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Does Burnt Lime Destroy Humus?

THE need for liming material on the soil is so big and so widespread that there would seem to be a place for all the available materials. If the big consideration is to produce larger crops, and lime is a profitable means to that end, then the larger the supply of such material and the wider the choice of the farmer, the better are his interests served.

Much of the discussion of liming materials for use on the soil have seemed to limit the farmer's choice on the theory that there are serious objections to the use of burnt forms of lime. It is important to carefully examine these contentions to determine how much actual fact there is to support those contentions which are usually made without any supporting data. An open and unbiased mind is essential to get a fair view of these matters. In the following discussion the best available scientific fact and practical observation are brought to bear on some of these contentions concerning the relative merits of burnt and carbonate forms of lime. The data speaks for itself.

Does Burnt Lime Chemically Destroy Organic Matter?

First of all, let us examine the contention that burnt lime destroys the humus of the soil. Manifestly if burnt lime is shown to have particularly deleterious effects not possessed by carbonate forms of lime, it does not have an equal claim with the latter to use by the farmer. If on the other hand those statements, of deleterious effects are shown by both careful research and by a consideration of practical facts, to be false, then all such criticisms have only the weight due to false claims.

The common statement has been that burnt lime is specially destructive of humus and that, to quote a recent statement in a current trade paper, "It attacks the organic matter as it attacks one's flesh and destroys it by eating away its substance through chemical action." The clear implication of most of the statements of this character is that both lump and hydrated lime are capable of destroying organic substance chemically by oxidizing the carbon, as this is the only way the organic substance can be really destroyed. It is presumed to be an action like fire. No actual investigations are ever cited by the proponents of the above criticism.

Dr. McIntire's Notable Investigation.

One, and only one, comprehensive investigation of this particular subject has been made. It is a part of a general study of the changes of burnt as well as carbonate forms of lime in the soil. These investigations are being conducted by Dr. W. H. McIntire, research chemist with reference to lime, at the Tennessee Agricultural Experiment Station at Knoxville. The particular report presenting carefully collected data on the possibility of the chemical destruction of organic matter

Another Old Theory Sent to the Scrap Heap by Prof. Elmer O. Fippin

by burnt lime, appears in the May, 1919, number of the Journal of Soil Science, published by Rutgers College of New Brunswick, and has just come from the press. The subject of the paper is the Carbonation of Burnt Lime in the Soil. This particular investigation was carried on for the degree of Doctor of Philosophy at Cornell University.

From all his studies, including strong solutions of both lump and hydrated lime in contact with humus and other organic material, and with soils both under laboratory and field conditions, he finds absolutely no evidence of a chemically destructive action of caustic lime on organic matter.

Moreover it is to be noted that such an action is not recognized within the range of processes of organic chemistry. Finally it should be remembered that strong solutions of caustic (burnt) lime are used in clarifying sugar, in tanning leather and in making paper by certain processes, without any chemically destructive action on the plant or animal substance being recog-

ed from comparing plots that any reasonable person now agrees should not be compared. If any conclusion is to be drawn from these Pennsylvania plots with reference to the disappearance of organic matter, it is that less disappeared from the plots receiving burnt lime than from the plot receiving limestone.

Caustic Lime Acts Quickly.

The second point to be kept in mind is that caustic lime in the soil changes in a few hours or a few days at the outside, into the carbonate and other combined forms. In other words, it either unites with the carbon dioxide of the soil atmosphere and the soil water and takes on the same chemical form as limestone, or it unites with the silicates and other materials in the soil to form new chemical compounds in which the lime bases perform their function and seem to be effective to meet the general needs for lime in the soil. Therefore, even if a chemically destructive action of caustic lime had been shown, it would have no import-

Natural Decay by Soil Organisms.

It is widely recognized that lime carbonate promotes the growth and activities of most of the small organisms in the soil, just as it promotes the growth of higher plants where there is shortage of suitable alkaline materials. Those organisms feed upon the organic substance just as the higher animals feed on plant and animal substances and in the process of nourishment and associated changes, the organic substance is destroyed. By breaking down the fresh plant and animal substance in the soil with the formation of humus and other soluble materials, its constituents are made available to crops that may be growing in the soil and the soil is rendered more fertile. This is the purpose of using lime materials. It is equally true for limestone and marl and oyster shells, insofar as they are soluble as it is for burnt forms of lime, because in the main they act in the same way, namely as carbonate.

In the language of the old saying, "one cannot both have his cake and eat it," it is part of the business of farming to maintain humus in the soil by means of crop residues, stock manure and green manures. Commercial fertilizer such as acid phosphate, muriate of potash and nitrate of soda, also increase the rate of decay of organic matter in the soil, but in no proper way can they be said to burn the humus. As a matter of fact, both fertilizers and lime may put into the soil, in the form of larger crop residues, more plant material than is lost by this more active decay.

It has been claimed that burnt lime sterilizes the soil—that is, kills the small organisms. A strong solution of almost any chemical substance will kill these organisms. Limestone kills certain soil organisms, especially those that dislike a sweet or alkaline medium. All investigations show a change in bacterial activity following an application of lime and in the case of burnt lime any such reduction in bacterial numbers is always followed by a tremendous increase in the activity. On the whole, the more marked effect of burnt lime due to finer division and greater availability is to be regarded as desirable and not objectionable. That is one of the objects of using lime.

Lime and the Waste of Soil Constituents.

Other claims that have been made are that burnt lime wastes ammonia and increases the loss of mineral plant nutrients. First of all, it will be evident on reflection that if burnt lime quickly changes to the carbonate form such displacement can no more occur with burnt lime than from the use of limestone, beyond the first few days after application. Second, while it is recognized that caustic lime can displace ammonia it is also known that one volume of water absorbs one hundred volumes of ammonia and since

(Continued on page 12).



The Lime Should be Thoroughly Incorporated with the Soil.

nized. Lime water is a solvent of certain substances, but they are no more destroyed than when sugar is dissolved in water.

The Pennsylvania Data.

A popular practice is to present a statement appearing in an old report of the Pennsylvania Agricultural Experiment Station indicating that where burnt lime has been used on certain plots as compared with limestone, there has been much the largest destruction of organic matter. Dr. Frear, who made the first statement has completely reversed and corrected that statement in his recent bulletin No. 261, entitled, "Sour Soils and Liming." The error in the first instance result-

ance beyond the few days before the change to the combined form, and for all the months and years after that change it would be active in the same manner as limestone, shells or marl. Hence, the criticism loses force on both counts unless carbonate forms of lime in the soil shall also be regarded as injurious.

The objection to burnt lime evidently rests on an imperfect mental analysis of the changes and processes involved. Let us now recognize clearly that liming materials applied to the soil do result in a more rapid destruction of organic matter in the soil. If this is not a chemical process how does it occur?

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DETROIT, JANUARY 3, 1920

CURRENT COMMENT

Tenantry Versus Peasantry

IN another column of this issue Mr. John Ketcham, Master of the Michigan State Grange, criticizes a recently published editorial comment, "Socialism and the Tenant Farmer," in which the too commonly preached doctrine that American farmers are approaching a condition of peasantry through an alarming increase in farm tenantry, was deplored. This doctrine was referred to as socialistic propaganda in the sense that it is an argument very commonly used by those who contend that the nationalization of industry is the logical panacea for this condition and incidentally for all ills with which agriculture is afflicted at the present time. Mr. Ketcham is probably correct in the statement that farm tenantry is on the increase in the states to which he refers and in the country as a whole, but it is not a tenantry to be classed with or which tends towards peasantry.

The average farm tenant in the typical American agricultural community is a tenant with a definite purpose in view, viz., the accumulation of capital for the purpose of purchasing a farm. Every Michigan community affords object lessons of this kind where tenancy has been the intermediate step between the condition of hired man and that of farm owner. Indeed, it is, under present-day conditions, often a necessary step for the ambitious young man who desires to follow farming as a business.

But there is a vast difference between this class of farm tenantry and the peasantry of Europe, to which the negro tenantry of the south is the only comparable example in American agriculture. This kind of tenantry is not, we believe, increasing in any other section of the country, nor does it exist elsewhere to any noticeable extent. It was this class of tenantry to which the comment above mentioned referred.

The common type of farm tenantry, which is a step toward farm ownership, is regarded by many present-day young men as preferable to the purchase of wild land and the clearing up and improving of a new farm in a more remote location. That it is not the result of wholly unfavorable economic conditions is proven by the rise in land values, which has been phenomenal in some of the corn belt states to which Mr. Ketcham refers. It is rather the result of country young men electing to go into other branches of industry and the desire of aged farm owners to retire from active farm

work. Nor is it a condition which can be remedied by paternalism or the nationalization of industry, which doctrine has recently been opposed by leading farmers' organizations, including the National Grange.

Legumes for Michigan

THE increased production of leguminous crops in Michigan to supply a larger part of the element of protein for animal feeding should be given careful consideration by the states' progressive farmers and live stock men, and the encouragement of such production should constitute an integral part of any program looking toward the extension of the live stock industry of the state. It is common knowledge that to feed economically one must properly balance the materials to be consumed by animals or where possible and safe, to substitute in part a cheaper ingredient for a more expensive one. With protein carrying feedstuffs commanding abnormally high prices, the subject of increasing herds and flocks on our farms is approached with much hesitancy.

The commercial situation of feedstuffs is changed from that of normal years. The cotton crop for 1919 was short and cottonseed meal and cake of forty-five per cent protein content is now quoted in Chicago around \$85 per ton, and "caddo," or cold-pressed cottonseed cake at \$64 to \$65 per ton. Linseed meal is held at \$82 at Minneapolis and around \$85 in the nearby consuming districts. Although the yield of flaxseed for 1919 was only about sixty per cent as large as the crop for 1918, the situation may be improved from the standpoint of the consumer through importations from Argentina where a large crop is reported. Bran is comparatively lower than the other major protein feeds, but at that it is extravagantly high, the present Chicago price holding around the \$40 mark. There may be improvement in this market in the coming weeks from the buyer's standpoint, since the production of bran from the beginning of the 1919 crop season is nearly 400,000 tons greater than for the same period in 1918 and while millers are closely sold up on their prospective output of flour for the next two months, the stocks of bran on hand at this time are reported to be fairly liberal. This situation, accompanied by a heavy movement of corn which may be reasonably expected from now on, portends a downward slope to bran values. There is little hope, however, that prices will be carried to a point which will make the production of legume crops unprofitable.

The position of the man advocating a wider planting of these crops is made doubly strong by the commanding high values of legume hay. It is exceedingly uncommon for clover hay, for example, to sell above the corresponding grades of timothy hay, yet at Pittsburgh and other large hay markets clover is commanding a premium of about \$2.00 per ton. Coupled with the problems of labor and the maintenance of soil fertility, it seems reasonable that prudent farmers will weigh carefully the proposition of increasing the acreage to be devoted to legume crops.

Get Better Acquainted

THE program of the twenty-ninth annual meeting of the Michigan Improved Live Stock Breeders' and Feeders' Association and allied organizations to be held at the Michigan Agricultural College January 14-15, appears on another page of this issue. It is seldom that an organization is able on a single occasion to present such an array of talent. In the state there are hundreds and thousands of progressive farmers who can

not afford at any reasonable cost, to miss this opportunity of seeing and hearing these well-informed leaders of state and national reputation. Even were it possible to have a complete stenographic report of the proceedings of the various associations, there would still be a distinct personal loss to those who remain away through failing to participate in the common democratic association with the enthusiastic breeders and feeders of the state.

It little matters what one's business is, he will invariably be better able to meet his peculiar problems through having mingled, even for a short period, with the best artisans of his craft. A great psychologist says: "A child will profit more by daily companionship with an acute observer than by all systematic attempts to train the senses," and Professor James adds: "The deepest spring of action in us is the sight of action in another." When ideas become flesh, breathe upon us with warm breath, touch us with responsive hands and speak to us in appealing tones, they become a real power and move us to action where the cold words of the printed page fail to arouse a single passion. This personal association cannot be spared in any movement where the greatest strides are sought, and it may well become one of the strongest factors in bringing about a big forward movement in the great live stock interests of the state. There certainly could be no more propitious time for extending the right hand of fellowship than on the occasion of this, the annual meeting of 1920.

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Honey in Good Demand

DURING the period of the war honey exports from the United States to the allied nations increased ten-fold, while domestic consumption, especially near the points of production, developed at even a greater rate. Not only did the flow of honey out of the country increase during the war, but since the armistice was signed export demand has continued. If our beekeepers are able to provide an adequate supply to meet this enlarged demand, the bee industry of the future is certain to take on considerable magnitude.

Like most other lines of effort the business of keeping bees is becoming a specialty and the great volume of colonies are now getting into the hands of commercial men. This tendency is looked upon as a wholesome sign from the standpoint of the development of the industry. The necessity for carefully studying the various problems of the business and the prevalence of two destructive brood diseases make it highly important that the person in charge of an apiary be qualified, and imposes a barrier to those who would attempt to keep a few colonies without thought of giving the necessary care. However, the man who has an aptitude for details can expect proper returns from his swarms whether he be a general farmer or a bee specialist.

The state of Michigan is bound to benefit from any improvement along this line since conditions here are peculiarly favorable to the industry and our beekeepers are wide awake to the possibilities before them. Recently at the annual meeting held at Lansing a cooperative selling and buying exchange was perfected partly as a result of anticipated help from this organization those interested have great faith in the economic possibilities of the future.

News of the Week

Wednesday, December 24.

EIGHT patients of a hospital at Middleton, Conn., are burned to death while the building is destroyed by fire.—The new crop of Cuban sugar is quoted at \$15.20 per cwt. wholesale,

which means a retail price of between seventeen and eighteen cents a pound.—What appears to be a crisis in the Holland government is the situation developing through the result of the resignation of the minister of war.—President Wilson pardons eighteen persons.—Washington insists that outrages against American citizens shall not be repeated by Mexico.

Thursday, December 25.

BITUMINOUS coal operators are urging a full investigation of the coal situation in order to bring about an amicable settlement and insure industrial peace.—Senator Kenyon, of Iowa, declares that there must be a closer cooperation between the government and agriculture.—Much of the whiskey now in the hands of American distillers will be sent to Germany.—Wilhelm, former emperor of Germany, will be demanded from Holland by the Allies early in January.—Government decides that intoxicating liquors will not be sold on shipping board passenger ships plying between New York and South America.

Friday, December 26.

PRESIDENT WILSON orders the return of the railroads to private control and operation on March 1, 1920.—John D. Rockefeller gives \$100,000,000, half to raise salaries of college professors and half to aid in combating diseases.—The State Department again revokes all licenses for the export of arms and ammunition to Mexico.—A British torpedo boat destroyer establishes a new world record for speed at forty-five miles per hour.—Bandits free four prisoners from the Lucas county jail at Toledo.—A terrific gale destroys life and property off the Sicilian coast.

Saturday, December 27.

RAILROAD workers numbering 600,000 union workers, threaten to strike if congress includes an anti-strike clause in legislation providing for the return of railroads to private owners.—Bolshevik troops capture eight Russian towns and peril Admiral Kolchak's regime.—The Canadian parliament will be called about the middle of January.—The national credit loan of France was over-subscribed on the first day.—A new motor fuel said to be cheaper than gasoline, is announced from New York City.—Major McKeever, Canadian ace, who brought down forty-five Germans, dies of injuries received in a recent accident.—Premier Clemenceau, of France, announces his candidacy for presidency.

Sunday, December 28.

