

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WOOL FAT

is unlike anything you ever tried or used. Don't confuse it with salves which contain grease and blister compounds. This remedy has no equal. It is not a grease but the fatty secretions extracted from the skin and wool of the sheep. It is readily absorbed by skin and hoof, penetrates to the inflamed inner tissues and

Heals Without Leaving a Scar

CORONA does not burn or blister, grows hair over cuts and sores, causes no pain, soothes and heals surprisingly quick. The free sample will prove my claim. A postal brings it postpaid, and I'll also send you my free book "HOW TO TREAT HOOF, WOUNDS, SORES, ETC." Send for both today. We also manufacture Corona Distemper Cure for Horses and Cows and Corona Balm for household use. Sold by leading blacksmiths, druggists, harness and hardware dealers.

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FEEDING HOGS? THEN HERE IS WHAT YOU WANT!

Ask your dealer for

DIAMOND HOG MEAL

Made from the nutritious hearts of corn kernels

Write to C. FRANCIS, 909 Ford Building, Detroit, for sample, literature and particulars



Tix-Ton-Mix

Keeps away Worms
Germs and Ticks

with salt the year around keeps flock healthy and free from stomach worms and ticks. A \$5.00 box makes \$60.00 worth of medicated salt—saves you big money—A \$2.00 size box of "TIX-TON MIX" by parcel post will medicate a barrel of salt.

Write for club offer—booklet on "Nature and Care of Sheep" PARSONS CHEMICAL WORKS, Grand Ledge, Michigan

their animals is shown by a report of committee should be empowered to the work in Ames, Iowa. One Ames formulate plans for a permanent organ- club boy made a gain of 2.39 pounds ization to be completed at a meeting to a day on his pig for a period of 123 be held next November in Chicago.

days; another, 2.26 pounds a day, and The general opinion of the delegates present seemed to be that there is a genuine need for a representative or- ganization to express the sentiments and opinions of our rural folks, and that the county farm bureau is the best institution that we have through which this expression can be made.

The delegates were entertained as guests of Cornell University, through whose hospitality this initial meeting was made possible, and the very enjoyable time given the men caused all to leave with gratitude and admiration for that institution.

NATIONAL FEDERATION OF FARM BUREAUS.

Boy and girl pig club members will play an important part in meeting the demand for meats, for they are learning how to raise better animals and produce gains economically, and many of them will be leaders in the industry of the future.

(Continued from page 282).

Following Mr. Smith's address the delegates entered into a general discussion of the problems confronting agriculture in the various states. An analysis of these expressions revealed the fact that every section of the country is suffering from practically the same agricultural difficulties. This situation will make it possible for the national organization to carry out a very definite program.

A committee of five was appointed by the chair to draft tentative resolutions. This committee was composed of O. E. Bradfute, Ohio; Chester Gray, Missouri; E. B. Cornwal, Vermont; F. M. Smith, New York, and C. V. Gregory, Illinois. The following resolutions were reported out by the committee and adopted unanimously:

Report of Temporary Committee on Organization.

Your committee begs to submit the following report:

A conference of representatives of the State Farm Bureau Organization of Illinois, Iowa, Massachusetts, Michigan, Missouri, New Hampshire, New York, Ohio and Vermont, together with County Farm Bureau presidents informally representing the states of Pennsylvania and Delaware (which have not yet completed state organizations), was held at Ithaca, New York, February 12-13, for the purpose of considering plans for the organization of a national farmers' association based on state organizations of farm bureaus.

It was the unanimous sentiment of the delegates that owing to the great need for a national body that should be in position to speak for all farmers of the United States, preliminary steps should be taken to organize a national farmers' organization at the earliest possible moment.

The purpose of such an organization, as outlined at this preliminary meeting, should be to handle broad questions of national importance affecting farmers, together with local agricultural questions which because of their nature cannot be successfully handled by the state organizations acting individually.

The temporary committee appointed to recommend a definite plan of action makes the following recommendations:

That a committee of five be elected to act as an organization committee until a meeting of delegates from the various states for the purpose of perfecting organization shall be assembled. The duties of this committee shall be to keep in touch with all states having state farm bureau organizations and urge all other states to organize and perfect such state associations as rapidly as possible, in order that they may be ready to take part in forming the permanent national organization. This committee shall prepare a tentative draft for constitution and by-laws for presentation at the regular organization meeting and such constitution and by-laws shall provide a suggested plan of financing the national organization, which shall in their judgment be fair and equitable, and at the same time provide the necessary funds which the national association must have for its successful operation.

The committee recommends that the meeting to perfect a permanent organization shall be held November 12-13, 1919, at Chicago, Ill.

The convention then voted that this

We feel that the movement started at this time will never die, and that the seeds of the greatest of all agricultural movements have been sown in fertile soil to take root and grow into a great national federation of state farm bureaus.

C. A. BINGHAM,
Secretary Michigan Farm Bureaus.

BANKERS TO CONSIDER FARMERS' FINANCIAL PROBLEMS.

A JOINT conference of the Agricultural Commission of the American Bankers' Association and the agricultural committees of forty-two state bankers' associations will be held in Washington on February 26-27, with the secretary, assistant secretaries and bureau chiefs of the Department of Agriculture, representatives of the Bureau of Education and the Federal Farm Loan Board. The object of the conference is to shape the bankers' plans for 1919 in the matter of dealing with agricultural problems.

Joseph Hirsch, chairman of the commission, says "The keynote of this meeting will be the formulation of bankers' plans so they may perform the greatest possible service to the nation and work in closest cooperation with the Department of Agriculture and other agencies dealing directly with rural matters."

"Up to this time the work of the bankers committees has been largely devoted to agricultural production. That is, our principal work has had to do with increasing the number of farm demonstration agents, the introduction and distribution of thoroughbred live stock, the organization of boys' and girls' agricultural and baby beef clubs but I think we should branch out now and go more largely into matters of marketing, warehouse construction and the organization of cooperative marketing associations. In short, I think the bankers should bring their ability to bear on the matter of the marketing of farm products."

"The bankers are especially interested in farm tenancy and should attempt some concerted action looking to the purchase of farms by present farm tenants and to long-time leases on terms that will conserve the soil. These matters are of vital importance to the nation, but have received but scant consideration as yet by our bankers."

The number of hogs in the United States on the first day of January, according to the Department of Agriculture, was 75,587,000 head, being the largest on record, and 4,609,000 greater than a year ago. The number of milch cows showed a gain of 157,000 and other cattle a gain 287,000 over a year ago. The number of sheep was placed at 49,863,000, showing a gain of 1,260,000 over a year ago. Horses gained 21,000 head, but mules decreased 52,000 from holdings reported a year ago.

We have recently received a simple, comprehensive and authoritative treatise for practical men explaining all basic principles pertaining to carburetion, showing how liquid fuels are vaporized and turned into gas for operating all types of internal combustion engines intended to operate on vapors of gasoline, kerosene, benzol and alcohol. This book is by Victor W. Page, M. E. Price, \$1.50. The Norman W. Henley Publishing Company, 2 West 45th street, New York.

Enclosed Working Parts

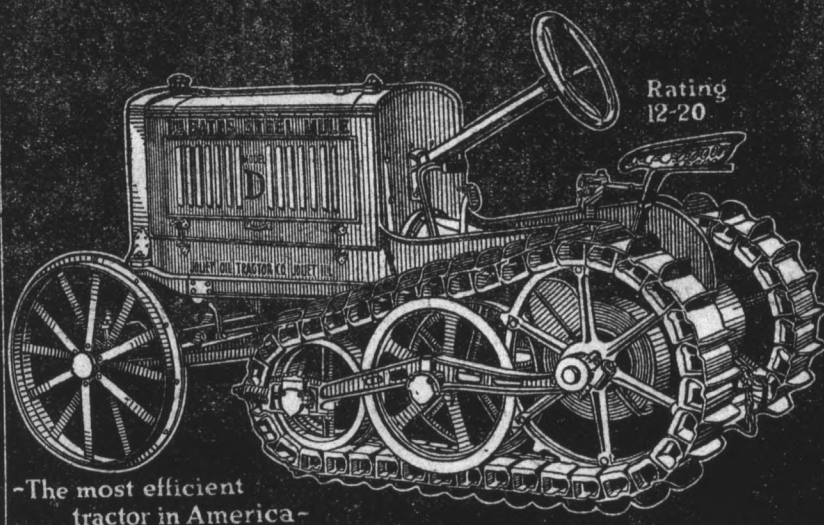
The unit construction of the Bates Steel Mule is such that not only is protection from dust afforded, but a permanent, rigid alignment of transmission parts with the motor is assured, regardless of any severe twisting strains to which the tractor may be subjected.

All working parts, of course, operate in an oil bath.

This feature, with the powerful twin crawlers driven by the valve-in-head, heavy duty kerosene motor, the hardened cut steel transmission gears and Timkin roller bearings, makes the Steel Mule a long-service tractor.

Naturally our factory output is continually overbooked, but the most progressive square deal tractor men near you may have been already allotted some. See him—or write us direct for full information.

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The most efficient tractor in America—



Saier's Seeds

are of proven quality. You take no chances when you sow our

Michigan-grown seeds for Michigan Planters

Every good variety of vegetable seeds, all the profitable and productive farm seeds, can be shipped direct from our warehouse—you save freight, time, money.

Saier's Garden Book lists everything the farmer and gardener needs—vegetable seeds, grains, ensilage corn, clover and grass seed. Send for a free copy today—before you order from a far-away firm.

Harry E. Saier
SEEDSMAN
Box 20, Lansing, Michigan

15% More Wool

That's what you'll get by shearing with a machine—tests have proved it. Old methods of shearing leave too much wool on the sheep. The Stewart No. 9 Ball Bearing Shearing Machine shears fleeces up to 300 head and leaves no second cuts—Price \$14. You can get it by sending \$2 and pay balance on arrival. Write for catalog.

CHICAGO FLEXIBLE SHAFT COMPANY
Dept. A127, 12th St. and Central Ave., Chicago, Ill.

Gladolli are most beautiful of garden flowers. My mixture is extra good. 12 bulbs to bloom next year, only 25c prepaid.
P. L. WARD, Plantsman, Hillsdale, Mich.

REGISTERED SEED

Pedigreed Wolverine, Worthy, College Wonder, College Success, & Alexander Oats. Wisconsin Pedigree Barley, Early Wonder and Robust beans, Pickett, Golden Glow and White Cap corn.

For names of growers address sec'y, Michigan Crop Improvement Association.

J. W. NICOLSON, East Lansing, Mich.

BINDER TWINE

Guaranteed A1, bug treated, F.O.B. factory near Chicago. Small or Standard February car lot price 19 1/2c. Small lots 20c, later shipment, 5c per bale per month more. Consumers Cordage Co., Minneapolis, Minn.

FOR SALE

A Special Bargain at cost to Manufacturer. Three New Tractors Complete with Two Bottom Plows and Power lift. Engine 20 H.P. S. A. E. Rating but smaller than our present design Tractors. Manufacturer, Michigan Farmer, Detroit, Mich.

Farmers with Fords can make extra money until plowing season selling the Ford Kick-a-Kick (anti-kicking device which prevents breaking arm when cranking). Retail at \$1.50. Discount will be allowed you. Write at once. AUTOMOTIVE EXCHANGE, Hippodrome Annex, Cleveland, Ohio.

FOR SALE Bates 18-36 tractor 4 now at the factory in Lansing, Bates Tractor Co. Has been overhauled and is good as new. Price \$1200. E. C. LEPPANDT, Pigeon, Mich.

FORD Owners, why drive at night without lights when bulb burns out or is broken? For 25c will send plug which takes place of defective lamp. Practically unbreakable. C. & C. Mfg. Co., Lock Box 302, St. Johns, Mich.

DOGS

COLLIE PUPS

males only \$5. G. A. WIGENT, Watervliet, Mich.
Pure bred Scotch Collie pups for sale, males \$5.00 and females \$3.00.
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Airedale Puppies, thoroughbred pedigree stock, wonderful watch dogs and companions for child.
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POULTRY

HOMESTEAD FARMS

A Federation of Interests

After a long delay our new illustrated catalog is ready. In it we explain the development of the Homestead Farms.

Pure Bred Practical Poultry

Every farmer, poultryman and poultrywoman in the State should have a copy of this catalog: it explains pure bred poultry stock that is practicable for the farmer. If you are interested in poultry, send for a copy.

Day Old Chicks

Everything indicates that there will be more orders for Chicks this year than can be filled. Orders are already booked for future delivery; those who want to be sure of Chicks should order now and have them shipped later when you will want them. Our Breeds are:

Barred, White and Buff Plymouth Rocks.
Rose Comb and Single Comb Rhode Island Reds.
White and Silver Laced Wyandottes.
Black and White Orpingtons.
Single Comb Black Minorcas.
Single Comb and Rose Comb White Leghorns.
Single Comb and Rose Comb Brown Leghorns.
Single Comb Buff Leghorns.
Single Comb Anconas.
White Pekin Ducks.

Guineas.

Eggs for Hatching

Eggs from any of the foregoing breeds for settings or in quantities for incubators. Special price for 500 to 1000 eggs during season; and for eggs for early broilers.

Eggs from White Pekin Ducks, Gray Toulouse and Embden White Geese.

Pullets—A few Pullets now laying are offered: 5 White Wyandottes; 4 S. C. Black Minorcas; 15 Barred Rocks; 20 White Leghorns.