THE Canadian government will control the exportation of wheat from that country to the United States.—Seventy-eight persons die in the United States within the past forty-eight hours through the consumption of wood alcohol.—An epidemic of influenza similar to that which swept around the world last year, has broken out in Japan.—Admiral Kolchak retires as chief of the all-Russian government forces opposing the Bolsheviks in Siberia.—The German minister of defense denies the reports that Germany is creating a secret army.—Many deaths are reported from various outlying districts of Switzerland from avalanches.—President Wilson observes his sixty-third birthday at the White House.

Monday, December 29.

SIX men are held at New Haven, Conn., charged with murder for the sale of wood alcohol as a beverage.—Heavy losses are reported in an engagement between French and Arab troops near Baalbek, Syria.—Great damage is being done along the Rhine and its tributaries by floods which are higher than they have been any time for the past thirty-eight years.—The next meeting of the Allied Council will be held in London.—Co-operative building associations show great activity in the war devastated portions of France.—The civilian population of Odessa is leaving as the Bolshevik troops approach the Russian port.

Tuesday, December 30.

THE military situation in Russia seems to be distinctly favorable to the bolsheviks according to the latest advices which indicate that deep salients have been cut by them into the front held by General Denikine, anti-red leader, from the Polish frontier to the River Don.—Sir William Osler, the famous English physician, dies in his seventieth year.—Federal government opens war on fake liquor dealing.—Pauline Hall, American opera singer, dies at her home in Yonkers, New York.—The initial meeting of the commission investigating the coal mining situation is held in Washington.



Making Hatching Eggs Pay.

THE hatching egg business furnishes the poultryman with his reward for keeping purebred stock. The eggs from purebred stock in the spring are worth more than mixed eggs because there is a demand for purebred stock. As the dairyman can sell a good purebred calf for a price higher than its market value as veal so the poultryman can sell the eggs from well-mated purebred fowls for more than the grocer can pay.

The first step in selling hatching eggs is advertising. The buyers in a poultryman's community will not furnish enough trade. Even they, will usually find out that eggs are for sale from reading the advertising. Most of the orders will come from the small towns of the state that the advertiser scarcely knew existed. Some advertising can be placed on the sign board at the side of the road, possibly some in the local newspaper and the balance in farm journals.

Hatching eggs can be shipped by parcel post with little if any loss. Commercial containers can be purchased which will hold fifteen, thirty or fifty eggs. Each egg is wrapped in newspaper and placed in its section so there will be no jostling. If the packages are shipped by express they can be sealed with gummed paper, but if sent

What Mr. Kirby Learned from Practical Experience.

by parcel post they must be left unsealed but can be tied with a strong cord.

Market baskets can be used for hatching eggs. Line the bottom with excelsior and then wrap each egg in a sheet of newspaper and a bit of excelsior. Do not crowd the eggs as this will result in some breakage. Cover

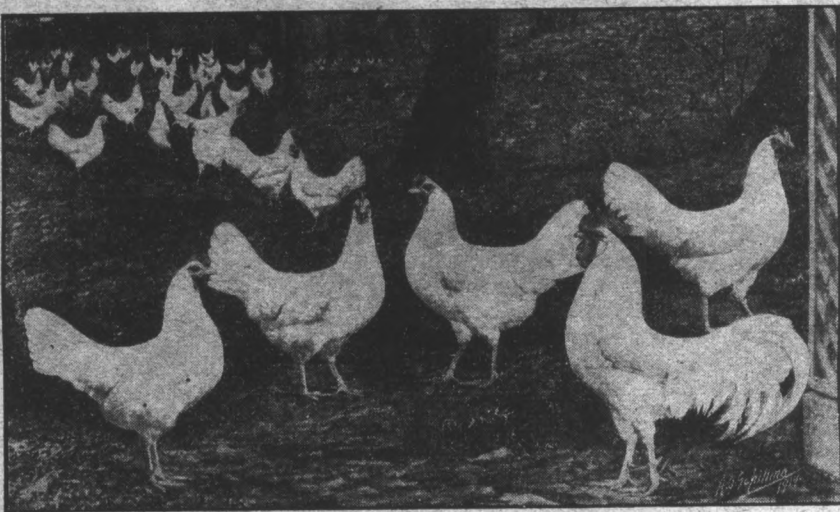
the top of the basket with burlap and tie in securely. Then draw the handles together over the top of the basket and tie them so that no other parcels can be placed on the eggs. The satchel baskets with covers are also fine for hatching eggs. Wooden candy pails are sometimes used. They are lined with excelsior on the sides and

between each layer of eggs, and the eggs are wrapped in paper. The wooden covers are nailed securely. A wooden package is more apt to cause vibration of the eggs than the more spring-like baskets. It is necessary to invest some money in packages as hatching eggs which are carelessly shipped will result in dissatisfied customers.

Orders for eggs must be promptly acknowledged and shipped as soon as possible. If all the eggs are sold for several weeks it is better to inform the buyer at once and let him know when he will be quite sure to receive them. Customers do not like to buy hatching eggs and then wait for six or eight weeks for delivery. It pays to encourage customers to order early and then estimate the probable number of eggs for sale and return the money immediately if more are ordered than can be shipped for a long time.

The seller of hatching eggs takes some risk as well as the buyer. The salvation of the hatching egg business is the fact that most farmers are honest. A dishonest buyer could purchase eggs and have good results with them and then claim to the producer that the eggs were bad and obtain another setting. Some breeders offer to replace a setting at half price. This gives

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Hatching Eggs from Selected Breeding Pens Find Ready Sale.

The Future of the Sheep Industry

IN addressing sheepmen at the Iowa Fleece Wool Growers' convention, Prof. W. C. Coffey, of the University of Illinois, impressed his audience with the observation that the center of our sheep production area is gradually moving eastward. He says:

If the sheep industry of the United States is to endure, we now realize as never before that the middle west must be one of the significant producing areas. We have realized for several years past the ever-increasing limitations placed upon production in the west; that vast territory is gradually being invaded by diversified agriculture, which in several ways tends to lessen the total value of mutton and wool production in that region, but at the same time to raise it in general quality.

For the past ten years it has been possible for the average sheepman in the middle west to profit on his flock even though he followed antiquated methods of breeding, feeding and shepherding. But now new factors are arising to stop all of this. Land values in Iowa and in all other middle western states have advanced by leaps and bounds in the past few months. For the past three years the shortage of labor has grown more and more acute, and there are no indications of relief in this direction soon.

Sheep Save Farm Work.

What does all of this mean? It can mean but one thing—that is, that our farms must be efficiently managed with the lowest possible minimum of labor. Only a few days ago an Englishman regretted the decline of the sheep flocks of England and pointed out that a flock of sheep replaces a definite amount of human labor. Flocks can do the same on our own farms, and if they are not established in much greater numbers than they now exist in our middle western states I am very

sure that our farmers will have made an economic mistake.

But we must bear in mind that the flock cannot replace labor unless the farms are inclosed by sheep and pig proof fences. At the present time advocating the fencing of our farms is an unpopular topic because of the very high cost involved, but I think it is a matter which must receive our serious consideration with the very near future.

Farm Bureau Helps.

The replacing of labor with a flock of sheep is not all that there is involved with the changes now coming upon us. We have known for a long time that a flock of sheep, properly managed, is a source of profit not only on low priced lands but on medium and high priced lands as well. And if they are properly managed I have no hesitation in predicting that they will be a source of profit—if anything can be a profit—on Iowa lands with their readjusted and much higher values.

Of all the productive agencies arising in these latter days for the betterment of the sheep industry, the county farm bureau stands out as the most significant. In these farm bureaus we are gradually developing sentiment in favor of cooperation. Instinctively our middle western farmers are not inclined to cooperate. They are too American, too individualistic, to take to it naturally. But we have now come to the time when we see that cooperation is not only desirable but really essential to our welfare.

Pooling Wool Clips.

In this movement the county farm farther and say it is indispensable to the success of our agriculture. Through cooperation we see that we shall be able to get a real market for our sheep and wool. You are familiar with the great movement started here in Iowa last year, when you went together to market your wool crop.

In this movement the farm county bureau participated in a most signifi-

cant manner. In Minnesota, Wisconsin, Illinois, Indiana, and I dare say, in your own state, cooperative shipping associations for the handling of live stock are gaining great headway. In some cases these associations arise independently of the farm bureau; in others they are fostered by this bureau.

But, at any rate, it is a movement toward cooperation, which is most significant for the sheepmen because it gives an opportunity for the man who has only a few lambs to sell to get the true market value out of them. When we begin to so organize that we can get the true value for our wool and lambs, we then have the incentive for engaging in the production of high-class products, both lambs and wool. So long as all had to sell wool on the same level of prices and had to dispose of lambs to a local man who knew little about buying, we had little to encourage us in breeding, feeding and shepherding with a view to producing the highest possible class of product.

Now, however, we can select the better breeding stock with confidence that we shall be adequately rewarded. We can cull out undesirable stock and feel that we are making progress. And out of the county farm bureau and related agencies we can gather information which will aid us in making a better product. Without the farm bureau the extension men in sheep furnished by the federal government could not make great headway in their work, which I believe gives promise of producing far-reaching results.

While we must recognize the existing destructive agencies, we can rejoice in the fact that the productive agencies are much more significant at the present time. And because of these productive agencies Iowa and all of the middle west is not far away from the period of great sheep production yet known in this part of our country.



Some of H. E. Powell's Shropshire Rams.

News of the Agricultural World

FARM BUREAU CAMPAIGN RESUMED.

THE state-wide membership campaign of the Michigan State Farm Bureau, discontinued during Christmas week, was resumed this week in St. Clair county. In a week's time campaigns will also be under way in Genesee and Kent counties.

According to the campaign schedule prepared by C. A. Bingham, secretary of the state organization, St. Clair, Macomb, Kent, Ottawa, Genesee and Tuscola counties will be completed during January. Washtenaw, Monroe, Livingstone, Eaton, Calhoun and Huron will be worked in February, with the possibility of the campaign extending into two or three additional counties.

At the present time the state organization has close to 12,000 ten-dollar memberships in eight counties. They are Oakland and Allegan with more than 1,800 each; Barry with 1,350; Montcalm with 1,700; Van Buren with 1,650; Lapeer with 1,700; Gladwin with 700, and Genesee, only half completed, with 900.

RECLAMATION BILL OPPOSED.

THE American Farm Bureau Federation has advised the American Legion not to favor the Mondell-Lane bills now pending in congress, which propose to reclaim land on which soldiers and sailors are to be settled. This information was received by C. A. Bingham, secretary of the Michigan State Farm Bureau, who has written Michigan's delegation in congress a request to oppose the proposed legislation.

In explanation of the stand, J. R. Howard, of Iowa, president of the national farm bureau federation, asserts he believes the legislation is being promoted by men who would selfishly benefit through the reclamation project.

In assistance to the American Legion, Mr. Howard offers service of a committee of three farmers to cooperate with the Legion in the selection of public lands for the soldiers and sailors to the end that waste land may not be unloaded on them.

"These soldiers and sailors are entitled to the best we have, not our barrens, and the American Farm Bureau is ready to help them get it in return for the sacrifices they made," Mr. Howard said.

BEAMER'S HEREFORDS WIN BLUE RIBBON.

RECORD prices were paid at the auction sales of fat stock at the second annual Buffalo Fat Stock show. "Laddie Roan," grand championship steer of the show sold at the record price of eighty-five cents per pound. The bullocks weighed 1,580 pounds. The buyer was Klinck Bros., Buffalo.

Dold Packing Company got the grand championship load of black steers, the best seen on the local market for a good many years past, at \$27 per hundred. The blue ribbon load of white faced steers, on the weighty order, shown by Elmer A. Beamer, Blissford, Michigan, sold for \$21.50, going to the New York butchers, New York City. Other straight loads of steers sold from \$15.50 and \$19.50. The bidding was spirited, buyers being here from all of the eastern markets. The from all the eastern markets.

Over in the east part of the rear hog barn stood "Roan Laddie," unconscious that he was the best individual fat steer offered in the show. "Roan Laddie" is a blue roan bullock; he was born a year ago on St. Patrick's day

and his owner and feeder is as good sheep than in the past. Late as it is, an Irishman as can be found anywhere there is a demand for the few feeding in the dear old U. S. A. The grand lambs offered on the market; and they have advanced sharply with the killers, the better class bringing \$14.50@15 per hundred pounds. There is also a demand for breeding ewes to ship to various states, with yearlings greatly preferred and selling as high as \$11 per hundred pounds. Efforts are being made in several states to increase the consumption of mutton and lamb, and there are many districts where scarcely any of these meats are eaten. Taking the country as a whole, only three per cent of the meats eaten is lamb or mutton, this comparing with seven per cent in Canada, eleven per cent in France, and with twenty-two per cent in Great Britain. With the exception of the Pacific coast, fourth, of Wauseon, Ohio, came in second, fifths of the lamb and mutton sold in

Service to Our Readers

THE December 27 issue of the Michigan Farmer was late in reaching you. There was a reason beyond our control. We are moving our plant into new and larger quarters, which made a slight delay in mailing that issue unavoidable. The issue of January 3 will reach most of our subscribers on Saturday as usual. Some copies may be late, as newly set presses give trouble in operation until they are settled. If this issue does not reach you on the usual mail, please bear with us. We take great pride in service to our readers, and the better facilities which will be at our command in our new location will enable us to reward their present indulgence with better service than ever before.

and W. W. Revington, of Canada, third. The grand champion load of cattle fell this year to the Aberdeen-Angus and the black "mullies" were indeed and in fact a very prime load of steers. Close down to the ground, they were prime and ripe in finish, very uniform and of very high quality.

M. Weinburg & Co., Rushville, Ill., carried off the grand championship on hogs. They are well known feeders and shippers to Buffalo.

C. E. Meggs, Paris, Ont., walked off with the grand champion load of lambs. They were Southdowns.

The highest prices a year ago in the auction sales of prize winners was \$22.50 per hundred for the blue ribbon load of heifers—the record price for all markets for heifers, with an individual grand champion steer at \$42.00. Feeders sold up to \$12.80; best fat cow \$18.75; best bulls \$15.35; best lambs \$18.80; yearling wethers \$15; sheep \$14.25; best bunch of five lambs \$21; best ewes \$12; best bucks \$9; the best load of hogs \$18.75; best bunch of pigs \$18.

LAMBS SELL MUCH HIGHER.

EVER since the close of the season for marketing the western range flocks of lambs, yearlings and sheep the Chicago market has been advancing most of the time in price, with fat lambs taking the lead, as usual, although substantial upturns have taken place also in prices for yearlings, wethers and ewes. The best demand centers on fat lambs, but fat little yearling wethers on the lamb order are having a good sale right along at high prices. Never in the past was there a better time for engaging in the sheep industry than now, present prices being far higher than in former years, with the premium paid for prime lambs much greater above prices for

the United States is sold in the markets of New York, Boston, Chicago, Philadelphia and Washington. F. W.

CURTAILING STOCK FEEDING.

MEATMAKING has had a severe setback in Kansas this season and it appears that many farmers are curtailing operations. A canvas by the State Board of Agriculture in the latter part of November of the cattle and hog situation reveals that stock has been sold off so extensively that there are now fewer cattle and hogs on the farms than was the case on March 1 last year. Beef cattle are less by twelve per cent, and only about seventy-six per cent of the usual number of cattle will be grain-fattened the coming winter. Contrary to the cattle situation, however, ten principal hog raising counties, from Smith east in the northern tier and two or three other northeastern counties, show more hogs on hand by about six per cent than the general average for the state.—F.

GOVERNMENT CATTLE LOANS.