Special in Cockerels—We have about 30 Barred Rocks of special breeding and weight that we will sell, if taken at once, at \$2.50 to \$3.50 each; about 20 S. C. White Leghorns at \$2.00 to \$3.00; a few high class R. O. Rhode Island Reds; White and Buff Rocks; R. O. White Leghorns; and Anconas.

Hares—Belgians and Flemish Giants.

Guarantee—Read our comprehensive and thoroughly just guarantee in the Catalog. Inspect stock and if not satisfactory, feed and water and ship back to us prepaid, and your full remittance will be returned to you.

If you really want poultry stock this season, especially Day Old Chicks, you should order now; stock can be shipped later.

BLOOMINGDALE FARMS ASSOCIATIONS,
Bloomington, Michigan

Baby Chicks Hatching eggs, seven leading varieties, best quality. Lowest prices. Catalogue free. Goshen Poultry Farms, R. 19, Goshen, Ind.

100,000 BABY CHICKS

for 1919, sent safely everywhere by mail or express. Single Comb White and Brown Leghorns and S. C. Anconas. Grand laying strains. Strong, vigorous, hatched-right kind. Tenth season. Satisfaction guaranteed. Order now for spring delivery. Prices right. Free catalogue. W. Van Appledorn, R. 7, Holland, Mich.

BABY CHICKS—11 Varieties, \$10 per 100 up, 2 weeks old 25c up, 4 weeks, 45c up. Hatching eggs \$1.50 per 15 and \$3 per 100. Bred White and Buff Rocks, Buff and White Orp., S. & R. O. R. I. Reds, White Wyand., S. C. W. Leg., S. & R. O. Br. Leg., Alredale Pups, Clr. free. Sunny Side Poultry Farms & Hatchery, Blanchester, O.

Baby Chicks Bred-to-lay S. C. W. Leghorns. The high cost of feed we have culled our breeders closely, saving the best; therefore, we will have to advance the price to 15c each for March and April. Book orders early. Sunnybrook Farm, Hillsdale, Mich.

Baby Chicks: S. C. White and Brown Leghorns. Good laying strains of large white eggs. Guaranteed to reach you in first class condition by parcel. Catalogue with price list free. WOLVERINE HATCHERY, R. 2, Zeeland, Mich.

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BABY Chicks and Eggs. Barron English White Leghorns, "The Big Kind," 248 to 303. Egg stock. Write Mrs. E. L. GARLOCK, R. 7, Howell, Mich.

Baby Chix Barron Strain S. C. White Leghorns. Large healthy vigorous stock farm raised, bred to lay. Aim satisfaction. Bruce W. Brown, R. 3, Mayville, Mich.

Barred Rocks—EGGS FROM STRAIN with records to 230 eggs a year; \$2 per 15. Delivered by parcel post, prepaid. Circular free. FRED ASTLING, Constantine, Mich.

Barred Plymouth Rock Cockerels, fullblood \$5 each; prize winners for 17 years. J. A. BARNUM, Union City, Mich.

25 Barred P. Rock Okls. \$3.50 to \$5, each, 10 good yearling P. R. Hens \$25. W. E. LEOKY, Holmesville, O.

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Barred Plymouth Rocks Cockerels of great size and superior breeding. Barred right, bred right, built right. Even better than last year. \$4.00 and \$5.00. WESLEY HILE, R. 6, Ionia, Mich.

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BARRED Rocks exclusively. Get your baby chicks and hatching eggs on time by ordering now. Prices and folder free. H. H. PIERCE, Jerome, Mich.

Blue CUSTOM HATCHING Hens Fifteen dozen eggs incubated and chicks boxed and shipped \$5.50. More than full compartment 50c per dozen. Order April chicks now. Many varieties send for circulars. Crescent Egg Company, Allegan, Mich.

Buff Leghorns and White Leghorns. Cockerels, hens, pens, and eggs. 500 April chicks of each breed. Place your order now. Prices reasonable. Dr. William Smith, Petersburg, Mich.

CHICKS 100,000 This Season. 10 varieties, best pure blood stock hatched right and guaranteed to reach you in right condition. Hatching eggs prepaid. Pekin duck eggs. Illustrated catalogue free.

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CHICKS AND EGGS Rose and Single Comb R. I. Reds, Barred Plymouth Rocks. Pure bred stock. Farm raised and of superior quality. Write for catalog. INTERLAKES FARM, Box 39, Lawrence, Mich.

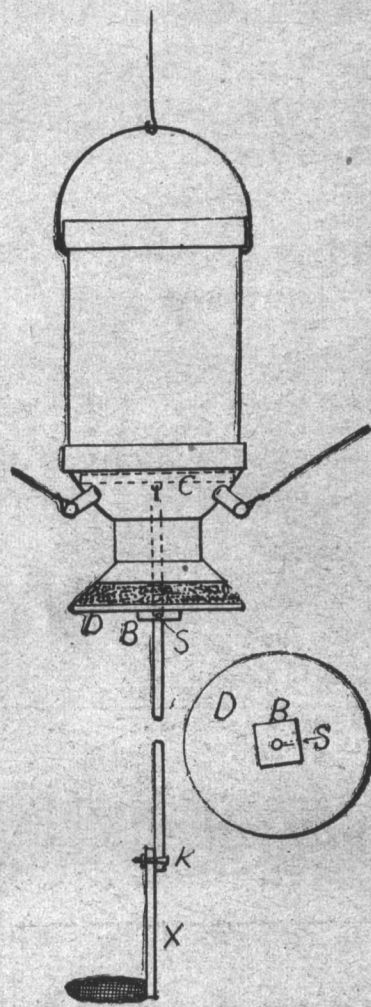
Chicks Barron Strain White Leghorns. Pay a little more and get a good start next season. Early hatched chicks are always the best. My cockerels come from hens with an egg record of over 250 eggs their pullet year. March \$16, April \$15, May \$14 per 100. Polly Cove Farms, R. 1, Holland, Mich.

CHIX:- S. C. W. Leghorns \$18 per 100. Full count live chix guaranteed. Pullets of same blood averaged 70½ yield through December and January. Morris White Leghorn Farm, Belding, Mich.



Poultry Feeder and Exerciser

I HAVE had my attention called to self-feeders and exercisers for poultry, similar to the one here shown, but this is the simplest and easiest to make of any that I know of, having made one and used it about a year. Take an old milk can and cut the bottom out of it, which can be done with a sharp cold chisel. Provide a cross bar C about one inch square and of nearly the same length as the diameter of the can. This is to rest, as shown, on the inside of the can shoulders. Insert a screw hook into the middle of this bar. Also put a screw eye or a little wire bale into the end of an old broom handle, to be hung onto said hook. Out of half-inch stuff, saw a round disc D, having a diameter five inches greater than the top of the can; and cut out a block B one inch or more thick and four inches square. Through



the centers of the block and of the disc bore a hole just large enough to admit the broom handle. Bore a hole through one side of block B to admit a large screw S. An extension X may be secured to the other end of the broomstick by means of a buggy clip K and a yoke. To the lower end of this bar, an ear of corn is to be held by means of a spike driven through the bar. The height of the corn from the floor may then be adjusted by means of the clip K. The fowls will pick at the corn, causing the grain to fall; and by the time they have the corn all picked off the cob, some of them will have learned to pick at the empty cob or at the bar to bring down the grain. The disc D may be raised or lowered to regulate the flow of grain, and is held in place by the screw S.

The object of cutting the bottom out of the can is, that the grain may be poured into the can through the open bottom. If it is rather high, one may need to step upon a box to reach it.

With a device of this kind, the hens get some exercise, and they cannot eat their grain too rapidly, which is much better for their health and egg produc-

tion than to allow them to gobble it all up at once.

But better than this or any other so-called feeder or exerciser, I am inclined to believe, is the method of working the grain into deep litter and letting the hens dig deep for it, for this sort of exercise is most natural for them and warms them up in cold weather as nothing else will. Vigorous exercise in winter is about as important as feed.

—L. B. A.

EARLY SPRING WITH POULTRY.

IF the litter in the poultry house is damp and dirty it should be cleaned out and fresh straw replaced. This will help to keep the hens busy until the spring days when they can range outside. One of the large items in poultry work is giving the hens plenty of clean scratching material and it is one of the factors in keeping the flock healthy until better conditions on the range arrive to further invigorate them.

Hens on free range seldom eat feathers. When they form this habit in the poultry yard it means that something needed in the ration is lacking. A balanced ration will often remedy the trouble. If one hen starts feather eating she should immediately be isolated or killed before teaching the habit to other members of the flock.

If there is little storage room for feed it sometimes pays the farmer to buy a few bags of some poultry mash which contains all of the elements needed for egg production. Such a mash will help to keep the hens healthy and maintain plenty of vigor. Many poultrymen feed the commercial mash throughout the year and some farmers who have not tried them at all, will find that a few hundred pounds during the hardest part of winter will help out wonderfully with the poultry feeding problems. Where there is plenty of storage room for various materials the mash mixtures can be made by the farmer in a satisfactory manner. Where there is no time for mixing the materials, the commercial mash forms a good substitute and they have a good influence on egg production when fed to vigorous bred-to-lay flocks.

It is not too late to order the incubator and brooder but the time is going fast. The early hatches pay the best and delays in transit are very discouraging to the poultryman with quality eggs to incubate and no machine in which to place them.

A few days devoted to the building of brood coops will save time next spring and insure the mother hens safe homes for their chicks. Many chicks are lost each year because rats and weasels steal them from under the hens. Place floors in all the brood coops and cover the front with one quarter inch mesh wire. Arrange some method of closing the brood coops each night. This can be done with a narrow hinged board next to ground. If the small shed-roof brood coops are used, either nail the roofs tight or use hooks on each side. This prevents the roofs from being blown off during severe spring wind storms.

Orders for hatching eggs often have to be placed early as such orders are filled in rotation by the breeders and late orders sometimes have to wait several weeks. In purchasing eggs for hatching remember that prize-winning birds are scarce and eggs from such stock are not sold by the hundred at a few cents above the market price. Good utility eggs can be purchased at moderate prices and such eggs will

Biggest Hatches Strong Chicks

That's what you want and will get with a Champion Belle City Hatching Outfit. My big catalog "Hatching Facts" tells the whole story—gives newest ideas and quickest ways to make poultry pay with my \$10 95 140-Egg Champion Belle City Incubator

Double Walls Fibre Board—Self-regulated—Hot-Water Copper Tank—Safety Lamp—Thermometer Holder—Egg Tester—Nursery. With my \$6.35 Hot-Water Double Walled 140-Chick Brooder—both only \$15.95

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I ship quick from Buffalo, Minneapolis, Kansas City or Racine. With this Guaranteed Hatching Outfit and my Guide Book for setting up and operating you can make a big income. You can also share in my

Special Offers They provide easy ways to earn extra money. Save time—order now, or write today for my Free Poultry Book "Hatching Facts"

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produce good farm flocks if the eggs are from vigorous year-old hens and not from pullets. The eggs from year-old hens are always worth more money than pullet eggs for hatching, provided that the birds are about equal in other respects. Order eggs from year-old hens whenever possible and tell the breeder that you do not want hatching eggs from pullets if it can be avoided.

STOVE BROODER SUGGESTIONS.

WHEN two hundred or more chicks are hatched at one time the brooding problem is serious and the coal-burning brooders are economical and a safe method of caring for such flocks. A colony house is necessary for each stove brooder. Some breeders use double colony houses for their stove brooder and then the heat is largely confined to one side and the other side is used for a cool exercise room.

The chimney pipe should be placed straight up from the stove and a small hole can be cut in the roof and protected with asbestos. Metal protectors for the chimney can be placed outside so that the roof will not leak at the chimney hole. These can be made to order by tinsmiths.

About one hod of chestnut coal will maintain the temperature in a coal brooder for two days and two nights. Every night and morning the ashes must be thoroughly shaken down and the magazine filled with coal. Some stove brooders are equipped to burn soft coal and this is an important feature during the present fuel shortage.

After the stove has been properly regulated the fire will almost take care of itself and there need be little worry concerning the welfare of the young birds even on cold nights. About once each week it will be found that the ashes have accumulated around the edges of the stove, slightly reducing the temperature. If this condition continues the fire may go out on some cold night and cause chilling of the chicks.

Once each week it pays to allow the coal supply to become low in the stove. Then remove the magazine, poke out most of the ashes and fill with fresh fuel. It does not pay to clean out the stove entirely unless the fire goes out, as a new fire will burn very briskly for several hours and require occasional watching until properly regulated again. In the stove brooder there is less danger of overheating the chicks than in other types of brooders. If the stove becomes too hot for their comfort they will move to the outside of the deflector where it is not so warm. Nature has provided the chick with an instinct which tells it how much heat is best for its welfare.

From two hundred to fifteen hundred chicks can be brooded under most types of coalburning brooders. However, the best results are obtained when no more than two hundred are given to each brooder. They will hover two hundred successfully until the chicks are six or eight weeks old, which is as long as artificial heat will be necessary. The amount of heat needed depends upon the season and the poultryman can study the birds and the weather and regulate the brooder fires accordingly. R. G. K.

IT is generally wise to try and breed fowls according to the size and weights which they are given in the Standard. One breeder recently suggested that it would pay to breed Leghorns to a larger size, like the Rocks, but why is it necessary to do that when we already have the Rocks and heavy breeds of that type. It might be possible to breed the Rocks into a larger breed but then they would mature more slowly, like the Brahmas and we already have the Brahmas. There is a practical reason for the weights of the different types of breeds and why disturb them when they are now giving satisfaction. R. G. K.