THE report of the war finance corporation made to congress shows that all but \$1,459,244 of the cattle loans made last year were repaid. During the year the board advanced \$4,292,746 to cattlemen, cattle loan agencies and associations and \$93,160 to banks, the latter loans being secured by the notes of cattlemen. The total loans on cattle amounted to \$7,779,826, and during the year \$6,320,581 was repaid. There was a feeling of apprehension last summer among cattlemen because of the long continued drought in various districts. The board could make no further advances, and felt that outstanding cattle loans should be paid at maturity in instances where no undue hardships would result. W. W.

POULTRY SHOW SET FOR FARMERS' WEEK.

THE Michigan State Round-up Poultry Show, a blue ribbon exhibit which will bring together all the best birds in the state, will be held at the Michigan Agricultural College in connection with Farmers' Week, February 2-6. Nearly one hundred different poultry establishments of the state will enter a total of about five hundred fowls.

Inasmuch as only those birds which have won premiums at other shows will be eligible for entry at the college sweepstakes, competition will be unusually keen. The birds that take the prizes at East Lansing will have to be champions among champions.

All entry fees are to go to the prize winners in each class, forty per cent for first place, and thirty, twenty and ten per cent for the next three places, respectively. Every bird that places will get at least a ribbon. The entry fees are to be fifty cents for single birds and \$2.00 for pens.

The poultry show will be but one of the many features of Farmers' Week, which is expected to draw a crowd larger than last year's five thousand. Many state agricultural associations will hold their annual meetings at the college during the week. Among these will be the Michigan Crop Improvement Association, The Michigan Maple Syrup Growers' Association, The Michigan Farm Bureau, and many others.

Speakers of national reputation as authorities on farm subjects will address the assembled farmers during the week. These will include: A. R. Howard, President of the American Farm Bureau Federation; Dean Vivian of Ohio State University; H. C. Taylor, Chief of the Farm Management Bureau of Washington, D. C.; Dr. E. V. McCollum, Nutrition Expert at Johns Hopkins University; Cecil Roberts, famous poet and war correspondent, and many others.

A RECORD HARD TO BEAT.

Walter M. Schworm, of Grant township, Grand Traverse county, has a ewe that is hard to beat. On March 1, 1918, she dropped three ewe lambs, raising them, also shearing eleven pounds of wool. On March 15, 1919, she dropped one ewe and one ram lamb, raising them and shearing eight and one-half pounds of wool.

During the month of March, 1919, the triplets each dropped a lamb, one ewe, two ram lambs, raising them, the triplets together shearing twenty-three pounds of wool.

Forty-two and a half pounds of wool, five ewe and three ram lambs from one ewe in less than eighteen months.

EASTERN CONSUMERS DEMAND WESTERN CLOVER.

DEALERS in western cities are seeking consignments of clover and alfalfa hay to ship east where dairymen are without these almost necessary roughages. Indicative of the broad demand for alfalfa is the fact that the legume represents a cost of around \$45 to \$50 a ton by the time it reaches the eastern shipping points. This is an abnormally high price. Dealers generally report demand never so broad at this period of the year as at the present time. Shipments of alfalfa and other varieties of hay on orders are limited by the quantities coming, owing to the acute shortage of cars. Supplies of alfalfa are more or less abundant in the interior.





LAWFUL AGE OF VEAL.

What is the lawful age of a veal calf?
F. H.

Comp. Laws (1915) Sec. 6514 provides: "No person shall for the purpose of selling, kill a calf less than four weeks old; and no person shall sell the meat of any such calf or have the meat in his possession with intent to sell."

The following section makes violation of the act a misdemeanor. There is nothing in the statute forbidding the killing of young calves to eat, but only to offer them for sale; and experiments conducted by our experiment station and health boards and others in other state, and bulletins showing the results of these experiments, prove that the meat of even newborn, healthy calves is wholesome. The statute is a reflection of a popular prejudice against young veal, and also possibly of the campaign of a few years ago to compel farmers to raise their calves.—R.

RATION FOR HOLSTEIN HEIFER.

I have a full-blooded Holstein heifer, three years old, giving about thirty-five pounds of milk per day. She freshened November 9, 1919, and weighs about 1,100 pounds. I wish a balanced ration from all, or a part of the following grains, to feed with clover hay: Sugar beets and tops, wheat bran, wheat middlings, buckwheat bran, buckwheat middlings, corn meal and ground oats. I would rather not feed oats unless it is necessary. Would it pay for the extra work to soak the feed in boiling water and let stand from one feeding to another?

Osceola Co.

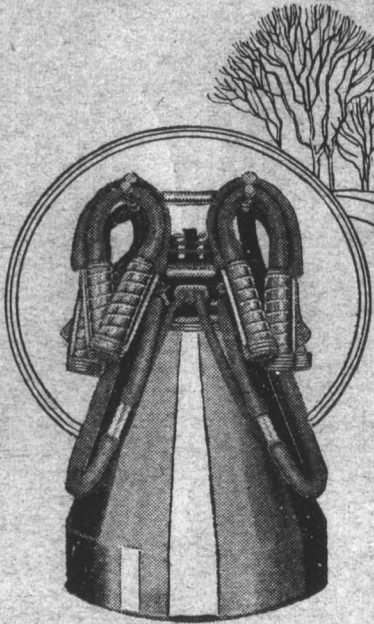
SUBSCRIBER.

You state that you have plenty of clover hay, which is the entire roughage. It simplifies the matter by balancing the grain ration somewhat. The clover hay is a balanced ration in itself, the only trouble is its bulky nature. A cow can't eat a sufficient amount to do her best. Sugar beets and beet tops will be splendid to furnish a succulent food in the ration, but they should not be fed in large quantities. A small amount night and morning is better than to feed this product in large quantities. In fact, if you feed sugar beet tops in large quantities it will give you trouble; they are not only laxative but they also act as a diuretic. However, if fed in small quantities like a small forkful night and morning, they will produce very good results.

With the varieties of grain which you mention it will not be necessary to feed ground oats, if you do not desire to do so. You can make a splendid ration out of wheat bran, buckwheat middlings and corn meal that will balance up your clover hay. Buckwheat middlings is a splendid food and contains over twenty per cent protein. If you would mix wheat bran, buckwheat middlings and corn meal in equal parts by weight I do not believe you can find a better grain ration to feed with clover hay. Your cow ought to have about one pound of grain for every four pounds of milk she produces in a day. She is now producing thirty-five pounds of milk a day, therefore she ought to have at least nine pounds of grain per day.

It is not necessary to feed the grain in the form of a slop. In fact, it is better to feed it dry. It is a good plan to have the drinking water so that she can drink whenever she wants to. It adds no value to the food by wetting it, and cows will do better on dry feed than on slop. Again, it does not pay to cook food for cows. This has been demonstrated time and time again. It is not necessary to cook food for cows to aid digestion because the animal has the power of digesting food in the raw state.

C. C. L.



This Seventeen Year Old Girl Milks Twenty-seven Holsteins with the Perfection

TWENTY-SEVEN cows, especially when some of them give as much as 100 pounds in a day, is quite a bunch for a girl to milk. When Theodore Gillis' 17 year old daughter can handle them all alone with the Perfection, it's not hard to understand why Mr. Gillis thinks his milker is a wonderful machine.

Just Ask Your Neighbors

"We have several other kinds of milking machines in this neighborhood but everyone seems to think the Perfection gives the best results and is the most reliable machine."

Names, Addresses and Catalog Waiting For You

How much would it be worth to you to have your milking problem solved? Find out about the Perfection Milker. We'll gladly send you names and addresses of owners so you can investigate for yourself. Just ask the men who own Perfections what they think of them. We will also send without charge a copy of "What the Dairyman Wants to Know", the book that answers every question about milking machines. Write.

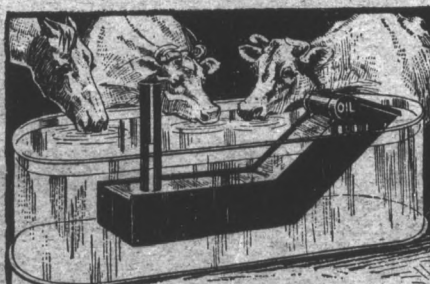
Perfection Manufacturing Company

2126 E. Hennepin Avenue

Minneapolis, Minn.

The Perfection is the Milker with the Downward Squeeze Like the Calf

PERFECTION MILKER



Empire Oil-Burning Tank Heater

Greatest improvement ever made in tank heaters. Fits any tank. Burns from 14 to 16 hours on one gallon of kerosene. Any child can operate it with safety; no sparks, ashes or smoke. The heating chamber is entirely under water; no heat wasted. Guaranteed. Saves feed—pays for itself repeatedly.

Empire Non-Freezeable Hog Waterer
Made of heavy galvanized iron—large capacity (70 gal.); drinking trough on outside where hogs can reach it; oil burner directly under trough—guaranteed not to freeze. Keeps water warm for 24 per day. An abundance of fresh, clean water at right temperature. Keeps hogs healthy—fatten faster on the same feed.



FARMER AGENTS
Special offer to farmers willing to show our Heater and Waterer to prospective buyers. Write at once for price and special offer.

Empire Tank Heater Co.
113 N. 7th Street
Washington Iowa



RIPLEY'S Combination Hot Water Heater and Steam Feed Cookers

will boil bbl. water in 20 min. or cook 25 bu. feed in 2 hours. Will heat water in tanks 20 ft. away, by attaching pipes to water jacket; will heat hog houses, poultry brooders, etc. Used by 25 State experiment stations. Saves 35 per cent of feed bill. Write for free catalogue of Breeder's Supplies.

Ripley Manufacturing Co., Grafton, Ill.

New York Office, 55 Liberty Street.

ASK US TO SHOW YOU how you can make several hundred EXTRA dollars this winter sawing wood with a

DIXIE PORTABLE DRAG SAW
You can cut 25 to 40 cords day after day with only 2 gallons of gasoline—easy to operate—the best built. Make big money cutting wood for yourself and your neighbors. Free descriptive folder, etc.

THE PETER GERLACH COMPANY
Sole Makers, Dept. 25 Cleveland Ohio



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Durable, Powerful, Reliable, Massive. Built to last; to do hard, heavy work. Uses Cheapest Fuel, Pull 1/2 to 1/4 horse-power more than rated. 3 Months Trial. Easy Terms. Slices 1 1/2 to 22 H.P. Easy to start. No cranking. No batteries. 10 Year Guarantee. Most practical engine ever built. Engine book free. A Postal brings it.

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Agricultural Lime High calcium hydrated lime in 50 lb. paper bags, in car lots of 20 tons or more. Delivered, price promptly quoted on request.
Northern Lime & Stone Co., Petoskey, Mich.

Lower Feed Cost!

Stock keep healthier and fatten faster if they drink lots of water. Save feed by giving them plenty of warm water in winter time. **Western Tank Heater**—gives warm water for your stock in coldest weather. Simplest, most economical tank heater for wood, metal or concrete tanks. **No Waste Heat**—Burns like a base burner. Removable ash tray—all fire under water—forces warm water to surface—burns coal, wood or waste material—boats quicker, on less fuel and with less trouble. Sold on absolute money-back guarantee. Send for illustrated folder and special low price offer. **FREE "Fatter Stock With Less Feed!"** Western Mfg. Co. 540 Depot St., Washington, D.C.

MAPLE SYRUP MAKERS

Champion Evaporator

saves labor, makes finest quality syrup and sugar, and gets Better Returns from Your Sugar Bush. Write for catalog and terms Today. Order Sugar Makers' Supplies Now. Freight moves slowly.

CHAMPION EVAPORATOR CO., Hudson, O.

INSIDE TYRES Inner Armor

for Auto Tires. Double mileage, prevent blowouts and punctures. Double applied in any tire. Used over and over—no material loss. Thousands sold. Details free. Agents wanted. American Accessories Co., Dept. 7126 Cincinnati, O.

CULL BEANS FOR FEED

Car lots or less. Ask for prices. **YOUNG-RANDOLPH SEED CO., OWASSO, MICH.** Mention The Michigan Farmer When Writing Advertisers.

Fill Your Silo From Fewer Acres

The one practical remedy for the high cost of labor is to make every acre produce more—a bigger yield of corn per acre means lower cost per ton of silage. Whether you apply manure or not, your corn needs available plant food—for a quick start—for producing more and better ears to give the silage greater feeding value—and for making big heavy corn, that requires fewer acres to fill the silo.

A.A.C. Fertilizers Make This Possible

They supply the necessary available plantfood—ammonia for a quick start, potash to make stout, heavy stalks and big grain, and phosphoric acid to fill out the grain, reduce the number of barren stalks and bring the crop to maturity ahead of frost.

Our Agricultural Service Bureau has been making farm tests with fertilizer for many years, to determine the best fertilizers for various crops under different conditions of soil and climate. The Bureau issues bulletins dealing with the culture of important crops, the use of lime and fertilizer. The Bureau also tests soils as to their need of lime, and gives advice on agricultural matters. This Service is free. Dr. H. J. Wheeler, formerly Director of the Rhode Island Agricultural Experiment Station, is in personal charge of the Bureau.

Ask for our valuable 56 page book, "How To Make Money With Fertilizer." Our nearest office will be glad to send it free.

The American Agricultural Chemical Company

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Please Address Office Nearest to You



GOOD LIVE STOCK

The Enduring Basis of Permanently Profitable Farming

War-born booms with accompanying fancy prices for grain may tempt us to put the plow through rich blue-grass sods that represent the work of many years.

Don't do it. FEED the land—don't rob or STARVE it.

It is in the midst of surroundings that indicate the presence of knowledge—which is power—in the handling of farm problems that you will invariably find THE BREEDER'S GAZETTE.

To be a member of a "BREEDER'S GAZETTE CLUB" in any community is to establish at once the fact that you are studying your business and keeping yourself—and your books—posted right up to date. If you do not belong to one, why not join now? The "dues" are but \$1.50 a year, \$2.50 for two years, \$3.25 for three years, or \$5 for five years.

See local agent or write for a sample copy and a catalog of the best books for the farmer's reading table. Address

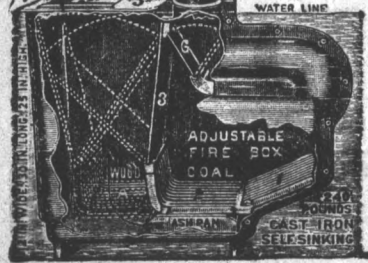
THE BREEDER'S GAZETTE, Room 1125, 542 So. Dearborn St., Chicago

Orders received before Jan. 1 can be commenced with our issue of Dec. 11 containing report of International Live Stock Exposition, and includes the beautiful 148-page Holiday Number as well.



Sanders Publishing Company, Chicago, U.S.A.

COW BOY SURE HEATER FOR STOCK TANKS



HELP FEED THE WORLD

Don't Waste Grain; but Save it and Produce more Meat, Butter and Milk by warming the drinking water for your stock with coal, wood or cobs with a

COW BOY TANK HEATER

Quickest to heat; strongest draft; adjustable grates; ashes removed without disturbing fire; keeps fire 24 hours.

Absolutely Safe; pays for itself in 2 months with 4 cows; Self-Sinking; can be used in Wood, Steel or Concrete Tanks of any size. Most reliable, practical, efficient and durable Tank Heater manufactured.

Purchased 3 of your Tank Heaters last Winter, worked very satisfactorily and are well worth their cost. Every Stockman should use one. W. H. Fox, Prof. of Animal Husbandry, Iowa State College, Ames, Ia. Get a Heater early. Write now for illustrated circular and dealer's name. THE WILLS MFG. CO., 56 Seventh St., MENDOTA, ILL.