MAKE YOUR HENS LAY NOW

YOU want eggs to sell at these war-time prices, and you want to do your full part toward increasing the world's food supply.

Speed up the laying. Get your hens in finest laying trim by feeding Dr. Hess Poultry Pan-a-ce-a. It helps to make poultry healthy—to make hens lay—to make chicks grow.

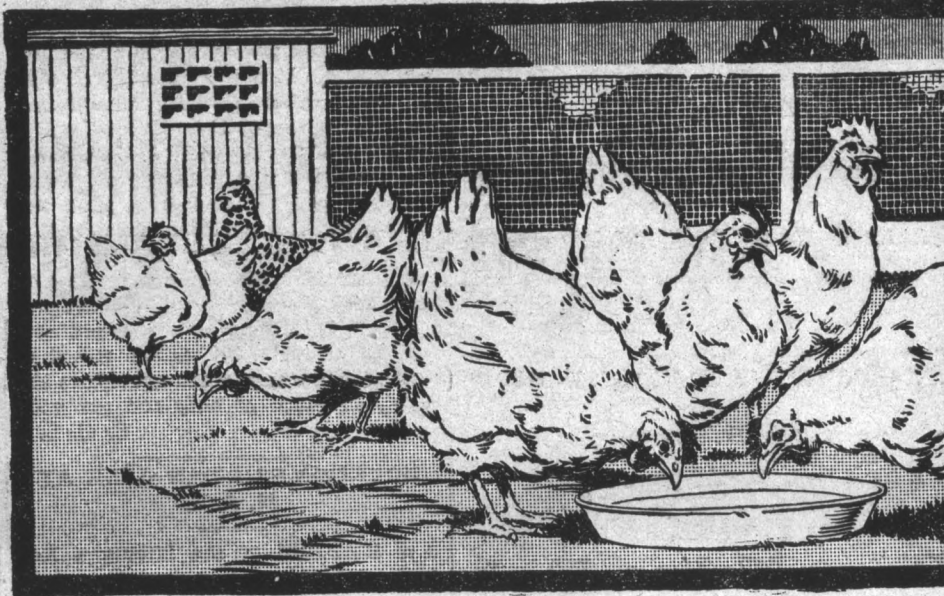
Mating time is here. Now's the time to put your hens and roosters in the pink of condition. If you want chicks that will live and develop rapidly, if you want early broilers, if you want pullets that will develop into early winter layers, then feed the parent stock Dr. Hess Poultry Pan-a-ce-a.

Remember, it's the singing, scratching, industrious hen that lays the healthy, fertile eggs that will hatch into strong, livable chicks. Feed Pan-a-ce-a for results. Buy according to the size of your flock—a penny's worth for every hen to start with. A good rule for feeding is a tablespoonful once a day for every 20 to 25 hens.

The dealer from whom you buy Pan-a-ce-a will return every cent you pay him if it does not do what is claimed. 30c, 75c and \$1.50 packages. 25-lb. pail, \$3.00; 100-lb. drum, \$10.00. Except in the far West and Canada.

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DR. HESS STOCK TONIC
A Worm Expeller A Conditioner for Spring Work



DR. HESS POULTRY PAN-A-CE-A



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R.C. RHODE ISLAND REDS cockerels, large, thrifty; pure bred; \$2.50 to \$5.00.
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ROSE COMB BROWN LEGHORNS
from winners at the largest shows in America.
Mrs. CLAUDIA BETTS, Hillsdale, Mich.

R. and S. C. R. I. Reds. Eggs for hatching, baby chicks, splendid stock, prices reasonable and satisfaction guaranteed. O. E. Hawley, R. 3, Ludington, Mich.

Special pen Barred Rocks that will produce extra early, heavy winter layers. You need some. Eggs \$2.50 per 15.
P. L. WARD, Hillsdale, Mich.

S. C. Anconas, W. Leghorns. Book orders now for Day Old Chicks and Hatching eggs. Circular free.
Elmhurst Poultry Farm, Brighton, Mich.

Silver, Golden and White Wyandottes. Plenty of Good Golden and White cockerels \$4.50. Few Silver pullets \$3 each.
C. W. Browning, Portland, Mich.

S. C. White Leghorn Cockerels, Ferris and Young's strains \$2.50 and \$3 each. Order at once.
RUSSELL POULTRY RANCH, Petersburg, Mich.

Snowy White Rocks Fishel Strain, dandy layers. Eggs \$1.50-15; \$4.50; \$7-100 All prepaid.
Mrs. Earl Dehnhoff, Vanburen, Ohio

White Wyandottes Free range flock 80 Duston's Strain hens mated to 7 Martin's Regal Strain Cockerels, 15 eggs by Parcel Post \$2.00 by ex. \$3 per 100.
VERN MOORE, Hartford, Mich.

White Wyandottes choice stock: cocks, hens, cockerels, and pullets. Send for 1918 circular. David Ray, 709 Norris St., Ypsilanti, Mich.

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OUR PRICE ONLY \$1.60

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Neither corn nor oats nor any other grain or combination of grains raised on your farm is a complete and economical ration for any kind of live stock.

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Why? Because you get more for your grain as raw material than you pay for a feed that goes farther and gets better results than do your grains, whole or ground. But, to insure the full benefit of the economy be sure that you are getting feeding values in every ingredient of the feed.

You are guaranteed full feeding value when you specify and get

True Value Stock Feed

which is not only a body-building feed for all stock, taking the place of grains at lower cost with higher results, but is an ideal basis for a specialized feed. Addition of proper concentrates secures a balanced ration for any special feeding purpose at a comparatively low cost.

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If your dealer hasn't True Value feeds yet, write us for full information as to how to get them promptly.

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DAIRY FEED
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WHEAT BRAN AND COTTONSEED MEAL IN RATION.

Kindly give me some information as to a proper ration for my cows that are now fresh. I am feeding mixed hay, corn silage and oat straw for a rough feed. Hay is about one-third clover and two-thirds timothy. Silage is not rich, as the corn was not ripe or even turned. For a grain ration I have plenty of oats and barley of my own, but I am not feeding any barley. I am buying cottonseed meal and wheat bran and feeding one pound of cottonseed meal per day to each cow. With this I give ground oats mixed with wheat bran, equal parts by weight, enough to make one pound of grain to each four pounds of milk that the cow gives per day. Oats are worth here about 67c per bushel; barley \$1.85 per cwt., and I have to pay \$57 per ton for bran and \$3.00 per cwt for cottonseed meal. What I wish to know is, would it not be better for me to cut out the bran or the bran and cottonseed meal and feed oats and barley? Will the cottonseed meal and bran pay for the difference in cost?

Sanilac Co.

W. J. C.

The only advice I can offer, either in the ration fed or the manner of feeding, is that the ration is a little bit deficient in protein. I would feed one pound more of cottonseed meal and one pound less of the oat and bran mixture. If you wanted to feed some of the barley it would be all right to cut out part of the oats and substitute barley, but you can't very well get along without the bran and cottonseed meal to furnish you the required amount of protein. I believe that if you add another pound of cottonseed meal that you will get an increased flow of milk.

I think that your practice of feeding is splendid. It really doesn't make so very much difference with cows if they are only fed regularly. If they get in the habit of having their feed at a certain time every day they look for it and they get nervous if they do not receive it. Regularity in feeding is a prime factor in getting results.

If you need the barley for hog or horse feed you can use it for that purpose and feed the oats as you are now feeding, or with the added pound of cottonseed meal you can substitute the barley in place of oats and get good results.

C. C. L.

HOLSTEIN-FRIESIAN SALE AT M. A. C.

MEMBERS of the Michigan Holstein-Friesian Association held their annual meeting at the Michigan Agricultural College during Farmers' Week program, February 3-7. The meeting was featured by an auction sale of registered stock, thirty-eight high-grade animals selling for \$13,245. This average sale price of \$348, as compared with the average of \$227 a year ago, shows the upward trend of the Holstein breed in Michigan.

Following is the sale list of the Holstein-Friesian Association auction at M. A. C. on February 7:

Winifred Mutual Friend—Frank H. Alfred, Detroit, Mich., \$300.
Elder Lawn Canary De Kol 328459—O. B. Armstrong, Pierrepont Manor, New York, \$545.
Canary Butter Boy 410689—H. I. Burghbacher, Bryan, Ohio, \$265.
Bessie Pietertje Canary De Kol 244-848—J. Bazley, Ypsilanti, Mich., \$325.
Calf—Chas. I. Brannon, Williamston, Mich., \$150.
Agatha Pauline De Kol 161714—John Bazley, Ypsilanti, Mich., \$400.
Dora De Kol Oosterbaan 113613—Buth Bros. and D. E. Waters, Grand Rapids, Mich., \$1,000.
Snowdrop Korndyke Butter Boy 321-891—H. I. Burghbacher, Charlotte, Mich., \$240.
Winifred Mutual Friend 121995—John Bazley, Ypsilanti, Mich., \$400.
Calf—E. C. Box, Lansing, Mich., \$175.
Rose Fern Korndyke 410684—H. I. Burghbacher, Charlotte, Mich., \$230.
Silver Creek Pride De Kol 253573—F. L. Corbin, Pottersville, Mich., \$230.

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Get the beauty and durability of tile in the Lansing "ship-lap" block. Ends overlap—extended shoulders top and bottom—less mortar exposed, better settling of silage—less chance for frost, better looking silo, blocks uniform in shade. Stronger walls. Notched ends on blocks prevent mortar from slipping. Twisted steel reinforcing. Steel hip roof—steel chute—fire proof—adds beauty to the silo. Write for Catalog.

J. M. Preston Company
Dept. 309, Lansing, Mich.
Also get offer on Climax Silage Cutters and Bidwell Threshers

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Start Your Calves
AT A
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CALF MEAL

Do not use whole milk at 45c to 60c a day and feed at a loss. **SELL YOUR WHOLE MILK.**

Cows milk varies, too, according to the animal's health and often causes scours. Raise your Calf on Lamprey's Calf Meal with Little or No whole milk. Simply mix with water or skimmed milk. Will save many times its cost in cream saved the first six weeks, and does not vary or scour.

Money refunded if you do not find it absolutely satisfactory and a Big Money Saver. Ask your Dealer also, for a 12-lb. package today. Write for Calf Meal Pointer Pamphlet. It's Free.

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GUERNSEYS—REGISTERED BULL CALVES

Containing blood of world champions.
HICKS' GUERNSEY FARM, Saginaw, W. S. Mich



Large Cows

Most Economical

Both milk and fat are produced at lowest rate in general by the cows consuming the most food. This conclusion is reached by Prof. H. H. Wing, Professor of Dairy Husbandry at Cornell, after a year's observation of the University Experiment Station's herd. Holsteins are large and healthy, capable of converting large quantities of coarse feed into the best of milk suitable for all purposes, but particularly in demand for infant feeding and for cheese making.

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HOLSTEIN FRIESIAN ASSOCIATION OF AMERICA, Box 164, Brattleboro, Vt.

Wanted

2 to 30 head of registered Holstein females. Will buy whole herd if priced right. Offerings from State accredited herds desirable, but not essential. Herds must be free from abortion. Bred two year olds and up to five year olds preferred, but others considered. Kindly state in first letter, full particulars, as to type, growth, weight, age, price, herd-book numbers, when bred, to what sire, if herds are tuberculin tested, etc. Wish to buy direct from "Breeders." No fancy prices. Also wanted a 30 lb. bull one to three years old. Lock Box No. 37. Shepherd, Mich.

The Traverse Herd

We have what you want in BULL CALVES, the large fine growthy type, guaranteed right in every way. They are from high producing A.R.O. ancestors, Dam's records up to 80 lbs. Write for pedigrees and quotations, stating about age desired.

TRAVERSE CITY STATE HOSPITAL
Traverse City, Mich.

\$550 Buys six high grade unregistered Holstein heifers 2 yrs. old freshen in spring. Well marked, bred to 83 lb. bull. B. B. Reavy, Akron, Mich.

Additional Stock Ads. on Page 316

Brown Swiss Dispersion

TUBERCULIN TESTED

Wednesday, March 12th, 1919

36 HEAD:

- | | |
|--------------------|---------------------------------|
| 14 Milk Cows | 6 two year old Heifers |
| 4 yearling Heifers | 8 Heifer Calves |
| 2 Bull Calves | 2 Herd Bulls, 2 and 3 years old |

SEND FOR CATALOG

DR. WM. SCHAD

BREEDERS' DIRECTORY

Change of Copy or Cancellations much reach us
Ten Days before date of publication

WE HAVE A FEW

ABERDEEN ANGUS

cows with calves at foot, and rebred to
IMPORTED "EDGAR OF DALMENY"
Mich. Grand Champion Angus Bull.

Also have four extra fine Angus
bulls of serviceable age.

"Best of Breeding"

and at a price to sell.

WILDWOOD FARMS, Otis, Mich.
W. E. SCRIPPS, Prop. SIDNEY SMITH, Supt.

WOODCOTE ANGUS

TROJAN-ERICAS & BLACKBIRDS (BLACKCAPS)
only. The most fashionable strains of the breed.
Great care given to matings and pedigrees. Every animal
BRED IN THE PURPLE. Breeders and feeders
of many INTERNATIONAL WINNERS.
WOODCOTE STOCK FARM, Ionia, Mich.

Cloverly Angus Good quality bulls of serviceable
age and younger. Inspection invited.
Geo. Hathaway and Son, Ovid, Mich.