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Vines, Berries, Shrubs, Roses and Ornamentals

Grown in our Upland Nursery, the largest in New York State, under ideal climatic conditions. Guaranteed to give satisfaction and sold to you at cost plus one profit only. Maloney Quality has become a recognized standard by which all nursery stock is judged because we have given our personal attention to every step in the production of our stock from budding to shipping, and know just what we are sending you and that our varieties bear and bloom true to name. Fruit Trees are scarce this spring owing to the fact that France has not been able to supply many seedlings for the past four years. However we have a fine assortment and can give you what you want. Send today for our FREE WHOLESALE CATALOG, and place your order early.

We Prepay Transportation Charges On All Orders for Over \$7.50

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Get It From the Factory Direct
PRICES 'WAY DOWN
We've knocked the bottom out of high cost of fence building. Send for our free Catalog and save 25%... percent on our
RUST-RESISTING
Stock-proof Fences—made of Open Hearth Basic Steel wire, drawn and heavily galvanized in our own Mill. Kitzelman's long-lasting, Horse-High, Bull-Strong, Pig-Tight fences are
SOLD DIRECT FROM FACTORY TO FARM
We Pay the Freight and save you money on every rod. Don't fail to send for our big Free Catalog.
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PERMANENCE

Suit your own choice or need. Glazed or unglazed Tile Siles; reinforced every course of blocks; fire-proof, wind-proof; last for generations; continuous doors with double sealing clamps, doors set flush with inside wall insuring even settling of envelope.
Wood Siles in fir and pine with binged doors. Cement Stone Siles, puddled process sealed and poured joints.
Hollow glazed building blocks for farm buildings—last forever—cheaper than lumber. Buy early and save money.
Write for literature, prices and special agent proposition.
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Michigan Agricultural News

RECORD FOR PRODUCTION OF BUTTERFAT.

Lulu Alpha of Ashburn No. 375710 has just finished her year's work as a senior yearling with the remarkable record of 800.08 pounds of butterfat in 365 days; equivalent to 941.2 pounds of eighty-five per cent butter. She was one year and ten months and twenty-four days old at the beginning of the test. Her nearest competitor for this great honor is a Holstein with a record of 640.91 pounds fat to her credit. Lulu leads by almost 160 pounds of fat, and if the amount of feed consumed by the two cows is considered, the Jersey will have even greater honor. Lulu is owned by Waterman & Waterman, of Washtenaw county.

STATE BOARD OF AGRICULTURE TO SEAT TWO NEW MEMBERS.

AT its January meeting the State Board of Agriculture will include for the first time its newly elected members, Mrs. Dora Stockman, of Lansing, and L. Whitney Watkins, of Manchester. The retiring members, who met with the board for the last time at the December meeting, are R. D. Graham, of Grand Rapids, and A. J. Doherty, of Clare. Graham and Doherty have served on the board seventeen and twelve years respectively. Mrs. Stockman will be the first woman ever to meet with the board as a member. Watkins is well known throughout the state. He has served a previous term on the State Board, and for years has taken a prominent part in all progressive agricultural movements.

BELIEVES TENANT SYSTEM IS FRAUGHT WITH DANGER.

PLEASE permit me space to protest both against the so-called facts and the spirit of a recent editorial in the Michigan Farmer entitled, "Socialism and the Tenant Farmer." The facts are wrong and the spirit of the article wholly unworthy of an editorial utterance from the Michigan Farmer. It says, "outside of a few southern states * * * farm tenantry is not on the increase." Now, Kansas is not a southern state and Governor Henry J. Allen is not a socialist. In a recent article Governor Allen says: "In 1880 eighty-four per cent of the farms in Kansas were operated by their owners and only sixteen per cent by tenants. Since then tenancy has increased rapidly until in 1910 only sixty-three per cent of the farms were operated by owners and thirty-seven by tenants. In 1918 the farm owners who were working their own farms had declined to fifty-two per cent and forty-eight per cent were renters. This is about the average."

Further says Governor Allen in the same article: "This is not typical of Kansas alone. In Illinois, Iowa, Nebraska, Ohio, Indiana, and even in the new state of Oklahoma, the tenant problem is growing with the same alarming rapidity as characterizes it in Kansas."

My own personal observations in rather wide limits of travel the past summer gave me a chance at figures on this very question. These were averaged and from them the statement made that the census of 1920 would undoubtedly show better than fifty per cent of American farms in the hands of tenants in contrast with forty per cent in the census of 1910. Anyone fairly conversant with Michigan farm conditions knows that farm tenantry

is increasing rapidly in our own state. Farm auction sales where the owners are leaving the farm are alarming in their number. An auctioneer in one of our best counties said recently in his introductory remarks at a sale that this was the sixteenth consecutive auction he had cried where the owner was leaving the farm. If there is any doubt on this matter I would be very glad to cooperate in the circulation of a questionnaire among the Granges of the state to see whether Michigan tenant farming is increasing or not.

Still another statement in the editorial is misleading. Reference is made to the prosperity of the tenant farmer. The inference is that tenant farming is therefore not bad. It is not the tenant farmer so much as the dangers of a tenant system that must be avoided. If tenant farmers do better than owners it is but another argument against the dangers of the tenant system itself.

Charging anyone who attempts to put these startling facts fairly up to the people with circulating "socialistic propaganda" is wholly beneath the dignity of a Michigan Farmer editorial.

Farm and home ownership is the greatest safeguard America has right now. It means better farm buildings, improved soil conditions, care for and interest in country life institutions, and greater stability in public affairs. It must be fostered in every possible way. We must all do everything possible to change tenant farmers into farm owners. It will not help much to deny the plain facts of increasing farm tenantry nor will it encourage the efforts of earnest workers in this cause to have what they believe to be the facts characterized as "socialistic propaganda."

J. C. KETCHAM,

Master Michigan State Grange.

SHORTHORN REGISTRATION FEE INCREASED.

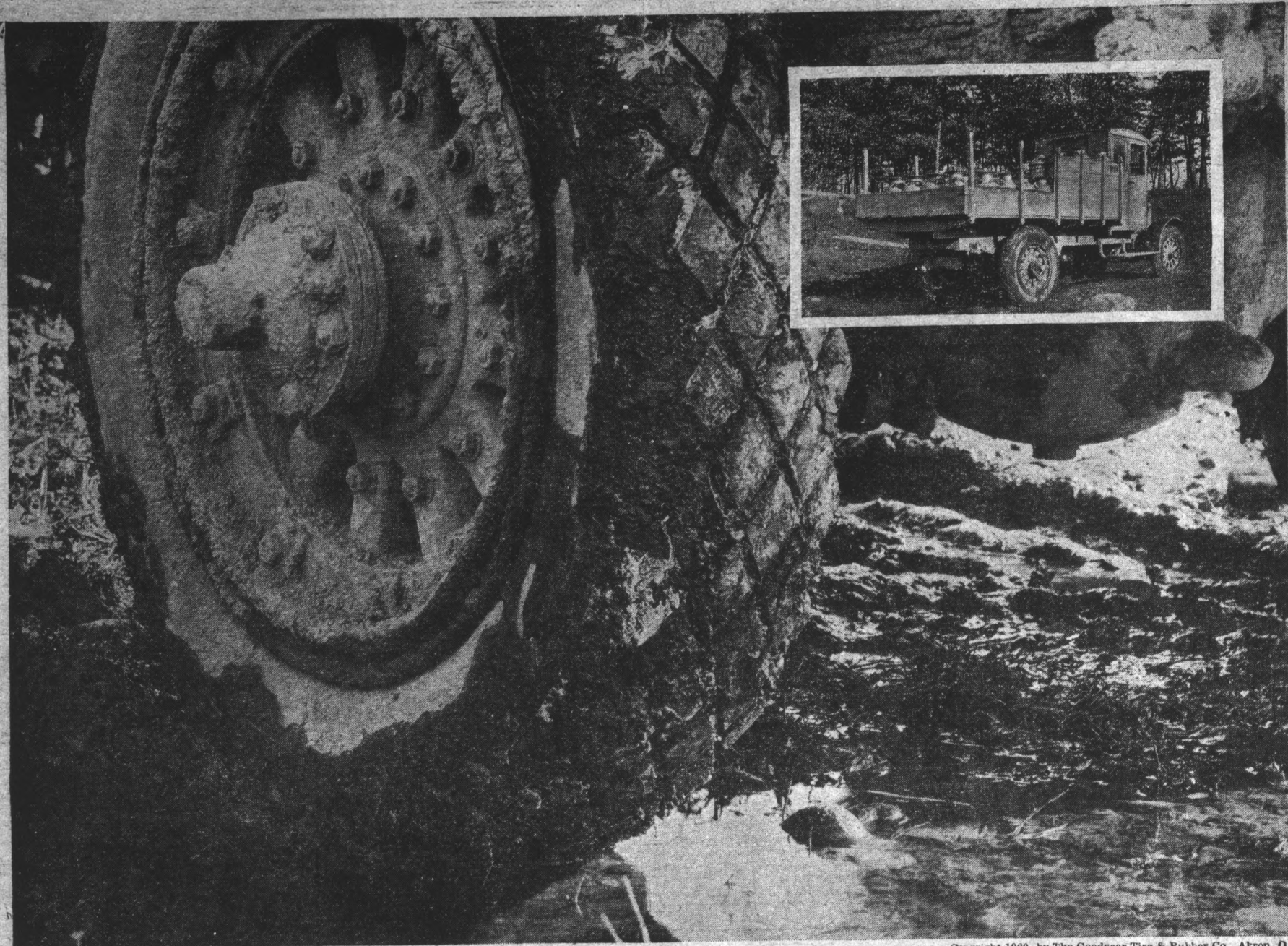
THE board of directors of the American Shorthorn Breeders' Association, at the December 4 meeting, voted to increase the registration fee to \$2.50 after January 10, 1920. This increase is necessary to meet the present cost of operations and in order to provide for the appropriations for the Shorthorn prizes and meet the demand for extension work. The Shorthorn Association has been progressive and discreet. A broad foundation has been laid and is being laid for the growth of the trade in the future. Immediate results are in evidence in all sections. A greater demand exists today for Shorthorn cattle than ever in the history of the breed.

MICHIGAN BEEKEEPERS ORGANIZE COOPERATIVE EXCHANGE.

BEEKEEPERS of the state joined the general movement toward cooperative business dealing for the farmer, by organizing a Cooperative Marketing Exchange at the recent convention of the Michigan Beekeepers' Association.

Thirty-seven delegates to the convention pledged their support to the new exchange, and agreed to back it financially in amounts running as high as \$200. The members expect to derive great benefits from the organization, and point to the success of similar organizations in other lines of agricultural work.

R. H. Kelty, secretary of the beekeepers' Association, is receiving applications for membership in the exchange at his office, Entomology Department, M. A. C., East Lansing, Michigan.



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"MY Goodyear Cords have paid for themselves in ten months with all-round savings of time, labor, repairs, etc. I figure the reduction in gasoline alone will pay the cost of these tires over solids. They have traveled nearly 10,000 miles to date and are good for another year at least."—Herman Marks, Farmer and Rural Expressman, R. F. D. 6, Waukesha, Wisconsin

THE advantages of hauling on pneumatics, as demonstrated by this dairy farmer and motor expressman, are proving of extreme importance to many farmers otherwise hampered by the scarcity of labor.

With motor trucks relieved of the handicaps of solid tires, they now haul across soft fields and through deep mud and snow on the tractive pneumatics.

The cushioning of these tires is a source of valuable protection to perishable produce and prime livestock which must be marketed quickly and smoothly to secure top prices.

Both of these qualities of the pneumatics have

a firm foundation in Goodyear Cord construction, pioneered by Goodyear years ago and today the basis of the country-wide success of cord pneumatic truck tires.

It is this Goodyear Cord construction which has made pneumatics practical for farm truck service, and thus has enabled farmers to motorize most effectively by using pneumatic-tired trucks to keep their power-driven farm machinery working at capacity.

Authentic information, describing how farmers employ pneumatic-tired trucks and what they save as a result, can be obtained by writing to The Goodyear Tire & Rubber Company, at Akron, Ohio.



GOODYEAR

Select Your Roofing as You Would Your Bank

DO YOU know of any reason why the interiors of your buildings, which also contain valuable property, should not be accorded the same protection as the money and securities you place in a bank?

Service, Strength and Safety—these are what your judgment requires of a bank. Why not, then, demand these same qualities in your roof?

MULE-HIDE Roofing and Shingles

are manufactured by a process that makes for greatest possible **Service**, thus doing away with the need of frequent repairs. They are **Strong**, tough and weather-resisting, due to the honest materials which they contain. MULE-HIDE Roofing and Shingles are inspected and approved by the Underwriters' Laboratories, making them **Safe** against flying brands and sparks.

Is it any wonder that MULE-HIDE has earned the well-known reputation "**Not a Kick in a Million Feet**"? When you buy MULE-HIDE your investment is as safe as though it were in the strongest bank. Ask your lumber dealer.



MULE-HIDE Roofing comes in smooth finish and red or grey-green slate-kote.

MULE-HIDE red or grey-green Shingles may be had individually or four-in-one style (often termed "Slab" or "Strip" Shingles).

THE LEHON COMPANY *Manufacturers*
44th to 45th Street on Oakley Avenue • Chicago



*from your fertilizer will be greater
if you use*

ROYSTER'S



*The Fertilizer that made
Fish Scrap Famous*

F. S. Royster Guano Co.
Toledo, Ohio

Michigan State Grange

(Continued from last week).

MASTER KETCHAM, in his address, stated that Michigan State Grange has a record in cooperation that is outstanding. "Combining our fire insurance companies' risks makes the impressive total of \$38,664,000. The saving in insurance rates to our members, especially in the newer sections of the state, where old-time rates would be prohibitive if obtainable at all, is many times the cost of the Grange. The Grange Life Insurance Company comes through the war with a fine record. Its totals have now reached the imposing sum of \$7,750,000 and it matches swords successfully with the best companies of the country in competition for business.

Our cooperative trade contracts register another year of large returns to our State Grange treasury, the sum being \$8,500. This has been largely due to the wise plans and wonderfully effective service of our faithful contract agent, Brother George B. Horton.

The cost of production which the Michigan State Grange has put on for the last two years has attracted world-wide attention and several articles on various phases of it have been widely copied in agricultural journals. Given character by manufacturers, grossly misused by war profiteers with their notorious "cost plus" contracts, this slogan is now being used by farmers and is to become the important factor in future price consideration on farmers' products. It must be made the slogan of farmers' organizations all over the country and must likewise be urged upon city consumers as the only means of insuring a steady and adequate supply of foodstuffs from the farms of America.

A Grange drive during the last two months has resulted in the addition of more than three thousand members. We have gone far enough to know that the Grange membership of Michigan can be increased fifty per cent in the coming year if a burning message is carried back by each delegate to his home Grange and the Granges where he is called to install officers. Organization is in the air and the program of the Grange is a sure answer to the needs the farmer desires to have served through a farm organization.

The State Grange strong box contains a total of \$58,184, a new high mark in our State Grange history and very distinct margin of leadership over any other Grange state. The Grange started in Michigan fifty-three years ago. It was created to bind together the northern and southern farmers after four years of bitter struggle in the Civil War. And now is it too far fetched to say that the farmers of America hold the destiny of the nation in their hands in these disturbed and unrestful days? Is the great army of home-owning, home-loving people on the farms of this country a strong anchor in the storms of reconstruction?

Are their opinions, wishes, desires and ambitions for themselves and their country fairly representative of the aspirations of the great body of Americans called the common people? Is their business of food production of sufficient importance to the country and to the world to warrant closer and more sympathetic action to their needs in both legislation and administration? Does not one-third increase in food production answer for good will and real constructive, unselfish patriotism of the American farmer in comparison with twenty-five per cent decrease in some industries? Ought they not in fairness to be given a large voice in public affairs? Eventually, why not now?

A determined fight is on in congress over the enactment of the "Capper-Hersman Bill," which is designed to

make absolutely clear the right of farmers to sell their produce cooperatively. The whole cooperative movement is endangered because of a lack of clear-cut legal definition of the rights of such enterprises. Recent prosecutions of milk producers in three large centers of population indicate something of the trend of affairs. No convictions have been secured thus far. The right to cooperative selling must be safe, however, and this State Grange is urged to support the Capper-Hersman bill and devise means to present that action most effectively to our congressional delegates.

Startling in the extreme is the report that the federal departments at Washington makes on the present situation of the rural schools of the country, due to the wholesale movement of young men and women from the country to centers of population. Of 212,000 one-room rural schools in the whole country, 125,000 are being taught by inexperienced teachers, most of whom are immature boys and girls of no training, and all too little educational preparation. Several thousand schools are entirely without qualified teachers and every sort of make-shift is used to supply the deficiency. Unless this condition shall be speedily remedied, the rural school will lose its proud place as the starting point for most of the successful men and women of the land. Michigan conditions are doubtless not so extreme as in many states, but we cannot allow them to become so."

There were many addresses and discussions given by prominent men and women in the Grange and by several outside speakers. State Superintendent of Public Instruction T. E. Johnson, called attention to the generally poor condition of the one-room rural schools and the poorly trained teachers and handicapped children. He urged that the present small districts be consolidated wherever possible. In fact, he favored making the township or county the unit for rural schools, and that the state has provided for financial assistance when rural school districts consolidate. Addresses were given by L. Whitney Watkins, new member of the State Board of Agriculture, Dean R. S. Shaw, of M. A. C., and Milo D. Campbell, on Thursday afternoon.

Financial reports showed that the Grange total assets were \$58,194.90. Receipts for the year were \$26,675.08 and expenditures were \$23,284.25.

Mrs. Dora Stockman, state lecturer, declared that rural conditions must be improved to make the farmer more contented or the country will face an enormous shortage of food. Hundreds of farmers, their wives and children, are leaving their farms annually because they cannot make cost of production plus any reasonable amount of profit.

The big Grange banquet at the Masonic Temple on Wednesday evening was an outstanding event. It was attended by several hundred delegates, officers and visitors. Master Ketcham was introduced by lecturer Mrs. Stockman to preside as toastmaster. There were numerous responses and all were supposed to answer the problem of "What Michigan Farmers Want."

Among the resolutions introduced and passed, we briefly mention the following:

That agriculture should receive the full value for its products, less a reasonable commission for placing with the consumer.

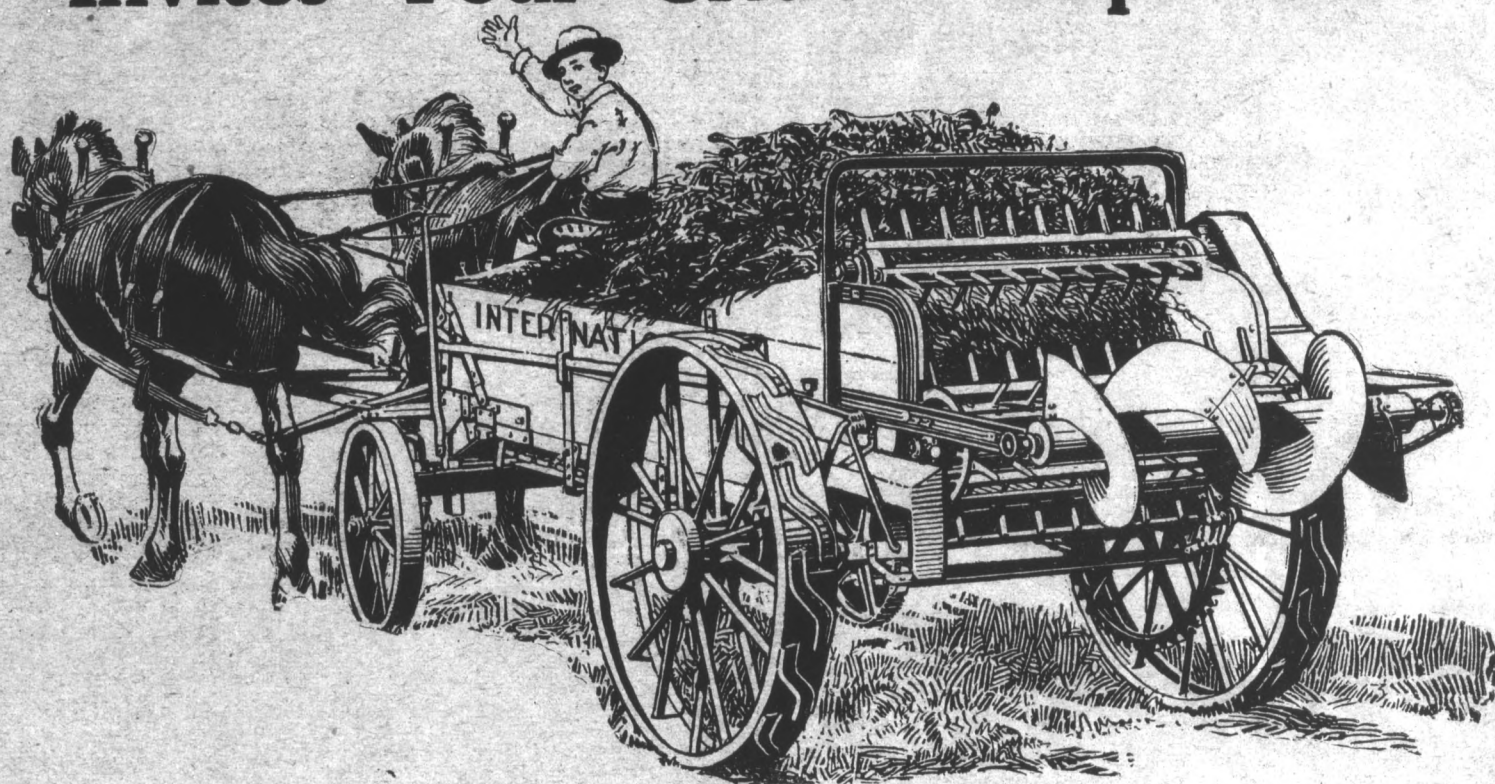
Recommended that the federal tax laws be so amended that incomes from preferred stocks be subject to the income tax. Also that we oppose the re-

(Continued on page 25).

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The spiral wide-spread behind the beaters gives the manure a third beating, and spreads it finely and uniformly beyond the wheels.

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An all-steel main frame—wood box sides hold only the load.

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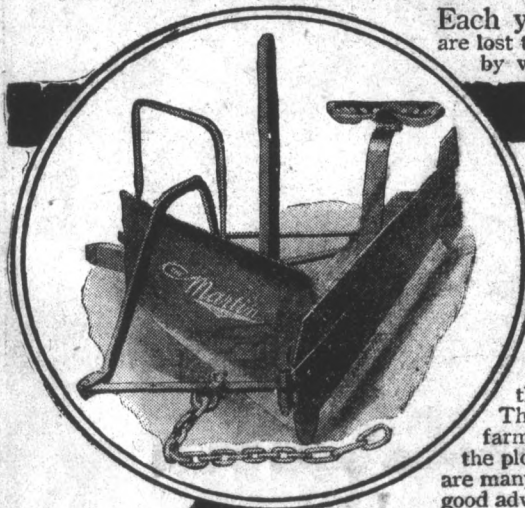
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Reversible

Each year many acres of grain are lost to the individual and to the nation by water standing on the fields because of improper drainage. Isn't it high time this frightful waste be stopped and that the farmer be insured of bigger crops and better returns for his labor? We must raise more food than ever in America this year to help feed the starving peoples of Europe. This is the farmers' opportunity. Prices of all food products will remain high for some time to come.

Many a farmer thinks he has no need of the MARTIN, but that's where he is dead wrong. This machine is needed on every farm, and was needed there before the plow. Even on well tiled land there are many places where it can be used to good advantage, and will quickly pay for itself. Stop a minute and study closely the many uses of this handy little implement.

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Potato Growers' Exchange

Doing Big Business According to W. C. Cribbs, Field Agent Who Contributes the Following:

A REVIEW of the work of the Exchange shows that the Michigan Potato Growers' Exchange is making thousands of dollars for the members this season. The season started with a large volume of apples offered, which were sold at very high prices for the farmers. The Exchange sold cider apples for the local associations for prices ranging from \$1.50 to \$2.15 per hundred. The price to the farmers was started by the local buyers at eighty cents per hundred, but it did not take long for the Exchange to get into the cider apple game and the price was advanced to \$1.50 at once. The writer attended a meeting at Tustin where the farmers were not organized. They were selling hand-picked apples No. 1 and No. 2 at \$1.40 per hundred and the Exchange was that day selling cider apples for \$1.65 and was returning to their members \$2.20 per hundred for potatoes and the buyers in Tustin were paying the farmers there \$1.70, a difference of fifty cents per hundred between the price received by the organized and the unorganized farmers.

The prices returned to the farmers by the cooperative associations this year has been very much in advance of the prices paid by the local buyers in nearly all cases. The difference has run all the way from four to fifty cents per hundred.

Last year there was a falling market coupled with a car shortage which worked against the local association or put them at a disadvantage on making returns to the farmers who were members. The buyers also were paying higher prices than they could afford to pay last year and by so doing they lost thousands of dollars. They did this in order to break up the organizations by causing dissatisfaction among the members. The buyers found that they could not break the associations by this method and although they put several thousand dollars in to do so, the associations doubled in number in just nine months.

This year we have enjoyed a car shortage for the market has advanced and the farmer who ordered his potatoes sold and was not able to get them off for a week or two has found that when they were sold he was returned much more than expected in many cases. The buyers this year gave up the idea of breaking up the associations by paying more than the produce is worth and are taking what they can get with a fair chance of making a reasonable profit on their investment. This year is the year when the loyal members are making good money and the man who is selling on the outside is getting let down.

The Exchange sold ninety cars of cabbage for its Saginaw association and several cars of rye and wheat at very good advances above the regular market. Three cars of rye were sold for the McBain association and netted the farmers around \$1.51 per bushel last fall when the elevator was only paying \$1.30 at the time this was loaded out.

One member at Beulah told me that he had made over \$100 in three weeks above the buyer's price on second-grade apples which were sold by the Exchange to the peddler trade.

At Gowen's, a little town just six miles from Greenville, the farmers organized a cooperative marketing association there. The members were offered \$2.14 by the buyers who were paying only \$1.90 in Greenville, the leading buyers' market of the state.

At Sheffield a concern was paying only \$2.00 per hundred and just twenty miles away where the farmers were organized, the same firm was paying

\$2.40 per hundred. So it is seen that the unorganized farmer is holding the bag for the organized farmer inasmuch as the buyers can take a profit from the one community and spend it in another community to compete with the organized farmer.

A concrete example of the difference between the price that the buyers are paying on a safe basis, is the Kingsley association in Grand Traverse county. Mr. Sidney Weaver had 5,980 pounds of potatoes to sell but the association was then too crowded to handle them. He went to a buyer who offered a price which would net \$101.66. He waited for a day or two and received from the association \$132.44, a gain of \$30.78.

The Exchange has just held a meeting, called to amend the by-laws. This meeting, held on December 18, was well attended by the voting delegates from the locals as well as many members and county agents. One of the important amendments to the by-laws was to give the Exchange the power to hire a competent auditor to audit the books of the locals whenever this was necessary, or at least once a year.

It is worthy of note that the quickest work of organizing a local association and their getting into operation, was the Sand Lake association in Kent county. This association was organized on Saturday afternoon, the officers purchased a warehouse on Monday and started doing business on Wednesday. This association is located so that they have members from Kent, Newaygo and Montcalm counties. They have shipped several cars of beans and potatoes and are handling all kinds of farmers' supplies.

One association at Grant has just placed an order for over eight thousand dollars' worth of clover and grass seeds. The Central Exchange purchased over four cars of grass seeds last year and made a saving to their members of from two to seven dollars per bushel.

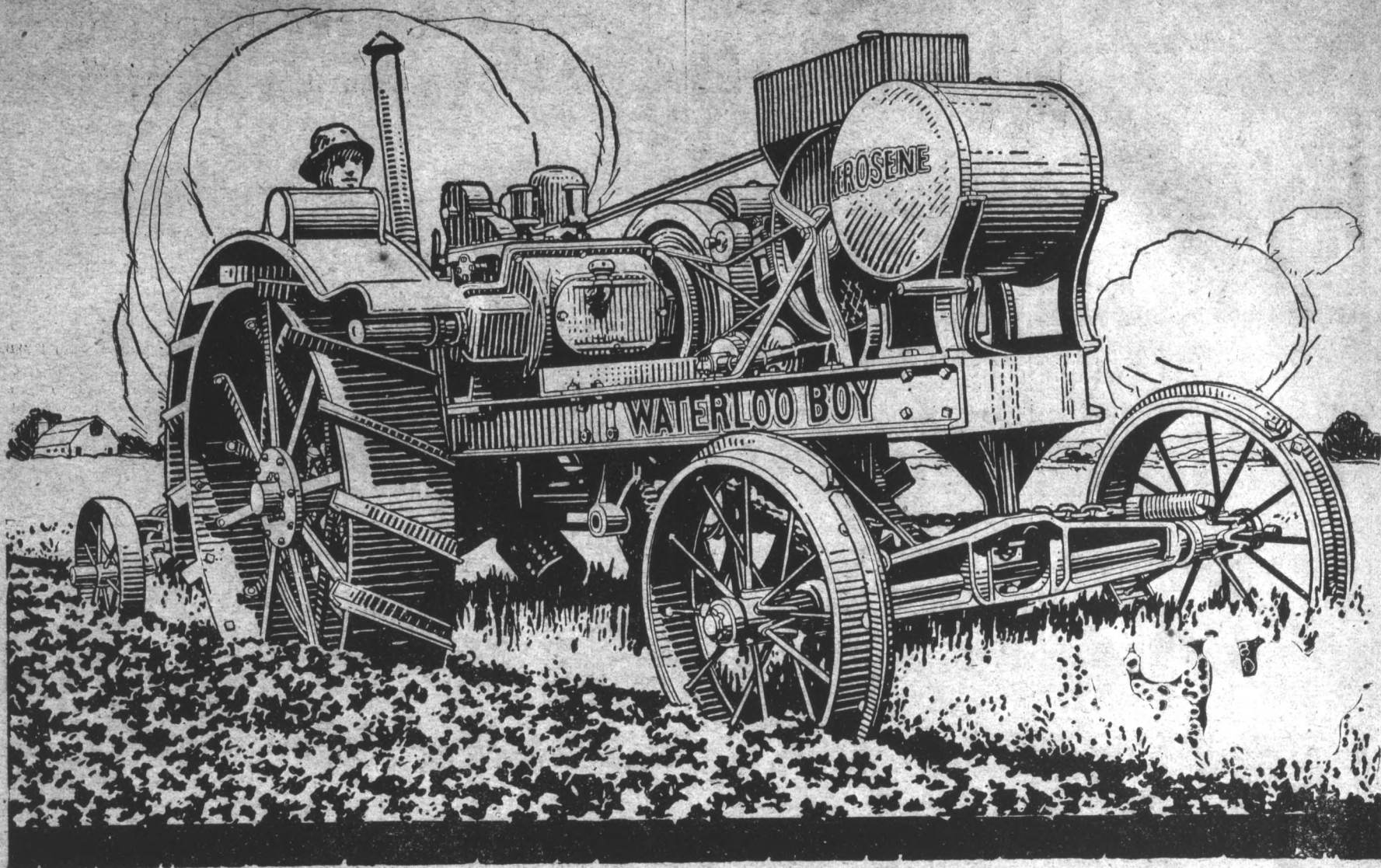
To give some idea of the confidence of many of the members in their local associations, I will give a little history of the Kingsley association. This association has been in operation about fifteen months and on the start they purchased a warehouse for \$3,000, but soon saw that this was too small for their needs and they have now just completed an addition to this house, made of tile, which is costing them above nine thousand dollars, including the cost of automatic machinery for the handling of potatoes. When the farmer drives up to the warehouse with a load of potatoes his wagon is tipped up at the front and the tubers slide out at the rear into a dump which elevates the potatoes onto a grader. From there they go to a conveyor which dumps them into a bin where they remain until ready to be sacked for loading onto the cars. They will have two of these automatic wagon dumps and will have several other doors where the farmers can unload in the rush season.