Registered Aberdeen Angus. Seven bulls from eight
to twelve months old. Plenty of size
best for breeding. Price \$150 and up. Come and see
them. Enquire F. J. WILBER, Olio, Mich.

GUERNSEYS Registered bulls two years old and un-
der grade heifers all ages, write your requirements.
WALTER PHIPPS FARM, 80 Alfred St., Detroit

\$500 WILL BUY

two Registered Guernsey Cows, \$500 one bull calf.
GEO. N. CRAWFORD, Holton, Mich.

Moline, Mich.

Registered Ayrshires FOR SALE

We have a number of fine heifers and bull calves
to offer at bargain prices. Write for description.
Michigan School for the Deaf.
W. L. HOFFMAN, Steward, Flint, Mich.

For Sale Registered Guernsey Bull

Gov. Chene Golden Noble & May Rose breeding.
Tuberculin tested by state Halcyon Sequel born 1912.
Great grand son of Gov. Chene sires and grand sires
are all A. R. breeding. Price \$250 F.O.B. Avondales
Hope born Mar. 25, 1917. Sire Halcyon Sequel Dam
Gertrude of Halcyon. Farm price \$150 F.O.B. Luella's
Duke of Avondale born Jan. 1, 1918 Sire Lord Sunrise
Dam Luella's Maid. Prices \$100 F.O.B. Avondales
Hero born Jan. 10, 1918. Sire Halcyon Sequel Dam
Serena of Pittsfield. Price \$200 F.O.B. Avondales Joy
born Feb. 8, 1918. Sire Halcyon Sequel Dam Winkle
of Pittsfield. Price \$125 F.O.B. Avondales Mark born
Apr. 9, 1918. Sire Lord Sunrise, Dam Popular. Polly.
Price \$100 F.O.B. Come and look our herd over.
AVONDALE STOCK FARM, Wayne, Mich.

GET GUERNSEYS

1695 lbs. more milk and 93 lbs. more butterfat is
the average production over dams of the first
six heifers sired by a purebred Guernsey bull
owned by a Maryland Bull Association. A Guernsey
bull can likewise increase the production as
well as the value of your herd. Write a postal
now for our free booklet, "The Grade Guernsey."
THE AMERICAN GUERNSEY CATTLE CLUB,
Box 1, Peterboro, N. H.

Fine Reg. Guernsey

7 yr. old cow and her heifer calf 1 mo. old right in
every way except—lost one quarter—\$300 buys this pair.
J. M. WILLIAMS, North Adams, Mich.

GUERNSEYS must reduce herd; so offer
a few choice females of
Guernsey breeding also bulls, all stock of A. R. breed-
ing, herd tuberculin tested.
T. V. HICKS, Battle Creek, Mich.

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ROSS In-de-str-uct-o METAL SILO

Built for a lifetime, will not rust, blow down, burn down, twist or warp. Fully guaranteed by the oldest manufacturers of silos in the country. The ROSS gives you perfect silage and more than a dozen exclusive points of superiority.

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Makers of Sturges Guaranteed Capacity Milk Cans

Chicago, Illinois

Sturges Steel Churns

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In the United States alone more than 1,000,000 calves were raised on Blatchford's Calf Meal last year. It puts calves through to a healthy, vigorous, early maturity at less than one-half the cost of milk. Write for booklet: "How to Raise Finest Calves on Little or No Milk." We'll send it free, also name of your nearest dealer.

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In Business Over 118 Years Waukegan, Ill.

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A record book you will use every day. Write for it. Also for Silo Filler Catalog. For speed in silo filling, you want a Rosenthal. Extra large throat, cutter head with four knives. Three sizes, self-feed with automatic speed control.

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are the most economical you can buy. Find out why. Get catalog and record book now. Rosenthal Corn Husker Co. Box 2 Milwaukee, Wis.

Natsen Pieterij 361808—F. L. Corbin, Pottsville, Mich., \$270.
Nellie De Kol Monk 411099—E. R. Clafin, Charlotte, Mich., \$185.
Pearl Johanna Hengerveld 243559—F. F. Consaul, Mt. Pleasant, Mich., \$400.
Calf—H. O. Dusemheller, Bath, Mich., \$75.
Queen Mutual Canary 320855—Hunter Bros., Northfield, Mich., \$640.
Korndyke Bess Spofford 181220—D. H. Hoover, Howell, Mich., \$500.
Silver Creek Wilkes De Kol 291520—C. R. Hank & Son, Jackson, Mich., \$270.
Little Maid Adaline De Kol 140579—Chas. S. Hug, Howell, Mich., \$1,200.
Bessie Fayne Johanna 318672—Theodore Jordan, Woodland, Mich., \$470.
Calf—George Lutz, Ceresco, Mich., \$250.
Waxana Lass De Kol 27949—George Lutz, Ceresco, Mich., \$230.
Winona Midnight 3rd 289319—Clifton Lutz, Ceresco, Mich., \$240.
Carrie Clothilde Lyons 152678—Geo. Lutz, Ceresco, Mich., \$300.
Bull Run Dora Veeman—John B. Martin, Grand Rapids, Mich., \$620.
Calf—Merriman Bros., Deckerville, Mich., \$225.
Calf—Murrett Ridenour, St. Johns, Mich., \$140.
Madam Veeman De Kol 133047—W. S. Rider, Jr., Almont, Mich., \$310.
Cornucopia Butter Maid Wayne De Kol 4th 402261—August Rohdl, Midland, Mich., \$170.
Winifred Mutual Friend 151823—R. A. Reed, Howell, Mich., \$504.
Lady Ophelia Comelian 216856—Frank Stone, Charlotte, Mich., \$215.
Lakeside Korndyke Alcarta—John G. Stortz, Lansing, Mich., \$440.
Princess Netherland Jane 281833—Wm. Schnabingo, Lansing, Mich., \$490.
Lakeside Princess 371910—Wm. Schnabingo, Lansing, Mich.
Jolie Sarcastic Duchess 170409—C. S. Welsh, Mason, Mich., \$235.
Flint Maplecrest Korndyke 246568—Dudley Waters, Grand Rapids, Mich., \$360.

POTATOES AND TURNIPS A SUC- CULENT FOOD.

I have clover hay, oat straw, ground oats, potatoes and turnips of my own. In addition to these I can buy bran, corn middlings and oil meal. I have no silo. In what proportion will I feed these to get the best results. This is for dairy cows.

Chippewa Co. H. O.

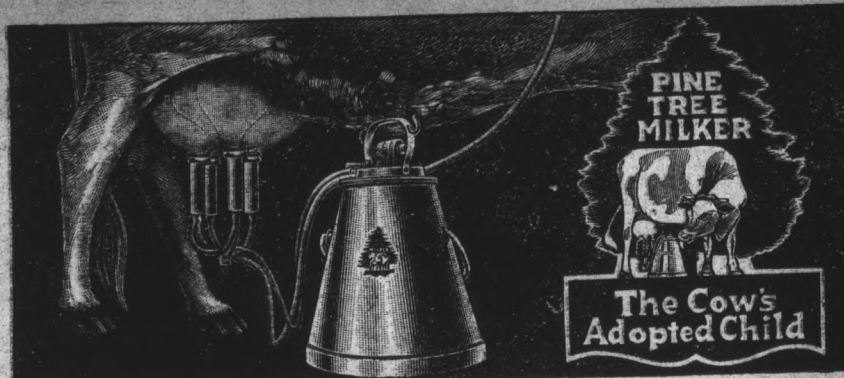
It is a splendid thing to have turnips and potatoes so that you can feed a few each day as long as you have no corn silage because these root crops will furnish a succulent food and improve the ration very much. They ought not to be fed in very large quantities. If you have plenty of potatoes and turnips you can feed say five pounds of potatoes and five pounds of turnips night and morning or a lesser amount will give you good results.

The clover hay and oat straw will make a very good roughage indeed. There is nothing better than clover hay and the cows will eat one feed a day of oat straw with relish, and you can convert this oat straw into money in this way. Feed all the clover hay they will eat up clean once a day and the same with the oat straw and feed a small amount of potatoes and turnips. If you choose to you could feed potatoes one morning and turnips the next, feeding them once a day.

I would suggest that you buy wheat bran and oil meal and that you mix the wheat bran with ground oats equal parts and then feed two pounds of oil meal a day and a sufficient amount of the ground oats and bran to give each cow a pound of grain per day for every four pounds of milk produced in a day if the milk tests less than four per cent and a pound of grain per day for every three pounds of milk produced if the milk tests more than four per cent.

C. C. L.

Of all the independent nations of the world, Belgium is among the smallest. It is less than one-fourth the size of New York state. Twenty-three countries the size of Belgium could be placed in Texas and there would still be a little room to spare. In exports and imports, this small country holds sixth place among all nations. In wealth it stands eighth.



TRY ONE FREE

EXCLUSIVE

Foot-Proof Pulsator
Insures perfect control, correct speed.
P. T. Double Action Teat Cups
Most like the calf's tips.
Cushion Teat Cup Tops
Soft rubber cushions at teat cup ends.
33 1/3% Longer Lived Rubber Parts

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Saves 2/3 Labor
Reduces Milking Expense 35% to 60%
Greatly Increases Profits
Gets More Milk
Lengthens Lactation Periods
Beneficial to the Cows
Most sanitary—lowest bacteria count

\$1 A Month, Per Cow After Trial

We will gladly install the wonderful Pine Tree Milker with its many exclusive features, on your farm for Free Demonstration Trial, without one penny in advance. This last word in a final perfect milking machine—this supreme achievement of a world-renowned inventor—this 100% efficient mechanical milker, we offer to place on your milking work, entirely at our risk. The great Pine Tree Milker—developed under actual dairying conditions—perfected after years—and rated by leading authorities as the most highly advanced and sanitary type of mechanical milking device—we ask you to TRY, and prove, at our expense.

Our experts will install the milker and instruct you. Use it just as if you owned it. Test it thoroughly in your own way. Prove how it saves two-thirds labor.

Satisfy yourself that it is not only safe to use, but most beneficial to the cows. Note how much better the cows stand. Note ease of operation—so simple a woman or boy can work it. Compare the Pine Tree with any other milking machine. You are to be the sole judge. If you are not entirely satisfied—if for any reason you do not want the milker—we will remove it at our expense and you will not owe us a cent.

Should you decide, after trial, to keep the Pine Tree Milker at our rock-bottom price, pay only a small part down. Pay the balance on our easy terms, to suit your convenience—only one dollar per month per cow. Pay for the milker from your savings and increased profits. Owners show that the Pine Tree Milker saves \$1 to \$3 or more per cow each month right from the start! Convince yourself on your own milking work. No risk. No obligation. We back the Pine Tree Milker with our iron-clad Three-Year Guarantee.

Send for Catalog FREE

Our valuable new 1919 catalog describes all types of milking machines—tells what Agricultural Colleges say—shows how the milking machine solves the dairy labor problem—gives complete, authentic information on all points. Don't think of buying any milker without first reading this most helpful book. Sent free. Mail coupon today—NOW.

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Please send me, without obligation, your complete 1919 catalog, and full information about your Free Trial Demonstration Offer. Quote present price and easy terms. I have cows.

Clean Milk At Low Cost

You must produce clean milk—but at a reasonable cost. This is easily possible with a Natco stable. The glass-smooth walls can be easily and quickly washed down. Dust and dirt cannot filter through them. The air-chambers in these walls prevent sudden changes of temperature—keep the stable cool in summer and warm in winter.

Natco Hollow Tile

will not burn, rot, or crumble. They save coal in dwellings and other buildings that require heating. The money you save on paint, insurance and repairs will in a few years repay you for the added cost. Natco buildings are cheapest in the long run. They will greatly increase the market value of your farm.

Ask your building supply dealer to show you samples of Natco Hollow Tile for various farm buildings. With freight so congested, it is none too early to study the money-saving possibilities of Natco Hollow Tile for your next building.

Write us today for free illustrated book "Natco on the Farm."

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CATTLE

"Top-Notch" HOLSTEINS

The young bulls we have for sale are backed up by many generations of large producers. Buy one of these bulls, and give your herd a "push". Full descriptions, prices, etc. on request. McPherson Farms Co., Howell, Mich.

"Winwood Herd"

REGISTERED
Holstein - Friesian Cattle
Sire in Service
FLINT MAPLECREST BOY

His sire is Maplecrest Korndyke Hengerveld. His three nearest dams each over 30 lbs. of butter in 7 days. His dam and granddam both made over 122 lbs. of butter in one year. It is the yearly cow we are looking for to deliver the goods. Flint Maplecrest Boy's Dam is Gluck Vassar Bell, 30.57 lbs. of butter in 7 days and 121 lbs. in 30 days. Her butter fat test is 5.27. This looks about right to the man who goes to the creamery. We have bull calves from 2 weeks to 12 months old. From A. R. O. dams and sired by Flint Maplecrest Boy, which we will sell at a dairy farmers price breeding considered. Just think 40 more cows to freshen which means more bull calves. Let us know your wants. We will make terms on approved notes.

JOHN H. WINN, Inc.

Lock Box 249, Roscommon Mich.
Reference Roscommon State Bank.

The Pontiac Herd

"Where the Champions come from"

Offer Bull Calves sired by sons of Pontiac Korndyke, Hengerveld DeKol, Pontiac Dutchland, or Admiral Walker Pietertje.

Do you want a Pontiac in your herd?

Pontiac State Hospital, Pontiac, Mich.