The members, numbering one hundred and seventy-six, paid a membership fee of fifty dollars into the association, which went into the building fund. When the building was completed they found that they would need about \$3,000 more. At a meeting of the members one afternoon they called for men to volunteer to loan the association this money and in fifteen minutes the required amount was secured.

At the present time the central is in a flourishing condition, having done about \$500,000 worth of business in October of this year and about the same amount in the month of November.

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The Pulley Wheel on the Waterloo Boy is mounted on an extension of the engine crankshaft. It is carried on wide, heavy-duty Hyatt bearings. There are no gears in mesh to cause friction. All power goes directly to the belt.

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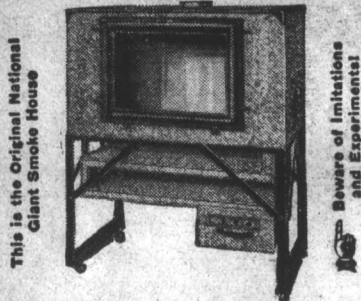
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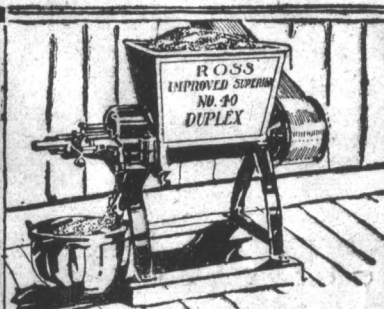
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DOES LIME DESTROY HUMUS?

(Continued from page 1).

this process occurs in a moist soil it is unlikely that any appreciable loss of ammonia occurs.

Moreover, and this is the "proof of the pudding," Dr. McIntire in the study mentioned above, extracted the atmosphere from a field soil in which caustic lime was known to occur and found no trace of ammonia in it.

Contrary to ordinary belief, the effect of lime on the soil is more in the direction of conserving mineral elements than to increase their loss. Lime does not unlock potash. It does not increase the loss of phosphorus which is usually very thoroughly conserved in soils. It may increase the loss of sulphur.

Moreover, burnt forms of lime are not more lost from the soil than carbonate forms. Their more free entry than limestone into silicate forms of combination operates to conserve lime in the soil.

Physical Effects.

When it comes to the improvement of the tilth of the soil, the burnt forms of lime are shown to be much the most effective. It is questionable whether in any direct way limestone improves the tilth and there is some indication of the reverse effect if it is not coupled with the large supply of humus in the soil.

Field Experiments with Crop.

Turning to field experiments with crops where both burnt lime and limestone have been used, the data at the Ohio Experiment Station covers the longest period (fourteen years) in the lime phosphate test, and is most dependable. In this data no proof is found that limestone is superior to burnt lime when used in chemically equivalent amounts. In a summary of all crops for the entire period, and all rates of application, the burnt lime has produced per three-year rotation an average increase in grain and hay (straw omitted) amounting to 2,703 pounds, while limestone has produced 2,308 pounds, worth, at two cents per pound, \$54.07 and \$46.16 respectively.

Practical Convenience.

Consideration of the use of liming materials on the soil should keep in mind first, the cost delivered on the land and not at the freight station. The labor saving in hauling the more concentrated burnt lime is a consideration the farmer will know best how to appreciate. Figured on this basis, the cost of a pound of available oxide of lime is very close to the same amount of the different forms of lime when delivered at the farm. Naturally the burnt forms, being more concentrated, have the largest advantage on long hauls.

Fairness to the Farmer.

Having in mind that there is a place for both limestone and burnt lime, it would seem to be the part of wisdom to recognize the full merit of each material, and for the limestone to be used more especially where the shorter haul is involved and the burnt lime on the larger haul territory.

Small Applications.

Finally, we believe the interests of the farmer are better served by frequent small application, related, of course, to the needs of the soil, than by large applications once in, one, two or three rotations. The average farmer finds much practical difficulty in covering his farm with a ton or more of material every five years. We are inclined to believe that there is a larger place than is now recognized for the regular application of from three or four hundred to one hundred pounds of material on the tilled and grain crops much as fertilizers are used. This idea opens up an entirely new field that must be reserved to some future discussion. The agricultural lime business is a big, sound, growing business, worthy of the united push of all parties concerned.



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A VERY dangerous insect known as the European corn borer has become quite generally distributed in eastern Massachusetts, and also in Erie and Chautauqua counties and in the vicinity of Albany, New York. This insect attacks practically all farm crops and if it once gets a foothold in Michigan will do great harm. The difficulty of exterminating it is increased by the fact that it also attacks all of the larger weeds, concealing itself in the pith.

The most likely means of its introduction into Michigan is with nursery stock. The danger is not so much from its being in the stock itself, although it might be found in herbaceous perennials such as iris and peonies, but from the straw, rushes, flags and other coarse grasses and weeds with which the stock might be packed.

While we can hardly expect to permanently keep this insect out of the state, we wish to delay its introduction as long as possible, and to this end would urge everyone to keep a careful watch for this insect. It is known to attack at least one hundred of our common plants but is most likely to be found in the ears and stalks of corn, especially sweet corn, and fortunately appears to prefer flint to dent corn. More than one hundred and fifty borers have been found in a single hill of corn, and fifteen in one ear. The tassel is likely to break off and tip over. This is often the first indication that the borer is present.

The larvae of the borer are smooth, grayish in color and about one inch in length. The pupae are generally found in the pith and are brown, cigar-shaped and about one-half inch long. If anything suspicious is found you should mail samples to the undersigned, enclosing the specimens in a tin box, as the larvae can eat through a paper box.

Aside from a careful watch for this insect, we would urge that all packing material be burned, especially if straw or other coarse material has been used. Although there is as yet no general quarantine against shipments from the infested sections, we would strongly advise against the bringing in of nursery stock from New England, or from eastern or southwestern New York. On the other hand, there is not likely to be any danger at this time of bringing in the European corn borer with shipments of nursery stock from Rochester, Geneva, Newark, Dansville and other nursery centers in central New York.

From the nature of this insect and the fact that it has such a wide range of food plants it will not only do great injury to the farm crops of Michigan, but will be difficult and probably impossible to exterminate if it once appears here. We therefore urge your cooperation to the end that it may be discovered as soon as it is brought to Michigan, and would also suggest that you ask your neighbors to be on the watch for this insect.

L. R. TAFT,
State Inspector of Nurseries and Orchards.

NATIONAL GRAPE GROWERS' ASSOCIATION MEETS.

On Tuesday, January 13, 1920, the National Grape Growers' Association will hold its first regular session at the Hollenden Hotel, Cleveland, Ohio, for the purpose of completing the organization. Representatives from every grape growers' association in the country are requested to be present. Address correspondence to W. H. Asbury, Unionville, Ohio.



Do You Know Hudson

*But Through Sheer Merit Alone
Essex Made Its Thirty Million Dollar Sales Record*

Builds the Essex?

Essex success has not been accidental. No one doubts its right to the position it holds.

But how many know why Essex in its first year revealed qualities more mature, more evident of the influence of long experience, than is commonly found in cars even in their third and fourth year.

You will recall the Essex was announced one year ago without one word as to the identity of its builders. Not a claim was made for its performance.

You were asked to go look at it, take a ride and form your own opinion. The Essex, we said, would have to speak for itself.

Now that it has established itself, we reveal why Essex has all the qualities of cars of long development.

Was Designed by Hudson Engineers

They conceived it as they developed the Super-Six. All they learned about endurance, they incorporated in the Essex.

They gave to the Essex the power that has made it famous in all quarters. Its speed is the result of what had been learned in making the Super-Six winner of all worth while speed records.

The Essex can never be all that the Super-Six is for they are totally different types.

But the Essex does bring quality and performance to a class field that was unknown.

The former owners of large costly cars that have adopted the Essex have not been Hudson users. They have come from other cars, cars that fall short of the Super-Six in all particulars save size and cost.

The Essex appeals to such users because of its nimbleness. They like the way its performance compares with that of the Super-Six. You can see this on every hand. The two cars in any community that are most prominent because of their performance ability are the Hudson Super-Six and the Essex.

Essex Did Not Need Hudson's Endorsement

Think of the advantages Essex has had. What ordinarily would have required years to perfect was made possible in the very first model.

That is why 20,000 are now running, why more than \$30,000,000.00 was paid for Essex cars in ten months.

You have not needed the Hudson endorsement to understand Essex performance.

Essex has won its own way. Hudson gave it full benefit of the experience of its engineers and the ability of its manufacturing organization. Its name was not needed.

Now Hudson takes the same pride in acknowledging its kinship to Essex that a father might in speaking of his son who on his own account had made good.

(115)

Get This Seed Book

FOR 33 years Olds' Catalog has been the farm and garden guide of thousands of people. It has been responsible for the success of gardens, large and small, as well as field crops everywhere. It lists only carefully tested and selected seeds. It leaves no room for guesswork, for

Olds' Catalog Tells the Truth
It makes no extravagant claims. Every statement is based on fact. You positively cannot make a mistake when you order garden, flower and field seeds, plants or bulbs from this book. Every packet of Olds' seeds is backed by 33 years of seed experience. All seeds conform to the strict Wisconsin seed laws. When you buy Olds' seeds you buy with certainty and assurance of good crops from the seed standpoint. Why take chances?

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A postal card brings it by return mail. Start right with right seeds. Send for this book now.
L. L. Olds Seed Company, Drawer C36 Madison, Wis.



Free Catalog in colors explains how you can save money on Farm Truck or Road Wagons, also steel or wood wheels to fit any running gear. Send for it today.
Electric Wheel Co., 35 Elm St., Quincy, Ill.

Save Money on These Combination Bargains

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The Michigan Farmer, one year...\$1.00
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Total value\$4.50

All for \$3.50.

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The Michigan Farmer, one year...\$1.00
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The Michigan Farmer, one year...\$1.00
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Both for \$2.15.

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The Michigan Farmer, one year...\$1.00
Hoard's Dairyman, one year..... 1.00
Swine Breeders' Journal, one year .50

Total value 2.50

All for \$1.90.

Address all Orders to The Michigan Farmer, Detroit, Michigan.

Exclusive Features in the **MOLINE** UNIVERSAL TRACTOR

Exclusive Features:

1. Does *all field work* including cultivating and harvesting.
2. Both tractor and implement operated by *one man*.
3. Tractor and implement form *one unit*.
4. Operator sits on implement at center of all controls of tractor and implement.
5. Operator sees his work. "Foresight is better than hindsight."
6. Tractive power in front of work, operator behind it.

Exclusive Results:

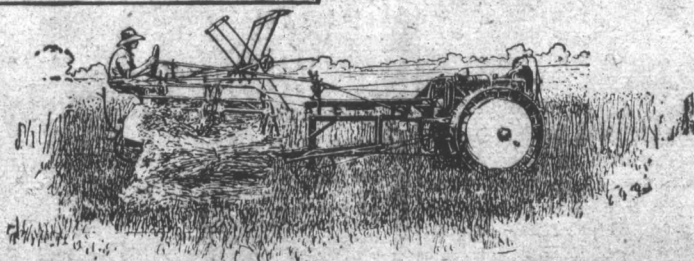
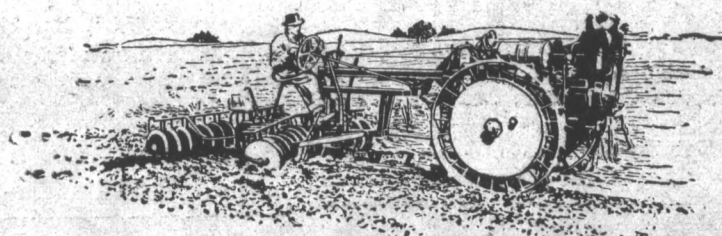
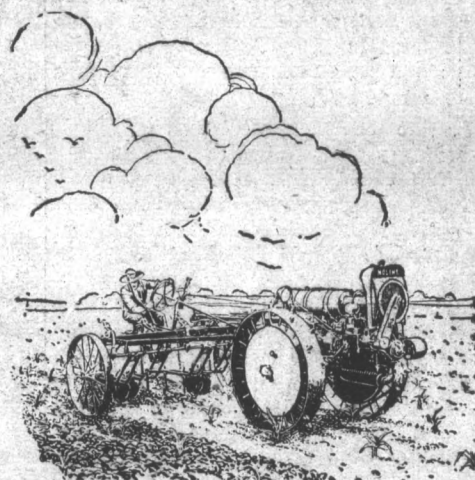
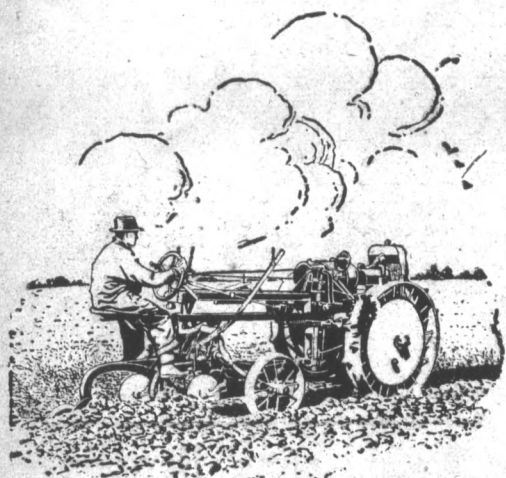
1. No duplication of any work by horses.
2. A saving in labor.
3. Entire outfit turns short, backs and makes fence corners produce.
4. Ease of operation.
5. Better work.
6. Power used as horses are used.

The Power of a Correct Principle

The principle of doing all field operations with one man sitting where he can watch his work is correct, or farming has always been done backward, and the operator would always have ridden or led his horses instead of driving them.

The Moline Universal Tractor places the power of nine big horses where the horses stood—is driven just like horses are driven, from the seat of the implement, and hitched up to the implement just like horses are hitched.

Note—If desired you can use the "drag behind" or horse drawn implements you now have the same as with other types of tractors.