Start a herd with dam, daughter & granddaughter. Peaceland Calamity No. 218038; Born September 19, 1912. 10.99 lbs. butter, 307.6 lb. milk, 7 days A.R.O. at 2 years of age. Peaceland Korndyke Calamity No. 273956; Born October 5, 1914. 11.68 lb. butter, 305.2 lb. milk, A.R.O. 7 days at 2 years of age. Peaceland Belle Korndyke No. 458616; Born November 4, 1917. All fresh since October and now being bred to Meadow Holm DeKol Butter Boy No. 234564. Herd under Government Supervision for control of tuberculosis. Price \$475 for the three f.o.b. Fabius, Peaceland Stock Farm, Three Rivers, Mich. Chas. Peters, Herdsman, For breeding and prices, C.L. Brody, Port Huron, Mich.

CLUNY STOCK FARM

100--REGISTERED HOLSTEINS--100
When you need a herd sire remember that we have one of the best herds in Michigan, kept under strict sanitary conditions. Every individual over 6 mos. old regularly tuberculin tested. We have size, quality, and production records backed by the best strains of breeding.

Write us your wants. R. BRUCE McPHERSON, Howell, Mich.

THE HOLSTEINS

At Maple Avenue Stock Farm are under Government supervision. The entire herd have just been tuberculin tested and not one reactor. A good place to buy that bull you are looking for, and I have two very fine, richly bred, old and splendid individuals ready for any amount of service. I want to answer any question you may ask about them.

L. E. CONNELL, Fayette, Ohio.

Registered and high grade Holsteins. Eight cows from three to eight yr. old some fresh others to freshen in Feb. and Mar. from 30 lb. sire, others bred to a 30 lb. sire good dairy cows. Will sell one or the eight.

HENRY S. ROHLFS, R. 1, Akron, Mich.

For Sale at a bargain. A few young bull calves from high producing stock. Buy one of these fine calves and raise a bull for next fall.

A. F. LOOMIS, Owosso, Mich.

A Good Note accepted in payment of finely bred registered Holstein bull calves. Quality of the best, and at prices within reach of all. Write, GEO. D. CLARKE, Vassar, Mich.

Parham's Pedigree Stock Farm offers Reg. Holstein cattle, Chester White Swine, extra bargains in calves and fall pigs. Bulls half price. R. B. PARHAM, Bronson, Mich.

\$22.46 above cost of feed for Jan. fresh July 3 record of dam's dam of bull calf adv M.F. Feb. 1 \$9.52 for Jan. fresh April 20 test 4.1% 2 yr. old sister to dam.

M. L. McLAULIN, Redford, Mich.

For Sale Registered Holstein heifer bred dam gives 125 lb. milk a day. Price \$300.00 JOHN EBELS, R. 2, Holland, Mich.

Reg. Holstein Bull Calves (dandies at \$50 reg. and del. J. ROBERT HICKS, St. Johns, Mich.

\$50.00 Buys a Reg. Holstein Bull Calf. Born Oct. 30 1918, delivered at any express station in state. Also have a yearling. E. E. STURGIS, St. Johns, Mich.

Maple Lane R. of M. Jersey herd. Bulls, bull calves and heifer calves sired by a nephew of the new World's Champion, Sophie's Agnes. Also R.I.R. Cockerels, both combs. Irwin Fox, Allegan, Mich.

Hillside Farm Jerseys, offer 3 yearling bulls, backed by tested dams, and sired by a double grandson of Royal Majesty, first prize & junior champion at Mich. State Fair, good individuals. C. & O. Deake, Ypsilanti, Mich.

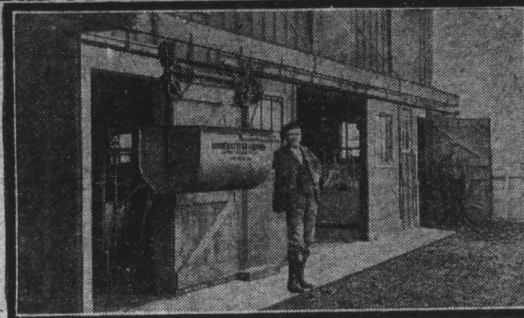
BUTTER BRED JERSEY BULLS
CRYSTAL SPRING STOCK FARM, Silver Creek, Allegan County, Michigan.

JERSEY BULLS
Ready for service FOR SALE
WATERMAN & WATERMAN, Ann Arbor, Mich.

LILLIE Farmstead Jerseys. Young bulls ready for L service from R. of M. cows. A few bred heifers and cows. COLON C. LILLIE, Coopersville, Mich.

The Wildwood Jersey Farm.
Bulls for sale by Majesty's Oxford Fox 134214 and Emment Lady's Majesty 150934, and out of R. of M. Majesty dams. ALVIN BALDEN, Capac, Mich.

Two of the Greatest Labor Savers for the Barn



WM. LOUDEN
Barn Specialist
Over 50 Years' Experience in Planning and Equipping Barns for Less Labor, Greater Comfort and Bigger Profits.

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Litter Carriers and Water Bowls

Every morning you can be ready for the field at a much earlier hour than usual if you have the Loudon Litter Carrier as a helper in barn cleaning. The big, heavily galvanized steel, water-tight box carries the refuse from eight or ten cows at once, glides along the track easily, dumps direct into manure spreader or pit—saves half the handling—all the manure, including the valuable liquid part. Loudon Carriers have no ratchets, brakes or clutches that are apt to get out of fix, and are often dangerous. Loudon Carriers are built right.

Water Your Cows Regularly and Watch the Milk Yield Jump

Milk is 87% water. Failure to supply cows with all the good, fresh water they need is costing many dairymen and farmers hundreds of dollars annually in loss of milk.

Louden Water Bowls insure a constant supply, day or night. Bowl can be easily and quickly detached for sterilizing. Install it yourself in any kind of barn—no special plumbing needed. Saves all the work of watering cows.

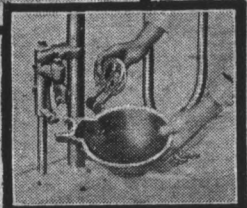
Our New 224-Page Illustrated Catalog Sent Postpaid—No Charge or Obligation

Tells you how to make your barn pay better, shows a Loudon labor saving equipment that fits your present barn and that you can easily install yourself at small cost: Stalls and Stanchions, Feed and Litter Carriers, Animal Pens, Hay Unloading Tools, Power Hoists, Detachable Water Bowls, Barn and Garage Door Hangers, Cupolas—"Everything for the Barn." Write also for Loudon Barn Plan Book and Loudon Expert Barn Planning Service, if you expect to build or remodel a barn. They will give valuable help. No charge. Address main office.

The Loudon Machinery Company
1911 Court Street (Established 1867) Fairfield, Iowa



Note simple construction. Merely raise up nose piece and bowl can be lifted off.



No set screws to rust; no collar connections requiring accurate adjustment; no supporting lever to release.

Branches: St. Paul, Minn. Albany, N.Y., Chicago, Ill.

Shorthorn Dispersion Sale

An extraordinary opportunity for Breeders and beginners. Every animal in the herd will be sold to highest bidder. At my farm near Chelsea, Mich., one-half mile south of Hoppe Road on Jackson & Detroit Electric Line.

BONDS ACCEPTED

On February 25, 1919, at 2:00 P. M.

30----Head----30

22 Females

8 Bulls

Most of the foundation Matrons of my herd were sired by Imp. Rubicon. These two bred to Grandsons of Imp. Bapton Diamond and Lovat Champion to get my present herd of shapely dual purpose Shorthorns. All calves under 8 months sold with dam.

Will sell all my horses, registered Black Top sheep and farm implements in forenoon on above date.

Cattle sale will be held under cover regardless of weather conditions.

PLAN TO ATTEND

B. C. WHITAKER

Bell Phone RR-1

Chelsea, Mich.

E. KALMBACH, Auctioneer

A. ADAMS, Auctioneer

For Sale Registered Jersey bulls ready for service and bull calves. SMITH & PARKER, R. 4, Howell, Mich.

Michigan Herefords

REPEATERS AND PERFECTIONS
Young stock for sale at all times.
80 head in herd, all ages.

Farm 5 miles south of Ionia. Visitors welcome. JAY HARWOOD, Ionia, Mich.

CITIZENS TELEPHONE 122-4

Buy a Hereford Sire Improve your Stock

Lakewood Herefords Strong in the blood of Anxiety 4th the strain that breeds true to type and predominates the leading show and sale rings of the country. A few high class young bulls for sale. Come see, and compare. Farm adjoins town. Cit. Phone 29. E. J. TAYLOR, Fremont, Mich.

Herefords Polled and Horned blood lines embrace Fairfax. Polled Perfection and Prime Lad 9th breeding. Prices reasonable. COLE & GARDNER, Hudson, Mich.

Herefords Bob Fairfax #4027 at head of herd. Stock for sale, either sex, polled or horned, any age. Priced right. EARL C. MCCARTY, Sec'y. H. B. Ass'n. Bad Axe, Mich.

Herefords

5 Bulls 9 to 14 months old Prince Donald, Farmer and Perfection Fairfax breeding.

ALLEN BROS., Paw Paw, Mich.

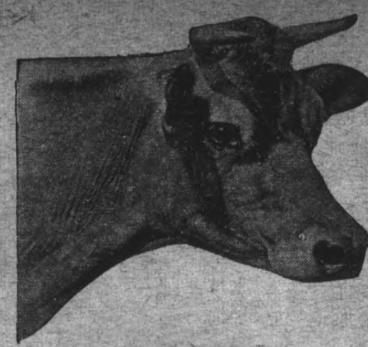
Shorthorn Cattle of both Sex for Sale
W. W. KNAPP, Howell, Michigan.

Shorthorn Seven Scotch and Scotch Topped bulls for sale. Price reasonable. W. B. McQUILLAN, R. 7, Howell, Mich.

BIDWELL SHORTHORNS
For Beef and Milk.

Registered bulls, cows and heifers—Good Scotch and Scotch-Topped for sale. In prime condition. Modern sanitary equipment. Farm 10 minutes from N. Y. C. depot, 1 hour from Toledo, Ohio. Automobile meets all trains. Write

BIDWELL STOCK FARM,
Box B, Tecumseh, Mich.



LEASING LIVE STOCK ON SHARES.

(Continued from page 282).
most of mine on a lease which is so simple that I take the liberty of giving in full.

Lease of Holstein Bull.

F. H. Williams of Allegan, Michigan, leases to of the township of county of Allegan, Michigan the bull calf..... for the term of two years, on the following conditions:

Said second party is to keep and maintain said bull in a good and thriving condition in such a manner as pure-bred stock should be kept. Said second party shall retain all service fees collected. In case of the death of said bull, through sickness or accident, the loss thereof shall fall upon first party.

Second party agrees to deliver said bull at the termination of this lease to the city of Allegan.

During the term of this lease first party authorizes second party to sign his name to certificates of services, when required for registration.

Dated, Allegan, Michigan,

Signed

When these bulls are brought back at the end of the term they will sell for from sixty to one hundred dollars, depending on the skill of the farmer who has taken them. At the same time, it gives farmers an excellent chance to improve their stock without any expenditure except for feed. It has been my endeavor to place at the head of my herd, the best bulls I could obtain. A personal acquaintance with the late G. A. Dimoc, of Kalamazoo, enabled me to obtain sons of these two famous bulls, Pontiac Aaggie Korndyke and Friend Hengerveld De Kol Butter Boy. These bulls, I believe, are recognized as the leaders in long distance testing. For the daughters of these bulls, I have obtained a son of a thirty-two pounds son of Rag Apple Korndyke Eighth. This combination of good breeding has caused a very good demand for male calves under the terms of the contract which I have given.

PARTNERSHIP IN RENTING.

A PARTNERSHIP basis of renting that makes both tenant and landowner more money than the old way has been worked out by Dr. Wendt, of South Dakota. The plan is essentially this, that the tenant furnishes horses, farm machinery, labor, half the stock, half the feed for horses, pays half the thresher's bill. The landowner furnishes the other half of the stock, feed for the horses, etc. When anything is sold from the farm the returns are divided half-and-half. This plan has proved so satisfactory that in the eight years it has been in operation no tenant has given up his lease which, by the way, is made a continuous one that can be terminated by either party giving a specified notice.

The general feeling among the leading breeders of beef cattle is that the demand for pure-bred breeding animals will not only continue, but be materially improved for the next few years. This is based upon the extremely high prices being paid for market cattle, the desire—the necessity—to improve the herds of the country generally and the acute scarcity of good cattle.

These Seven Cows



Kept for One Year on the Product of One Acre

It is hardly believable. Keeping seven cows for a whole year on the product of one acre goes a long way towards reducing the cost of milk. On one acre of land in the state of Michigan, Ross' Eureka Ensilage Corn produced, in one year, 70 tons and 800 lbs. of the best quality of sweet ensilage. Figuring at the rate of 50 lbs. per day, this would be sufficient to feed seven cows for one year with enough left over for 261 feeds.

Ross' Eureka Corn will produce more tons of good sweet ensilage per acre, than any other variety. Four of the heaviest acres of this corn in one year gave a total yield of 200 tons and 96 lbs., an average of 50 tons and 24 lbs. per acre, but this is not much above the average.

If you plant cheap corn you will reap accordingly. We have been selling Eureka corn for nearly 40 years and we know before shipping that it will grow under favorable conditions. This corn usually germinates 90% or better.

Ross' Eureka Corn is white, smooth dent variety, and grows the tallest of any known corn, usually 16 to 20

feet. We have heard from some of our customers who say that it grows as high as 23 feet and it will get into condition for the silo early in September.