See your Moline Dealer or write our nearest branch for full information

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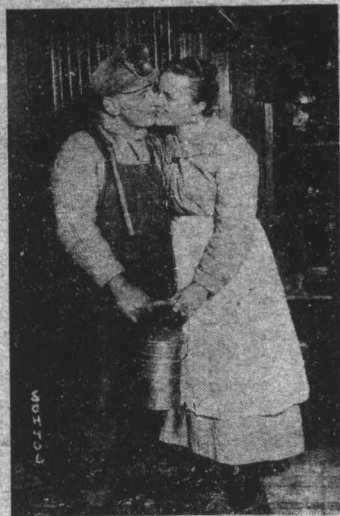
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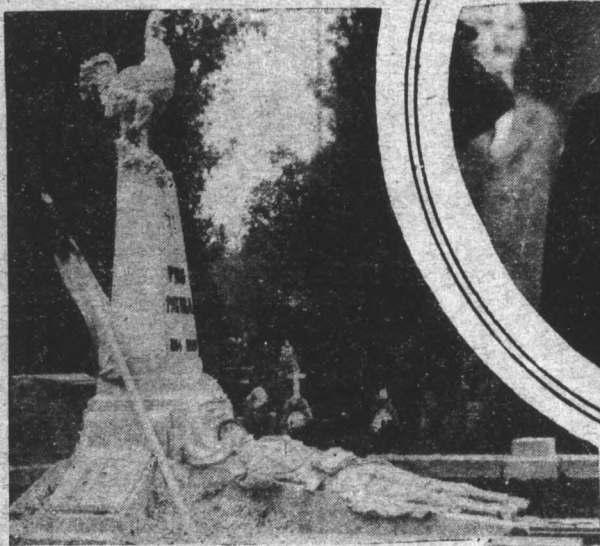
WORLD EVENTS IN PICTURES



Coal Strike Over, Miners Return where Relatives were Killed. Photo at left shows, John Thom kissing his wife goodbye as he starts back to the Coal City mines, where Mrs. Thom's brother was killed less than a year ago, in the same shaft where her husband is now employed. At right is shown Mrs. Russell sending her son, Andy, back with a warning to be careful, for just one year from the day that Andy went back, she lost her husband in the mines.



Rev. Chauncey Goodrich, (the man with white beard near left), and Co-workers who have just finished the task of translating the Bible into Chinese. The work has taken over a quarter of a century.



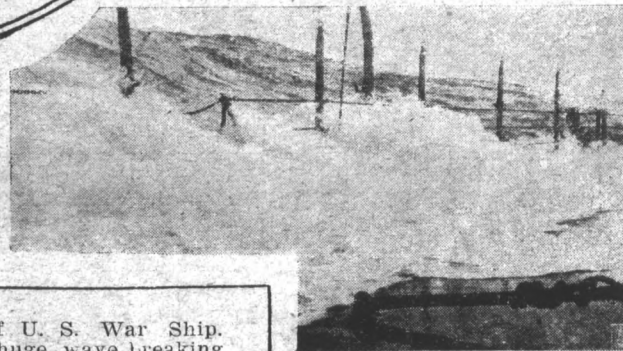
Beautiful Memorial to dead soldiers, erected at Clarens-Montreux in Switzerland, by the citizens of that place.



Lady Astor, who believes the United States will support the League of Nations.



Have an egg for breakfast? Miss Colleen Moore, noted film star, frying an ostrich egg weighing five pounds.



Huge wave breaking over deck of U. S. War Ship. This remarkable picture of a huge wave breaking over the deck of the U. S. S. New Mexico, was taken during a cruise off the coast of California.



Dr. Cecil E. Nixon, San Francisco dentist, and his automaton that puzzles magicians. He calls it "Isis," and claims Isis can do everything but think.



These young women, five native Americans and others born in Poland, but all of Polish ancestors, are on their way to Y. W. C. A. camp in Poland.

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**Buy Direct
Save Your Money**
When you select your seeds from the Isbell catalog, you are buying the best that can be produced. Seeds grown in Michigan—seeds in which hardiness, early maturity, ruggedness, have been bred. Seeds produced under the most severe conditions and in consequence produce big crops where others fail.

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As They Grow Their Fame Grows

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Northern Grown—Hardy, Big Yielding Farm and Garden Seeds

Make Bigger Farm Profits: It means sure crops as certain as it is within the power of man to make them. Every ounce is tested. Many varieties are universally famous. Used the country over by the most successful farmers and gardeners. Over 41 years' experience, development and growing insure the sterling qualities of all Isbell seeds.

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Corn Barley Oats Alfalfa Clover Timothy

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Kansas City, Mo. Chattanooga, Tenn.



Phil's Lion

By Ladd Plumley

PHIL'S father has a farm in Michigan near the Michigan & Western Railroad, and close to the railroad track Phil has a chicken run. He is an enterprising fellow, seventeen years of age, and it can be mentioned, is stocky, and solidly-built, and has developed his muscles so that he has taken several prizes for athletic work in his school. He sells his poultry and eggs in a town at a little distance, and is saving the money for a course at M. A. C., which he proposes to enter just as soon as he has finished his course in high-school.

The chicken-run is far from the farm house, so far, indeed, that one evening, when Phil was studying his lessons for the next day, the sounds of the squawking of his chickens came but faintly into the room. But when he opened the kitchen door, he heard plainly a great commotion at the chicken yard over toward the railroad track. He lighted a lantern, and telling his mother that a fox was likely making a killing, hastened across the meadows. He has lost not a few fowls by foxes, and with an attack of a fox in mind, he stealthily approached where the fowls were making a great outcry.

Holding the lantern before him, he threw open the gate of the yard and entered. "That isn't a fox!" he exclaimed, as a far larger animal than a fox slipped into the shadows of the chicken house. And, at first, he thought the creature was a neighbor's bird dog, which sometimes chased his hens; but it seemed strange how a dog could have gained an entrance.

Phil swung his lantern so that the beams encircled the space before him, and as he did so his heart seemed to pound into his throat. It was not a dog which crouched on the ground within a few yards, gazing toward him with angry eyes, which gleamed red in the lantern light, meantime lashing its tail from side to side.

To behold a lion in a chicken yard was enough to make any one frenzied with fear, and there could be no question but that the brute directly in front of Phil was a lion. For several moments Phil's nerves went rigid with terror, and he found it impossible to change his position. Then his quick boy wits came to his rescue. Just as the lion was about to make it leap, Phil lifted the lantern and threw it with all his strength, directly into the beast's face, at the same moment leaping to one side, thus gaining the open door of the chicken house. Instantly he yanked the door shut, securing it inside with its hook.

The chicken house is a stout structure, which was designed as a small cattle barn, and which has been changed into a snug place for fowls. As the winters are severe in Michigan, an extra siding of one-inch hemlock boards has been added. There was, therefore, little danger that the lion could break into the building, but for a few moments Phil gasped with the fright of his narrow escape, as he listened to the growls of the lion, which remained just outside the door.

Except at a circus or a zoo, lions, of course, are unknown in the United States, and Phil knew that the lion must have escaped from confinement, and, as the yard is directly above the railroad cut, it seemed equally clear that the lion had escaped from a circus train, or, possibly, from a freight car, while being transported to a zoo.

Presently Phil's nerves became less shaky, and although he still heard the lion growling outside the door, there

had been no attempt to break into the building. And a few moments later the lion turned its attention to the chickens in the yard, evidently catching one which it devoured.

"I don't propose to stay here all night," whispered Phil. "The lion must be a circus brute, but if it should take the notion to visit our cattle barn it wouldn't do a thing to our calves!"

Another thought immediately came. Before long his father and mother would wonder why he did not return, and his father would probably come after him. If his father did, there was the certainty that he would be attacked by the lion.

"It's up to me!" whispered Phil. "I have got to do something. And if I could get the lion to come in here, and I was outside, I could close and padlock the door."

There are several small windows on one side of the building, and the windows are high up and just under the roof. Phil whispered again, "In here there are some of my setting hens. I'll pull them out of their nests, so they'll make a lot of cackling and attract the notice of the lion. Then I'll push the door open and shin up on the poles of the chicken roosts. I've often climbed to one of the windows, and thanks to my practice in the school gym I can make the climb pretty quickly. Mighty risky, of course, but father may be here at any time now and I can't let him run chances with the brute."

Phil is a nerry chap, and without waiting for the thought of the risk he was assuming to weaken his determination to protect his father, he routed out the setting hens, which immediately began a loud cackling. Then, while the hens continued their shrill complaints, Phil snapped out the hook from its staple and threw the door open.

The night was clear, and sufficient light came to Phil's eyes, now accustomed to the blackness in the building, so that he could see the poles of the chicken roosts. But he had not supposed the lion would so quickly make an entrance; and barely was he a few feet from the floor, when the lion, growling loudly, leaped within. Phil, his nerves like taut wire, scrambled to the higher poles, and he was not a fraction of a second too quick. For the lion, furious at the escape of its enemy, made a mighty spring, crashing against the side of the building and breaking the poles, smashing many to the floor. But Phil had grabbed the sill of one of the windows, and as he hung there desperately, the lion made another furious leap, almost ripping away one of Phil's shoes from his foot. Afterward, Phil found several slits in the leather, where the claws of one of the lion's forefeet had cut the shoe. His teeth fairly chattering now, Phil drew himself up to the safety of the window ledge.

The window was barely large enough for him to pull himself through, but just as he managed this, and rested for a moment on the ledge he saw a swinging lantern above the path that led to the yard, and knew his father was coming. For fear that a cry would cause the lion to leave the building and make an attack on his father, Phil dared not risk a warning from the window. Silently he lowered himself from the ledge, then he dropped to the ground, landing lightly on his feet. Without waiting a second he slipped quietly but swiftly around the building, and gaining the door he quickly pushed it shut; and as quickly slipped the padlock through its ring. He had

barely done this when his father called, "Phil, what's the matter?"

Phil leaped to his father's side. "A lion!" he gasped. "Padlocked in the chicken house! Listen!"

The lion had already turned its attention to the hens, and although some escaped through the runway, which was near the door, the brute had caught one of the others. And during the following ten minutes the lion devoured several more of the hens.

"Lion!" exclaimed Phil's father, after he had listened to the confusion inside the chicken house and Phil had gasped out his excited tale. "It doesn't seem possible, but those growls in there are certainly not coming from any ordinary beast!"

"It is a lion and a mighty big lion!" gasped Phil. "And, father, it's likely a circus lion, and probably escaped from a train on the railroad. And I've been thinking that the lion is used to being shut up in a cage, so perhaps after it's eaten all of my poor hens it can catch it won't try to break out. The building is pretty strong, anyhow."

"Run to the house and get my rifle," exclaimed Phil's father. "Tell your mother to use the 'phone and rout out all the neighbors. We've got to watch here. If the brute broke out, there'd be every kind of peril, and if it got into our cattle barn it would do a lot of killing of our stock."

Phil raced to the farmhouse, and after giving his father's message to his mother, returned on the run with the rifle. And, very soon, gathered by the news of a lion in a chicken house, a number of the neighbors hastened to the building, and continued all night to guard the imprisoned lion. But after its hearty chicken feast, it made no effort to break out.

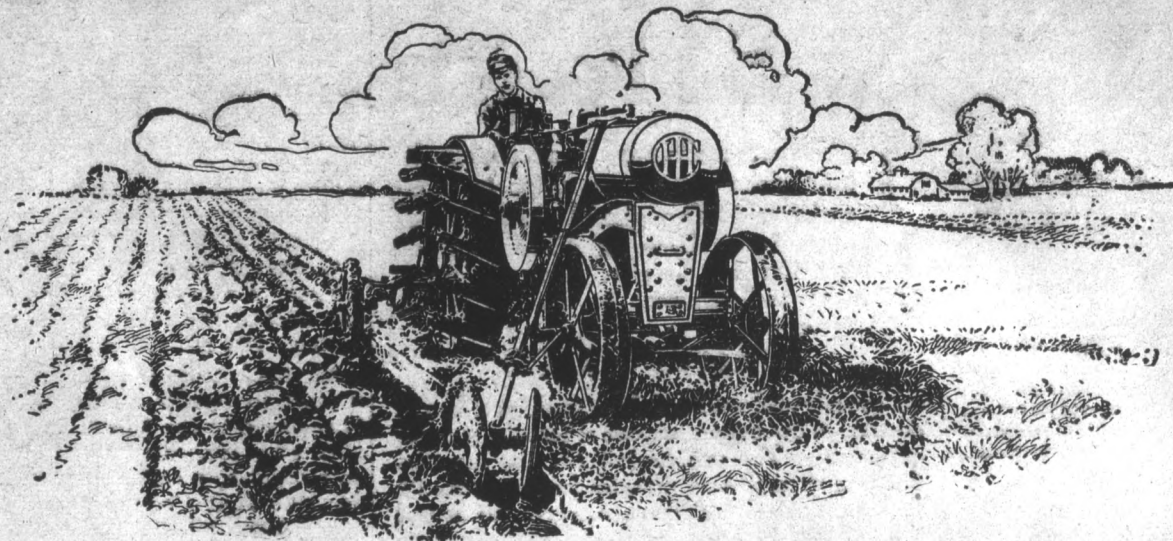
Early next morning, a circus manager appeared at the farm, with several of his animal keepers.

"About dusk last night," explained the manager, "our circus train was stalled by a freight in the cut, right below this farm. One of our animal feeders is a careless fellow, and it is evident that after he fed the lion its supper he did not properly secure the door of the cage, and the cage was on a flat car. Until we were more than fifty miles down the line we didn't know of the escape of the lion; then we stalled our train and began telephoning up the line. But, at first, we could get no information of the lion's whereabouts. Finally came a message that it was here at this farm in a chicken house, and we engaged an auto, reaching this place as soon as possible."

"Napoleon, as he is named, is an ugly old brute," went on the manager. "We can do nothing until the men bring his cage. It's coming on an auto truck. I shall, of course, pay for all the damage Napoleon has done, and in addition I shall give this plucky fellow here fifty dollars. There are mighty few men, let alone boys, who would have shown so much sense—and, yes, sand!"

Although Napoleon was said to be an ugly creature, he had greatly enjoyed his feast of chickens; and when the cage was trundled into the chicken yard, and the trainers had thrown the door open, there proved to be little difficulty in urging the lion to come out of the building and enter his cage.

Phil was paid for the chickens the lion devoured, and in addition received the fifty dollars, which sum he added to his fund for a course in the agricultural college. In telling the story, Phil calls the lion "my lion," and explains that for one night he considers that he actually owned a lion, by "right of capture," as he puts it.



The Sensible Leader of the 1920 Tractor Field

NOWADAYS the chug-chug of the farm tractor is heard in every corner of the land. Tractors are at work in the fields of many thousands of farms and if you look them over you will find them a mixed lot.

Tractor farming is still in its youth. Novelty is still in the surge toward power farming.

The impractical theorists are still in the ring, limping but not out of the running. Adventurers who swarmed into what they termed the "game" are still "playing." The hazards facing the farmer in search of reliable power are many.

In all this turmoil, one tractor like a steady star has lighted the way. That tractor bears the trusted name—**Titan 10-20**. It has led because it is the product of practical builders of good farm machines; because it is backed by many years of experience and unquestioned reputation.

Today **Titan 10-20** is the standard-setter among all tractors. During the past year it has been the topic of conversation on the tongues of farmers and tractor makers the nation over.

Selling at the popular low price—**\$1000 cash f. o. b. factory**—**Titan 10-20** faced a sensational demand. A few months ago this desire for Titan ownership had flooded the factory with thousands of orders which could not be filled at once, though a new Titan was being turned out every few minutes.

Every effort is being directed to greater production and to continued Titan 10-20 pre-eminence during 1920. In view of manufacturing difficulties however, this is earnest advice to the intending purchaser:

Orders for Titan 10-20—and also for International 15-30 and International 8-16—must be placed far in advance. No other course will assure delivery.