Ross' Eureka Corn is only one of our specialties. We handle a complete line of Farm Seeds, such as Oats, Rye, Barley, Wheat, Buckwheat, Cow Peas, Vetch, Soy Beans, Essex Rape, and all varieties of Field and Ensilage Corn; Grass Seeds, including all kinds of Alfalfa and Sudan Grass. We also have a full line of Agricultural Implements, Poultry Supplies, Fertilizer, etc. Our 120-page catalog will be mailed free on request.

Every bag of Ross' Eureka Corn bears this trademark. Adopted for your protection.

Ross' Eureka Corn

Betsy Ross Victory Garden

17 large packages of highest quality vegetables, enough for the home garden, postpaid, for only \$1.00

1 pkt. Beans, Sure Crop Black Wax
1 pkt. Beet, Crosby's Egyptian
1 pkt. Carrot, Danvers Half Long
1 pkt. Cabbage, Copenhagen Market
1 pkt. Cucumber, Early White Spine
1 pkt. Lettuce, May King
1 pkt. Peas, Sutton's Excelsior
1 pkt. Radish, Scarlet Globe
1 pkt. Squash, Blue Hubbard (6 Collections \$5.00)

1 pkt. Spinach, Thick Leaf
1 pkt. Sweet Corn, Golden Bantam
1 pkt. Onion, Yellow Globe Danvers
1 pkt. Turnip, P. T. White Globe
1 pkt. Swiss Chard
1 pkt. Beans, Green Pod Stringless
1 pkt. Squash, Summer Crookneck
1 pkt. Melon, Rocky Ford

Each variety the best of its kind. All should be planted in every garden. Address, enclosing \$1.00, ROSS BROS. CO., Front Street, Worcester, Mass.



ROSS BROTHERS COMPANY, 37 Front Street, Worcester, Mass.

CATTLE

Richland Farms Shorthorns

Home of the Mich. Champions. We have just purchased the entire herd of Scotch cattle belonging to the Estate of the late A. D. Fintom, Kansas City, Mo. About Feb. 1st. we will offer a choice lot of young bulls for sale.

C. H. PRESCOTT & SONS, Office at Tawas City, Mich. Farms at Prescott, Mich.

For Sale Shorthorns of Quality Scotch and Scotch Topped descendants of Archers Hope, Avondale, Maxwatt Sulton and White Hall Sulton by the Oneida Co. Shorthorn Breeders Ass. JOHN SCHMIDT, Sec. Reed City, Mich.

CLARADALE Milking Shorthorns and Large type Berkshire hogs, young bulls ready for service at reasonable prices, white and roans the ideal farm cow is for butterfat, beef and milk. We have them, write F. W. Johnson & Sons, Ouster, Mich., Drawer 26.

Shorthorn Bulls ready for service of the choicest breeding. Write me you want. A. A. PATTULLO, R. 4, Deckerville, Mich.

Oakwood Shorthorns. Three bulls sired by Valiant 387201, 9 to 12 months old. COLLAR BROS., R. 4, Conklin, Mich.

Scotch Shorthorn. A fine lot of young bulls for sale. Phone Pontiac 7353 or Orion Exchange. John Lesiter & Sons, R. 1, Clarkston, Mich.

For Sale 2 yr. old Scotch herd bull sired by Valiant 387201, a Lespedeza Farm product. LAURENCE P. OTTO, Charlotte, Mich.

Five Shorthorn Bulls ready for service. One herd bull 4 years old. W. F. BARR, Aloha, Mich.

Stockers & Feeders For Sale 100 Shorthorn Steers ave. 1065 lbs. 100 Hereford Steers ave. 980 lbs. 2 cars of yearling Herefords ave. 750 lbs. 2 cars of Shorthorn yearlings roans and roans. These steers are dehorned and in good flesh. Wapello Co. Ia. is noted for its good cattle. Write JOHN CARROW, R. 3, Ottumwa, Ia.

For Sale 2 red Shorthorn bulls, 7 and 10 months, good milking strain. OHAS. WARNER, Jr., Imlay City, Mich.

Milking Shorthorns Clay bred young bulls 3 to 10 months old. DAVIDSON & HALL, Tecumseh, Mich.

Rosemary Farms, Williamston, Mich. young bulls ready for service, Shorthorns bred for milk & beef. Herd estab. by Prof. C. H. Burgess, Mich. Agri. College.

Shorthorns Central Mich. Shorthorn Breeders Ass. offer 37 bulls all ages. 17 females for sale. Write Oscar Skinner, Sec., Gowen, Mich.

Shorthorn bull seven mo., also Imp. Belgian Stallion 7 yr. ton horse. F. L. BECKER, R. 1, Plymouth, Mich.

HOGS

For Sale Reg. Berkshire Sows & Boars all ages. Priced to sell. RUSSELL BROS., R. 3, Merrill, Mich.

DUROC OPPORTUNITY

Michigan Breeders and Farmers prefer to buy Duroc Jerseys at private rather than public sale. For the first time in five years we are able to offer as many as 40 bred sows and gilts privately. Same blood lines and bred to some prize winning boars as our sale stock. Prices are in keeping with the individuality and breeding of the offering, send for sale list. If you need a boar we have them.

BROOKWATER FARM, Ann Arbor, Michigan. HERBERT W. MUMFORD, owner. J. BRUCE HENDERSON, Manager.

DUROC Bred sows and last fall boars. State Fair Champions and winners. Down to date breeding and correct type. Orion's Fancy King heads herd. NEWTON BARNHART, St. Johns, Mich.

DUROC-JERSEYS E. D. HEYDENBERG, Wayland, Mich.

WE HAVE A FEW choice young sows bred to a Defender Boar. We think this is some of the best Duroc stock in the country. Write for information. THE JENNINGS FARMS, Bailey, Mich.

OAKWOOD FARM A few choice Duroc fall pigs left. Also a fine yearling sow bred for Mar. litter. Write for prices. RUSH BROS., Romeo, 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

Duroc Jerseys Large heavy-boned gilts, bred to Junior Champion boar for March and April farrow; prices reasonable. Come and see them, free delivery expenses paid if not as represented. F. J. DRODT, R. 1, Monroe, Mich.

Duroc bred gilts for March and April farrow with quality and size. Fall pigs both sexes not akin. W. C. TAYLOR, Milan, Mich.

Duroc Jersey Sows, Large type, heavy boned, 1000 lb. herd boar. JOS. SCHUELLER, Weidman, Mich.

Duroc Jerseys. A few choice gilts bred to Brookwater King Special 111467. (A full brother to Brookwater Lass D, the grand champion sow at the 1918 International). Carey U. Edmonds, Hastings, Mich.

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THE WORLD NEEDS LARGE FAT HOGS

Why lose money breeding and feeding scrub hogs? Two of our O. I. C. Hogs Weighed 2506 Pounds. We are the most extensive breeders and shippers of pure bred hogs in the world. Write today for the true story of the real O. I. C. Hogs. All foreign shipments U. S. Government Inspected. We have bred the O. I. C. Hogs since 1863 and have never lost a hog with cholera or any other contagious disease.

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"The Hog from Birth to Sale"
THE L. B. SILVER CO.
196 Heights Temple Bldg.
CLEVELAND, OHIO

THE WORLD'S CHAMPION big type O.I.C.S. Stock of all ages for sale. Herd headed by Calloway Edd, the World's Champion O. I. C. boar assisted by C. O. Schoolmaster, Grand Champion boar of Michigan, New York and Tennessee state fairs. Also, C. O. Giant Buster, undefeated Senior boar pig wherever shown and Grand Champion of Oklahoma state fair. Get our catalogue of Crandell's prize hogs, Cass City, Michigan.

Shadowland Farm
O. I. C.'s

Bred Gilts 200 to 300 lbs. from prize winning stock. A few fall yearlings and 2 yr. old sows, big type, growthy boars of all ages, guaranteed as breeders. Everything shipped C. O. D. Express paid and registered in buyers name. J. CARL JEWETT, Mason, Mich.

Chesters Gilts bred for March, April and May farrow from mature stock of the large prolific kind. Satisfaction guaranteed. F. W. ALEXANDER, Vassar, Mich.

O. I. C. and Chester White Swine Strictly Big Type with QUALITY. I am sold out of everything but fall pigs. These pigs are as good—and I think better than any I ever bred. I am one of the oldest breeders of Big Type in the U. S. NEWMAN'S STOCK FARM, R. 1, Marietta, Mich.

O. I. C. BRED GILTS all sold. Have some good last fall boars. OTTO B. SCHULZE, Nashville, Mich.

O. I. C.'s big type serviceable boars. Yearling sows and gilts bred for spring farrow. G. P. ANDREWS, Danville, Mich.

O. I. C. Boar, 14 months old. Large fall pigs of either sex. C. J. THOMPSON, Rockford, Mich.

O. I. C. Gilts bred for Mar. and April farrow a few good fall boar pigs about 100 lbs. I ship C. O. D. pay express, guarantee to please. F. C. Burgess, R. 3, Mason, Mich.

O. I. C. Gilts to farrow in March and April. Also CLOVER LEAF STOCK FARM, Monroe, Mich.

O. I. C. Bred Gilts All Sold. H. W. MANN, Danville, Mich.

FOR 25 YEARS This establishment has been head quarters for Big Type Poland Chinas. We have a nice lot of boars and sows of strictly big type breeding at very low price. Let me know what you want. Bell phone. JNO. C. BUTLER, Portland, Mich.

Big type Poland Chinas. Spring gilts of the best of breeding. With quality from 1000 lb. sire's and 800 lb. dam's. Will be bred to a great son of the noted 36000 Gertsdale Jones. Also fall pigs. W. BREWSTER & SONS, R. 5, Elsie, Mich.

P.C. bred gilts sold. For sale herd boar prospect 17 mo. old, wt. 600 lb. with quality, sire Buster Giant, 289593, dam Nemo L. 548940 an 800 lb. sow in flesh. Sire sold for \$1500, priced reasonable. Free delivery from Parma. W. E. LIVINGSTON, Parma, Mich.

Big Poland Chinas with quality. For sale, summer and fall gilts, and a big boned good spring boar. G. A. BAUMGARDNER, R. 2, Middleville, Mich.

Large Type P.C. boars all sold. Spring gilts and young Letried sows, bred for March and April farrow. Free delivery from Augusta. W. J. Hagelshaw, Augusta, Mich.

B.T.P.C. Bred Gilts, the best lot ever on the farm at prices any good farmer can afford to pay. H. O. SWARTZ, R. 37, Schoolcraft, Mich.

Big Type P. C. boar and bred gilts. Choice Aug. pigs at a bargain. A. A. WOOD & SON, Saline, Mich.

Big Type P. C. Choice bred sows from Iowa greatest Big herds, the big home prolific kind with size and quality. E. J. MATHEWSON, Burr Oak, Mich.

Big Type Poland Chinas. Spring boars all sold. Bred gilts ready for shipment. Inspection invited. L. L. CHAMBERLAIN, Marcellus, Mich.

P.C. Bred Sows Large style best we ever owned. Satisfaction or no sale. R. W. MILLS, Saline, Mich.

Mammoth Poland Chinas. Choice lot early fall pigs now ready to ship. Double Immune. Inquire Clyde Weaver, Ceresco, Mich.

Large type Poland Chinas' bred gilts all sold. Fall pigs of either sex for sale. Sired by 800 lb. yearling. A. A. FELDKAMP, Manchester, Mich.

MICH. Champion herd of Big Type P.C. Nothing for sale but fall pigs; orders booked for spring pigs. E. R. LEONARD, St. Louis, Mich.

Gilts sold have one yearling P. C. sow bred for May farrow, bull calf 4 months old, Pure bred Shorthorn. Price \$100. John D. Wiley, Schoolcraft, Mich.

Hampshire Hogs The International Grand Champion Hog of 1918, both sexes for sale. Spring deliveries booked now. ELI SPRINGER & SON, Saginaw, W. S., Mich.

Hampshires Boars at a bargain bred gilts all sold. JOHN W. SNYDER, R. 4, St. Johns, Mich.

LATEST MARKET REPORTS

SECOND EDITION.

The markets in this edition were revised and corrected on Thursday afternoon, February 20.

WHEAT.

No changes of importance are reported in wheat marketing circles and trading is done at old prices. The new crop has no doubt been better insured by the recent fall of moisture. One year ago No. 2 red wheat sold on this market at \$2.17 per bushel. The visible supply last week decreased 3,108,000 bushels. Present Detroit prices are as follows:

No. 2 red	\$2.30
No. 2 mixed	2.28
No. 2 white	2.28

CORN.

A firmer tone prevails in the corn market. The trade finds that farmers will not market this grain when prices have been crowded to the levels recently reached. Because of small primary receipts and the belief that growers are holding less than was earlier thought, dealers have been obliged to bid up quotations. Stocks at primary markets are also small. The visible supply showed a decrease of 43,000 bu. Farmers are turning a large quantity of the grain into pork. One year ago No. 2 corn was quoted on the local market at \$1.80 per bushel. Present prices are:

No. 3 corn	\$1.31
No. 3 yellow	1.36
No. 4 yellow	1.31
No. 5 yellow	1.28
No. 6 yellow	1.23
No. 3 white	1.34

The Chicago market improved during the week with No. 3 yellow now quoted at \$1.30; No. 4 yellow \$1.26½; 1.28½; May corn \$1.20½; July \$1.16½.

OATS.

Canada needs 3,000,000 bushels of seed oats for immediate delivery. To secure these the duty on seed oats from the United States is to be rescinded. This, with the firmer tone in the corn market, enabled oats to maintain prices at the advanced figures reported last week. Present Detroit prices are:

Standard	.61
No. 3 white	.60½
No. 4 white	.59½

RYE.

There is no change in rye prices and the market is easy and dull. The visible supply decreased 2,558,000 bushels during the week. At Detroit cash No. 2 is now quoted at \$1.42 per bushel.

BEANS.

A government agent announces that the state of California will receive sixty-five per cent of the orders for beans made by the American and Allied governments, providing she continues to remain on a competitive basis with other states. A short time ago it was reported that the government was not purchasing California beans as orders were being filled in Michigan. Michigan growers have failed to understand when such purchases were made. However, during the past few days there has been a slight reaction and some buying with prices advanced on Detroit market to \$7.25 per cwt. but sales were small. In New York all varieties of beans have declined, with choice pea beans at \$7.75@8, and mediums at \$8 per cwt. The Chicago trade also fails to show improvement with supplies excessive. Choice to fancy pea beans are quoted there at \$7@7.25.

HAY.

The market rules firm with the demand good, and offerings in moderate volume. Quotations are: No. 1 timothy \$25.50@26; standard timothy at \$24.50@25; No. 1 mixed \$23.50@24; No. 1 clover \$23.50@24.

SEEDS.

Seeds are active and higher as follows: Prime red clover \$25.25; March \$25; alsike \$17.25; timothy \$4.75.

FEEDS.

Mill feeds are lower, while others rule steady as follows: Bran \$46@48; standard middlings \$47@48; fine middlings \$48@50; coarse corn meal \$55;

cracked corn \$55; chopped \$48.50 per ton in 100-pound sacks to jobbers.

POTATOES.

Further declines have taken place in potato markets. In Michigan growers are receiving \$1@1.10 for round whites U. S. grade No. 1 at warehouses. In Detroit for this same grade jobbers are paying \$2.50 for 150-lb. sacks; in Cleveland \$1.75@1.85 per cwt; in Philadelphia \$1.75@2; in Cincinnati \$1.75; in Pittsburgh \$1.80 per cwt; in New York \$2.75@3 per 150-lb. sack; in Columbus \$2.90; in Indianapolis \$1.75 per cwt; in Chicago \$1.55@1.60.

BUTTER.

Butter made very substantial advances during the past week, the rise amounting from 5@8c. At Detroit the fresh creamery firsts are now quoted at 50c. In Chicago the range for creameries is 38@52c. The Philadelphia trade is paying 53c for western extra creameries.

EGGS.

Shortage of supplies has forced higher prices under pressing demand. Local quotations for fresh firsts are 39c and extra fresh in new cases 39½c. At Chicago the market is higher, with firsts

at 38c and ordinary firsts at 37@37½c. The Philadelphia trade reports an advance, with western firsts at \$12.75 per case.

DETROIT CITY MARKET

Apples are selling at \$3@3.50 per bushel for fancy, \$2@2.75 for No. 1, and \$1.50 for No. 2. Potatoes are retailing at 90c@1; cabbage is selling better at \$1.25 for good white stock, and \$1.25@1.75 for red; fresh eggs are bringing 45@50c; live poultry 30@32c; dressed poultry 40@42c; dressed hogs 22@23c; butter 45c.

THE NEW YORK PRODUCE MARKET.

Butter.—The feeling of confidence that pervades the butter market at present is in strong contrast to two weeks ago, when values were falling each day. During this week there has been but one day when the price did not increase and a great activity has been witnessed. Jobbers and retailers, who have been averse to large stocks for several months, are now buying freely. The market started actively on Monday and the quotation on extras advanced to 49c. Gains of one cent on Tuesday, two cents on Thursday, one cent on Friday and three cents today followed, leaving established quotations as follows: Extras 56c; higher scoring than extras 56½@57c; firsts 50@55c; seconds 46@49c.

MILK COMMISSION MEETS.

The Detroit Milk Commission will hold a session at the Board of Commerce, February 24, at 1:00 p. m.—R. C. Reed Field Secretary.

Live Stock Market Service

Reports for Thursday, February 20th

BUFFALO.

The hog market is lower, with pigs bringing \$15.50@16 and other grades \$17.70@18. Lambs are higher at \$18.85 and the best calves bring \$20.50. The cattle market is dull.

CHICAGO.

Cattle. Receipts 19,000. Beef and butcher cattle opening slow to 25c lower; stockers and feeders steady; calves strong. Good to prime choice steers \$16@20; common to medium butchers \$10.50@16; heifers \$7.50@17.50; cows \$7.40@15; bologna bulls \$8@12.75; canners and cutters \$6.75@7.40; stockers and feeders, good \$12.25@15; do medium \$8.25@11.25.

Hogs. Receipts 43,000; held over 9,470. Market active and mostly 10@15c higher. Tops 17.85; bulk of sales \$17.50@17.75; heavy \$17.75@17.85; mixed and light \$17.55@17.80; packers' hogs at \$16.75@17.35; medium and heavy at \$17.25@17.70; light bacon hogs \$17@17.70; pigs good to choice \$14.50@16.75; roughs \$16.25@16.75.

Sheep and Lambs. Receipts 17,000. Market is steady. Choice to prime lambs \$18.25@18.35; medium and good lambs \$16.50@18.25; culls \$14@15.50; medium good and choice feeders \$15.50@16.65; choice yearlings \$16.25@16.50; medium and good yearlings \$13.25@16.25; wethers, medium and good \$12@13.25.

Reports for Wednesday, February 19th

BUFFALO.

Cattle. Receipts 40 cars. The market is dull. Prime heavy steers \$17@18.25; best shipping steers \$14@14.50; medium shipping steers \$12@12.50; best yearlings \$9.50@10; light yearlings, good quality \$13@14; best handy strs \$12@13; fair to good kinds \$10@11; handy steers and heifers, mixed \$10.25@10.50; western heifers \$12@12.50; best fat cows \$9@9.75; butcher cows \$7@8; cutters \$5.50@6.50; canners \$4.50@5; fancy bulls \$10@10.50; butcher bulls \$8@8.50; common bulls \$6@7; best feeders 900 to 1000 lbs \$10.50@11; medium feeders \$9@10; best stockers \$7@8; light, common \$6@7; milkers and springers \$7.50@15.

Hogs. Receipts 40 cars; market 25c lower; heavy \$17.80@17.90; yorkers at \$17.70; pigs \$15.50@16.

Sheep and Lambs. Receipts five cars; market is strong. Top lambs \$18@18.15; yearlings \$15@16; wethers \$12.50@13.50.

CHICAGO.

Cattle. Estimating the Wednesday receipts at 8,500 head, only 43,725 head arrived during the first half of the week, comparing with 60,307 for the same time last week. Prices advanced largely 20c for steers Monday, butcher stock advancing in extreme cases 50c, and fat cows sold well Tuesday, but steers lost much of the Monday advance, the best sales being at respectively \$19.50@20. Next best sales were at \$18.90 and \$17.25. Wednesday's market is a little better for fat butcher stock, and weakness in steers is checked. Steers are selling this week largely at \$14@17.50, with fair sales Monday at \$17.25@19.25. Choice cattle bring \$19.50 and over, and sales take place down to \$11.25@14.50 for the commoner lots of light weights, with small lots of can-

yearlings \$16@16.25; medium and good yearlings \$13@16; wethers, medium and good \$11.75@13.

DETROIT

Cattle. Receipts 2,734. Best steers 25@50c lower; other grades steady. Best heavy steers \$14.00@15.00. Best handy wt bu steers 12.00@13.00. Mixed steers and heifers 11.00@12.00. Handy light butchers 9.50@11.50. Light butchers 7.50@9.50. Best cows 9.50@10.00. Butcher cows 7.50@9.00. Cutters 6.75@7.00. Canners 6.00@6.50. Best heavy bulls 10.00. Bologna bulls 8.50@9.50. Stock bulls 7.50@9.00. Milkers and springers \$65@110.

Veal Calves. Receipts 1,756. Market 50c lower. Best \$17.00@17.50. Others 7.00@16.00.

Sheep and Lambs. Receipts 4,305. Best lambs 25c higher; other grades steady. Best lambs \$17.75@18.00. Fair lambs 16.50@17.25. Light to common lambs 14.50@15.50. Yearlings 14.50@15.50. Fair to good sheep 10.50@11.00. Culls and common 7.00@9.00.

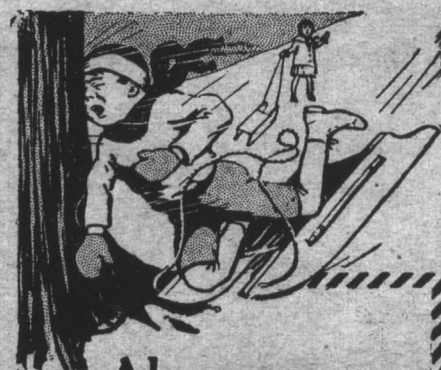
Hogs. Receipts 7,796. Market steady. Pigs \$15.50. Mixed hogs 17.50.

ning steers at \$10.50 and over. Fat cows and heifers are selling at \$7.85@16, canners and cutters at \$6.25@7.80 and bulls at \$7.50@13.50. Calves are 25@50c higher, light vealers bringing \$15.75@16.75. Stockers and feeders are scarce and firm at \$8.50@15 for common to prime lots.

Hogs. Receipts for three days amount to 141,389 head, comparing with 119,697 a week ago. With estimated Wednesday receipts of 31,000 hogs and 22,935 left unsold last night, the prices were mostly unchanged, sales being made for the greater part at \$17.40@17.70; and heavy butchers at \$17.60@17.75, while light butchers brought \$17.40@17.75. Rough, heavy packers brought \$16.75@17, and pigs sold at \$12.25@16.25. Light bacon hogs weighing from 170 to 195 pounds brought \$17.20@17.45 and light mixed weighing 140 to 165 pounds \$16.60@17.15.

Sheep and Lambs. There is a constantly booming market, with an active demand and only 33,545 head received during half of the week, comparing with 48,117 a week ago. There was a further average rise of 25c today, only about 8,000 head being received. Lambs sold at \$14.50@18.35, and feeding lambs were scarce and firm at \$15.50@16.65. Yearlings were quotable at \$14@16.50, wethers at \$10.50@13.25, ewes at \$6@12.50 and bucks at \$9@10.50.

Recent sharp advances in hog prices, due to the much curtailed receipts, have served to stimulate the provision market, and sharp advances have taken place, pork booming \$1.00 a barrel in a single day. This was in the face of large stocks, the aggregate holdings of provisions in western warehouses on the first of this month footing up 409,956,340 pounds, comparing with 346,644,460 pounds on the same day last year.



Always Getting Hurt

YOUR children are? Well, what live boy or girl isn't? Accidents! You've got to expect them with youngsters in the family. The only thing to do is to be prepared for them!

Yes, you feel a mighty sight easier and safer when you know you can lay your hands any minute on a bottle of Hanford's Balsam of Myrrh.

The great "first aid" in thousands of homes for generations back—over seventy years. Valuable in case of cuts, burns, bruises, strains, sprains and soreness.

On open wounds, just a few drops of Hanford's Balsam to cleanse and prevent infection and to form a protective skinlike film that gives nature every chance to heal quickly.

For rheumatism and lameness, apply Hanford's Balsam freely and rub in thoroughly. Say, but it's a speedy reliever!

That you may know its merits for yourself, present this advertisement at your dealer's and buy a bottle (in any of their sizes). And

Test It At Our Risk!

If not completely satisfied, take empty bottle to dealer and get your money back. No questions asked!

Made only by

G. C. Hanford Mfg. Co.
Syracuse, N. Y.

HANFORD'S Balsam of Myrrh

News of the Week

Wednesday, February 12.

THE new German government asks permission to use war ships against the Bolshevik forces occupying towns on the Baltic coast.—Demobilization of the French army continues despite persistent rumors to the contrary.—Great Britain and France warn Germany to deliver agricultural machinery as agreed upon under the armistice terms.—Tension is developing between Japan and China over secret treaties which China threatens to divulge to peace delegates.—Losses by express companies in the United States amounted to \$18,000,000 last year.—President Ebert of Germany is to receive a salary of \$240,000 a year.

Thursday, February 13.

KING ALFONSO of Spain will visit South America.—Baron Makino, head of the Japanese delegation at the peace conference is ordered to discontinue all secret treaties between China and Japan.—The American expeditionary forces in Russia have suffered casualties to the number of 324.—German ships are ready to carry American soldiers home at the rate of 50,000 per month.—Americans no longer will be compelled to file a twenty days' notice with Mexican consuls when entering Mexico.—The United States formally accepts Japan's proposal to restore the Siberian railway.—America's war cost is estimated at \$16,000,000,000.

Friday, February 14.

REPRESENTATIVES of the United States, Great Britain, France, Italy, Japan, Belgium, Brazil, China, Szechuan, Slovakia, Greece, Poland, Portugal, Rumania and Serbia unanimously adopt a covenant for the proposed League of Nations.—The United States Senate adopts the ten billion war tax bill which now awaits President Wilson's signature.—The German offensive against the Poles is suspended.—Labor leaders in session at Paris are formulating articles providing for an international conference body.

Saturday, February 15.

PRESIDENT WILSON sails for America.—France offers to the United States a site on French soil for a monument to Americans who "died on the field of honor."—President Wilson asks for a conference of governors and mayors to meet early in March to consider the question of unemployment.—The federal government purchases 740,000 barrels of flour with prices ranging from \$3.50 to \$10.50 per barrel.—The Department of Agriculture warns tobacco growers against overproduction. Nearly two million railroad employees vote in favor of government control of railroads.—It is rumored that restrictions on shipments of hogs will be removed.—All special regulations applying to egg dealers and cold storage of eggs are removed.

Sunday, February 16.

HUGH C. WALLACE, of Seattle, is named ambassador to France by President Wilson.—Field-Marshal Foch informs the German armistice commission that the new armistice terms must be signed by six o'clock today or war will be immediately renewed.—Delegates of the thirty nations assembled at Paris accept the basic principle of the Monroe Doctrine of the World League of Nations.—New York and New Jersey officials are considering a tentative draft of a new treaty providing for a central port of authority and supplementing the treaty of 1834.

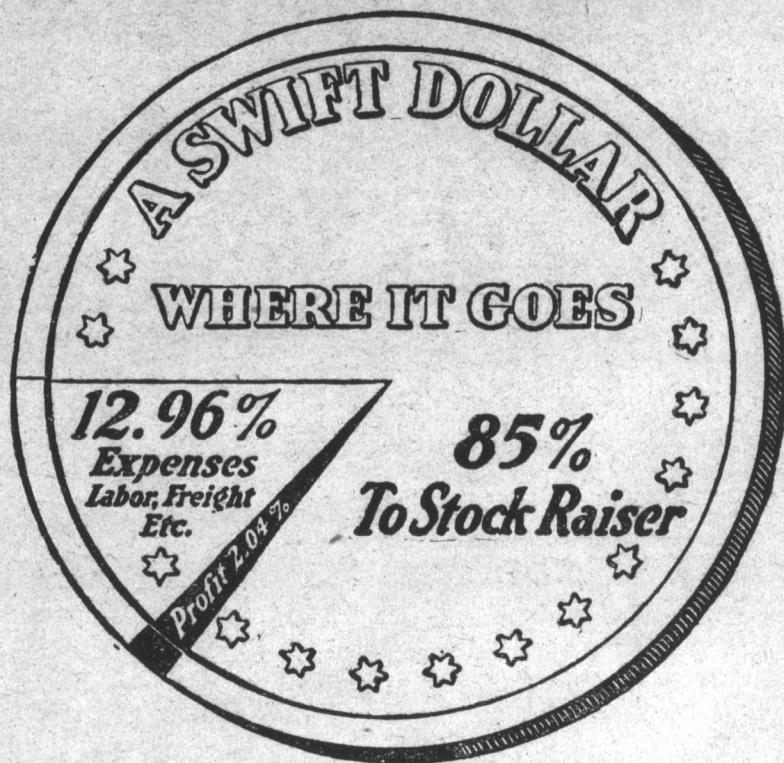
Monday, February 17.

THE French press criticizes the proposed statutes of the League of Nations upon the ground that it fails to guarantee France against future attacks.—While the German army is demobilizing, a new republican army is being organized.—Belgian troops defeat Spartacists at Duisburg in Rheinisch Prussia.—Sir Wilfred Laurier, former Premier of Canada, suffers stroke of paralysis at his home at Ottawa.—Chinese peace delegates have been instructed by their government to discontinue secret agreements with Japan.—Ukrainian forces advance on Lemberg and threaten to cut off railway lines of Poland.

Tuesday, February 18.

UNDER the new armistice terms as signed by Germany the Kiel canal is to be opened and Helgoland dismantled. All branches of the German military forces are to be demobilized.—A decisive battle between the Reds and white guards is being fought in Estonia and Livonia.—Employees of packing concerns have been granted increased pay for an eight-hour day.—The Michigan Republican convention is in session at Lansing nominating candidates for the spring election.—Income tax blanks are ready for distribution for all incomes of \$5,000 or less.

The Swift Dollar for 1918



The above diagram shows the distribution of the average Swift dollar received from sales of beef, pork and mutton, and their by-products, during 1918.

1919 Year Book of interesting and instructive facts sent on request.

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Union Stock Yards, Chicago, Illinois

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Increases Yield—Lowers Labor Cost
Plays for itself many times over. One Man and team opens furrow, drops seed any distance or depth, drops fertilizer (if desired), covers up, marks next row. Automatic. More accurate, dependable and quicker than hand planting. Furrow opens and seed drops in plain sight. Does not injure seed. Has long life, needs few repairs. Sizes for 1 or 2 rows. **Protects you against uncertain labor and season. Investigate now.**

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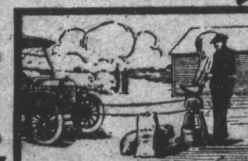
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We need your shipments of Poultry, Veal, Dressed Hogs, Live Roasting Pigs, Eggs, Live Rabbits and Game. Highest prices possible obtained on arrival. We can handle your Potatoes, Onions, Apples, Cabbage and root crops, carlots or less. Your shipments will be appreciated and have our best care and attention, and you don't have to wait for your money. Reference Peninsula State Bank.

Mr. POULTRY FARMER:

We make a specialty of White Henery Eggs and have created a profitable market for your eggs the year around. We pay the highest premium for your Henery Whites—We remit same day shipments arrive. **Ship Often—Ship by Express**

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Remember! We guarantee you satisfaction with every shipment.

Holmes, Stowe Co., 445 Riopelle St.

Commission Merchants. Dressed Beef, Hogs, calves, Poultry, Live & Dressed, Provisions, etc. Correspondence Solicited. Ref. Wayne County & Home Savings Bank, Bradstreet.

HAY Ship To The Old Reliable House Daniel McCaffrey's Sons, 623-625 Wabash Bldg., Pittsburgh Pa.

Wanted: Michigan 90 to 125 pound healthy pigs in car lots. We buy them all year. Write Danville Stock Hog Co., Danville, Illinois.

Binder Twine Get our low 1919 prices. Farmer agents wanted. Sample free. THEO. BURT & SONS, Melrose, Ohio.

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WHEAT
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Carloads or less

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SEED CORN. Old reliable Mich. Yellow and tested. Also regenerated Swedish Select and Scottish Chief Oats. Circular and samples on request. F. A. BYWATER, Memphis, Mich.

A Grand Stock of all kinds of fruit trees berry plants, grapes, shrubs vines, roses, the choicest varieties. Also seed corn and garden seeds. Prices right. Catalog free. ERNST NURSERIES, Box 2, Eaton, Ohio.

Guaranteed Garden and Flower Seeds. Free packet with each order. Postage paid. special prices to Market Gardeners and large growers. ALLEN'S SEED HOUSE, Geneva, Ohio.

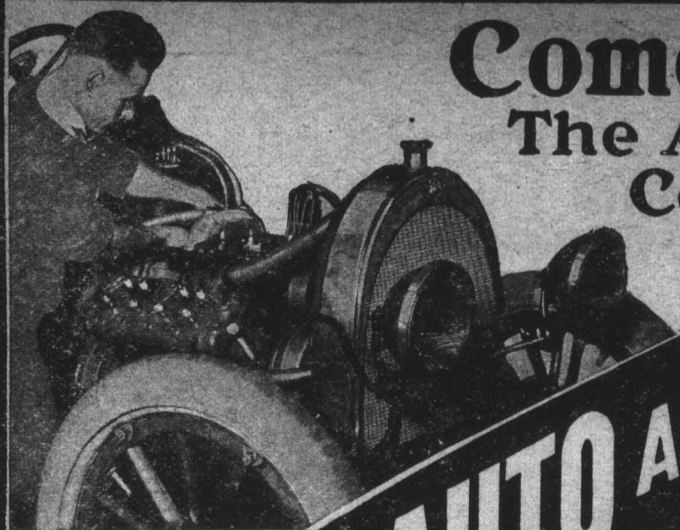
Leaf Tobacco Kentucky Best, 2 yrs. old, chewing or smoking, 3 lbs. \$1.50, 7 lbs. \$3.00, postpaid. Special prices on large orders. S. ROSENBLATT, Hawesville, Ky.

OATS Sensation 90-92 and 97 bus. per acre. Also early SEED CORN. Samples free. THEO. BURT & SONS, Melrose, Ohio.

Cherry, Pears, Apple and Plum trees 15c each, all kinds of small fruit. Catalogue free. ALLEN'S NURSERIES, Geneva, Ohio.

WE WANT VETCH. SEND US YOUNG-RANDOLPH SEED CO., Owosso, Mich.

White Sweet Clover seed Test 99.94% pure, germ. 76.6 Write for sample and price. C. A. THOMAS, Shepherd, Mich.



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LEARN AUTO AND TRACTOR BUSINESS

THE Automobile and tractor industries offer you greater opportunities than ever before. Now that the war is over, the factories are again building autos, trucks and tractors. It is reported that the Ford Motor Company alone has orders ahead for 250,000 to 300,000 cars, not including trucks. It is said that Dodge Brothers, Buick, Cadillac, Packard, and many others have enough unfilled orders on hand to keep going at full speed day and night for months. Tractor factories are also behind on orders. There will be a boom in auto and tractor manufacturing that will outdistance anything previously experienced. Thousands of trained auto and tractor men are needed. Get ready now to enter a successful and profitable life work.

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We can teach you in a few short weeks to handle any auto or tractor proposition. You learn to repair any car that comes along. Our garage repair shop has from twenty to twenty-five cars for you to work on. Different cars go and come every day—you get regular garage experience. In our block test department alone, we have twenty-five different motors for you to work on. We have absolutely the best equipment obtainable.

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The Michigan State Auto School, in our opinion, is the finest institution of its kind in the country. So far as we are aware, its course of instruction is thorough, comprehensive and practical. In fact, we endorse its method of tuition.

We have recommended a great many students to them and the results were very satisfactory.

Yours very truly,
HUDSON MOTOR CAR COMPANY.



MAXWELL MOTOR COMPANY

MANUFACTURERS OF AUTOMOBILES

DETROIT, MICH.

Mr. James Williams, 20 Lincoln St., Gloversville, N.Y.
Dear Sir:—Your letter of February 23rd, making inquiry regarding the Michigan State Auto School received. Wish to say that this is one of the best schools in the country, and would not hesitate to recommend it to anyone who is desirous of learning the automobile business. It is a recognized institution among the automobile factories of this city.

We have a great many graduates from this school in our employ and every one has given entire satisfaction. Trusting this information will be of benefit to you, we remain,
Very truly yours,
MAXWELL MOTOR COMPANY, Inc.
H. H. LEE, Supervisor Welfare and Labor.



DETROIT, MICH., U.S.A.

The Michigan State Auto School enjoys a very enviable reputation and is probably one of the best of its kind in the United States. I have no hesitation in recommending it in every particular.
Yours very truly,
PACKARD MOTOR CAR COMPANY.



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The Officers of the School are well known business men, and the reputation of the School is of the highest. It is known as the largest School of its kind in the country.
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Your practice of co-operating with the factories is very commendable for it brings together the biggest men and most successful ideas to be had.
We will gladly co-operate with the Michigan State Auto School through our ninety branches in the United States in placing your tractor graduates. There is a constant demand for competent trained tractor men at very good wages. Very truly yours,
INTERNATIONAL HARVESTER COMPANY OF AMERICA.

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Gentlemen: Please send me absolutely FREE, New 176 page Illustrated Catalog, "Auto School News" and information as checked below.

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Mark each course you are interested in. Or, better still, you can expect me about

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Factories Endorse Our School

The leading automobile factories in Detroit and other cities endorse our school, our equipment and our methods of teaching. Read some of their endorsements on this page. These were written in reply to letters from different parts of the country asking about us. We enjoy their keenest co-operation; and you, as a student (here in Detroit, the auto center), get the benefit of it. This school is highly endorsed, and has a world-wide reputation for excellence.

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With the co-operation of the International Harvester Co. and our complete tractor equipment, every man who takes the complete Auto course is thoroughly equipped to handle every Tractor problem. Tractor instructions are included with the Auto course at the same tuition.

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Arthur G. Zeller, President

This school is founded on the best, most practical and newest principles in Automobile, Truck, Aeroplane and Tractor business. It is the result of the keenest co-operation with manufacturers, service stations, garages and owners. It is not one man's idea, but the ideas of the biggest, best, and most successful men in each field.

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Detroit trained men get preference and get jobs quickly. No other city can give what Detroit does with its more than 184 large Auto and accessories factories. Think what it means to learn in the Michigan State Auto School. Factories endorse our school, glad to employ our graduates. Unlimited opportunities. 71% of automobiles made in Detroit. You are right in the Heart of the Auto Industry. Men are needed everywhere as testers, repairmen, chauffeurs, garagemen and salesmen. We have a Sprague Electric Dynamometer for Block-testing purposes for students' use. Michigan State Auto School open all the year. Enter classes any time, any day. Three classes daily; morning, afternoon, evening. Instructors are members of The Society of Automotive Engineers (S. A. E.).

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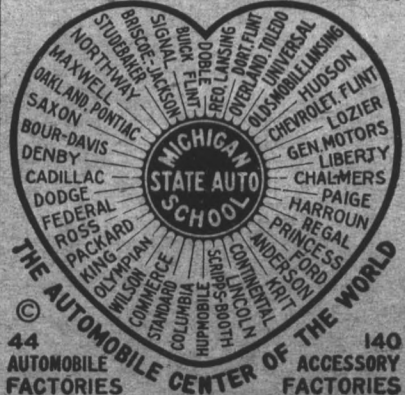
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