INTERNATIONAL HARVESTER COMPANY

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KEROSENE TRACTORS

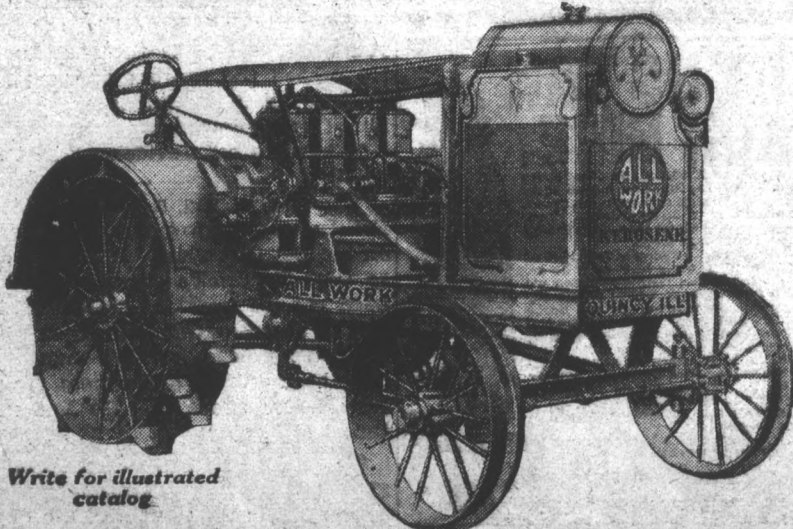
Wonderful Power Built Into This Light Tractor

For All Kinds of Field and Belt Work

HERE is a lightweight tractor with a big four-cylinder 5x6 motor which gives you a substantial margin of reserve power for pulling three plows easily through the toughest kind of soil. The *Allwork* also furnishes sufficient belt power for a 24-in. separator, 16-in. ensilage cutter, etc.

Guaranteed to Burn Kerosene Successfully

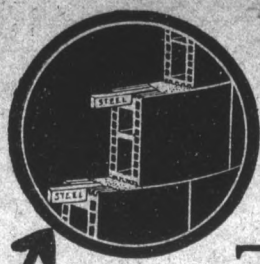
This reliable tractor is a safe investment which will pay you big returns, and its excellent past performance insures satisfactory service and long life. During the six years the *Allwork* Tractor has been in actual use on thousands of farms in all parts of the country, it has retained the same sturdy design, while numerous improvements and refinements have been added from time to time, most of them being prompted by the farmers using this tractor.



Write for illustrated catalog

ELECTRIC WHEEL COMPANY, Box 35A, Quincy, Illinois

Please Mention The Michigan Farmer When Writing to Advertisers



Section of Natco Silo wall showing still air spaces and steel reinforcing

Keeping Silage

THE perfect silo must be absolutely air-tight, since air causes silage to mold and rot. The glazed tile walls and tight-fitting cypress doors of Natco Silos seal the silage like fruit in glass jars. It comes out sweet and succulent to the last forkful.

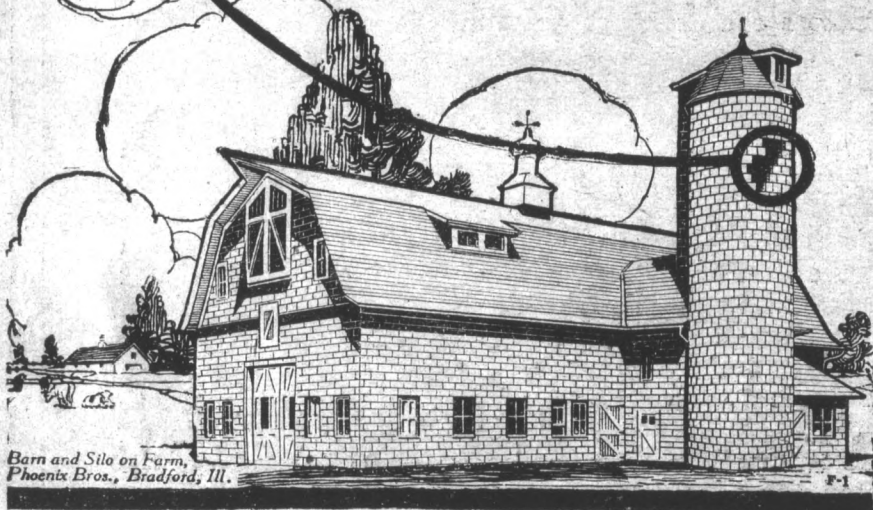
Natco Silos

are strongly reinforced with high grade steel bands, doubled in the bottom courses where the pressure is greatest. The double-shell tile also increases the wall strength and provides for secure mortar joints. The still air spaces conserve the natural heat of the silage—resist frost. Heavy galvanizing protects all exposed ironwork.

Ask your building supply dealer for prices on Natco Silos. Write for FREE book, "Natco on the Farm."

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23 Factories assure a wide and economical distribution



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1093 Q. Street Lincoln, Nebraska

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

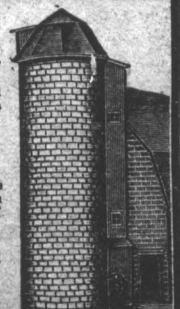
Made of famous Brazil Vitified Fire Clay—ONE ton costs as much as FIVE tons of shale.

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

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Crooked Trails and Straight

By Wm. MacLeod Raine

The girl's hand went to her heart. no other way could Luck Cullison have Faith in her father was a rock not to be washed away by any amount of evidence. What made her wince was the amount of circumstantial testimony falling into place so inexorably against him.

"Is that all?" she asked despairingly.

"I wish it were, Miss Cullison. But it's not. A man came round the corner and shot at the robber as he was escaping. His hat fell off. Here it is."

As Kate took the hat something seemed to tighten around her heart. It belonged to her father. His personality was stamped all over it. She even recognized a coffee stain on the under side of the brim. There was no need of the initials L. C. to tell her whose it had been. A wave of despair swept over her. Again she was on the verge of breaking down, but controlled herself as with a tight curb.

Bolt's voice went on. "Next day your father disappeared, Miss Cullison. He was here in town all morning. His friends knew that suspicion was fastening on him. The inference is that he daren't wait to have the truth come out. Mind, I don't say he's guilty. But it looks that way. Now, that's my case. If you were sheriff in my place, what would you do?"

Her answer flashed back instantly. "If I knew Luck Cullison, I would be sure there was a mistake somewhere, and I would look for foul play. I would believe anything except that he was guilty—anything in the world. You know he has enemies."

The sheriff liked her spirited defense no less because he could not agree with her. "Yes, I know that. The trouble is that these incriminating facts don't come in the main from his enemies."

"You say the robber had on his hat, and that somebody shot at him. Who ever it was must know the man wasn't father."

Gently Bolt took this last prop from her hope. "He is almost sure the man was your father."

A spark of steel came into her dark eyes. "Who is the man?"

"His name is Fendrick."

"Cass Fendrick?" She whipped the word at him, leaning forward in her chair rigidly with her hands clenched on the arms of it. One could have guessed that the sound of the name had unleashed a dormant ferocity in her.

"Yes. I know he and your father aren't friends. They have had some trouble. For that reason he was very reluctant to give your father's name."

The girl flamed. "Reluctant! Don't you believe it? He hates father like poison." A flash of inspiration came to her. She rose, slim and tall and purposeful. "Cass Fendrick is the man you want, and he is the man I want. He robbed the express company, and he has killed my father or abducted him. I know now. Arrest him tonight."

"I have to have evidence," Bolt said quietly.

"I can give you a motive. Listen. Father expected to prove up yesterday on his Del Oro claim. If he had done so Cass Fendrick's sheep would have been cut off from the water. Father had to be got out of the way not later than Wednesday, or that man would have been put out of business. He was very bitter about it. He had made threats."

"It would take more than threats to get rid of the best fighting man in Arizona, right in the middle of the day, in the heart of the town, without a soul knowing it." The officer added with a smile: "I'd hate to undertake the contract, give me all the help I wanted."

"He was trapped somehow, sure," Curly cut in. For he was sure that in

"If you'll only tell me how, Fendrick," Bolt returned.

"I don't know how, but we'll find out."

"I hope so."

Kate felt his doubt, and it was like a spark to powder.

"Fendrick is your friend. You were elected by his influence. Perhaps you want to prove that Father did this."

"The people elected me, Miss Cullison," answered Bolt, with grave reproach. "I haven't any friends or any enemies when it comes to doing what I've sworn to do."

"Then you ought to know Father couldn't have done this. There is such a thing as character. Luck Cullison simply couldn't be a thief."

Mackenzie's faith had been greatly strengthened by the insistent loyalty of the girl. "That's right, Nick. Let me tell you something else. Fendrick knew Luck was going to prove up on Thursday. He heard him tell us at the Round-Up Club Tuesday morning."

The sheriff summed up. "You've proved Cass had interests that would be helped if Mr. Cullison were removed. But you haven't shaken the evidence against Luck."

"We've proved Cass Fendrick had to get father out of the way on the very day he disappeared. One day later would have been too late. We've shown his enmity. Any evidence that rests on his word is no good. The truth isn't in the man."

"Maybe not, but he didn't make this evidence."

Kate had another inspirational flash. "He did—some of it. Somehow he got hold of father's hat, and he manufactured a story about shooting it from the robber's head. But to make his story stick he must admit he was on the ground at the time of the hold-up. So he must have known the robbery was going to take place. It's as plain as old Run-A-Mile's wart that he knew of it because he planned it himself."

Bolt's shrewd eyes narrowed to a smile. "You prove to me that Cass had your father's hat before the hold-up, and I'll take some stock in the story."

"And in the meantime," suggested Curly.

"I'll keep right on looking for Luck Cullison, but I'll keep an eye on Cass Fendrick, too."

Kate took up the challenge confidently. "I'll prove he had the hat—at least I'll try to pretty hard. It's the truth, and it must come out somehow."

After he had left her at the hotel, Curly walked the streets with a sharp excitement tingling his blood. He had lived his life among men, and he knew little about women and their ways. But his imagination seized avidly upon this slim, dark girl with the fine eyes that could be both tender and ferocious, with the look of combined delicacy and strength in every line of her.

"Ain't she the gamest little thorough-



bred ever?" he chuckled to himself. "Stands the acid every crack. Think of her standing pat so game—just like she did for me that night at the ranch. She's the best argument Luck has got."

CHAPTER VI.

Two Hats on a Rack.

ONE casual remark of Mackenzie had given Kate a clew. Even before she had explained it, Curly caught the point and began to dig for the truth. For though he was almost a boy, the others leaned on him with the expectation that in the absence of Maloney he would take the lead. Before they separated for the night he made Mackenzie go over every detail he could remember of the meeting between Cullison and Fendrick at the Round-Up Club. This was the last time the two men had been seen together in public, and he felt it important that he should know just what had taken place.

In the morning he and Kate had a talk with his uncle on the same subject. Not content with this, he made the whole party adjourn to the club rooms so that he might see exactly where Luck had sat and the different places the sheepman had stood from the time he entered until the poker players left.

Together Billie Mackenzie and Alex Flandrau dramatized the scene for the young people. Mac personated the sheepman, came into the room, hung up his hat, lounged over to the poker table, said his little piece as well as he could remember it, and passed into the next room. Flandrau, Senior, taking the role of Cullison, presently got up, lifted his hat from the rack, and went to the door.

With excitement trembling in her voice, the girl asked an eager question. "Were their hats side by side like that on adjoining pegs?"

Billie turned a puzzled face to his friend. "How about that, Alec?"

"That's how I remember it."

"Same here, my notion is."

"Both gray hats?" Curly cut in.

His uncle looked helplessly at the other man. "Can't be sure of that. Luck's was gray all right."

"Cass wore a gray hat, too, seems to me," Mackenzie contributed, scratching his gray hair.

"Did father hesitate at all about which one to take?"

"No-o. I don't reckon he did. He had turned to ask me if I was coming—wasn't looking at the hats at all."

Curly looked at Kate and nodded. "I reckon we know how Cass got Mr. Cullison's hat. It was left on the rack." "How do you mean," his uncle asked.

"Don't you see?" the girl explained, her eyes shining with excitement. "Father took the wrong hat. You know how absent-minded he is sometimes."

Mackenzie slapped his knee. "I'll bet a stack of blues you've guessed it."

"There's a way to make sure," Curly said.

"I don't get you."

"Fendrick couldn't wear Mr. Cullison's hat around without the risk of someone remembering it later. What would he do then?"

Kate beamed. "Buy another at the nearest store."

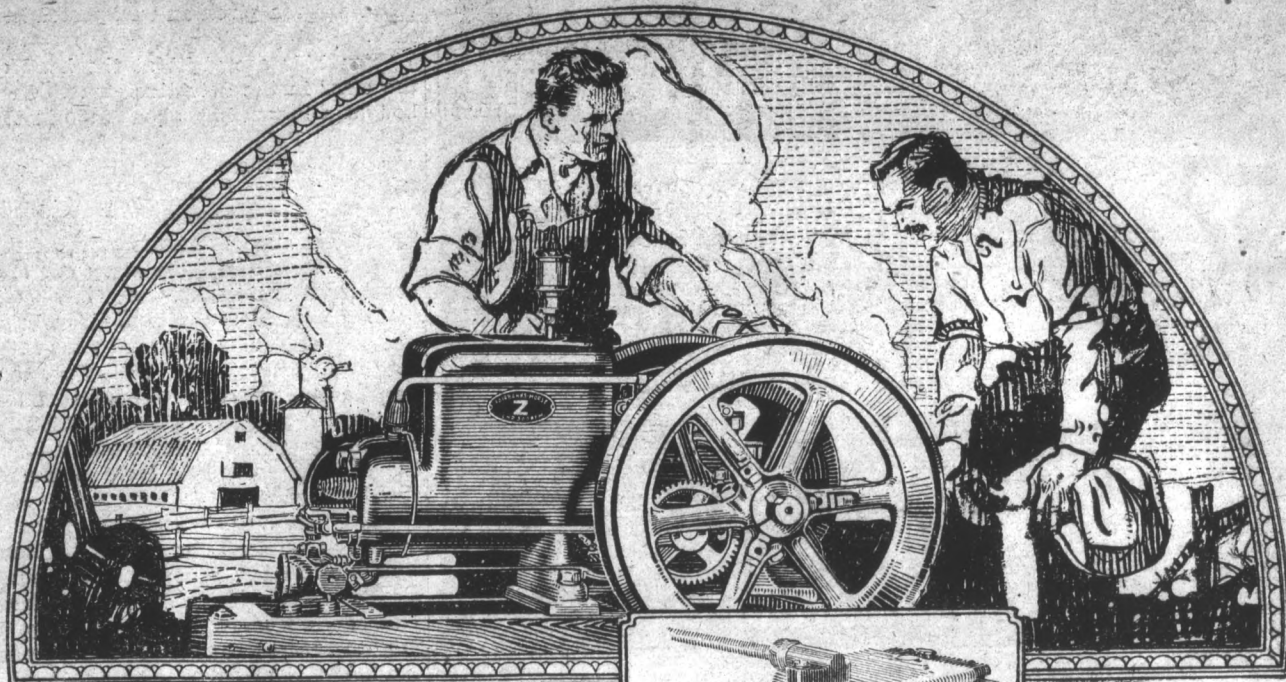
"That would be my guess. And the nearest store is the New York Emporium. We've got to find out whether he did buy one there on Tuesday some time after nine o'clock in the morning."

The girl's eyes were sparkling. She bustled with businesslike energy. "I'll go and ask right away."

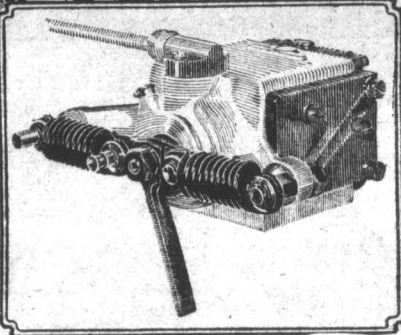
"Don't you think we'd better let Uncle Alec find out? He's not so likely to stir up curiosity," Curly suggested.

"That's right. Let me earn my board and keep," the owner of the Map of Texas volunteered.

Within a quarter of an hour Alec Flandrau joined the others at the hotel. He was beaming like a schoolboy



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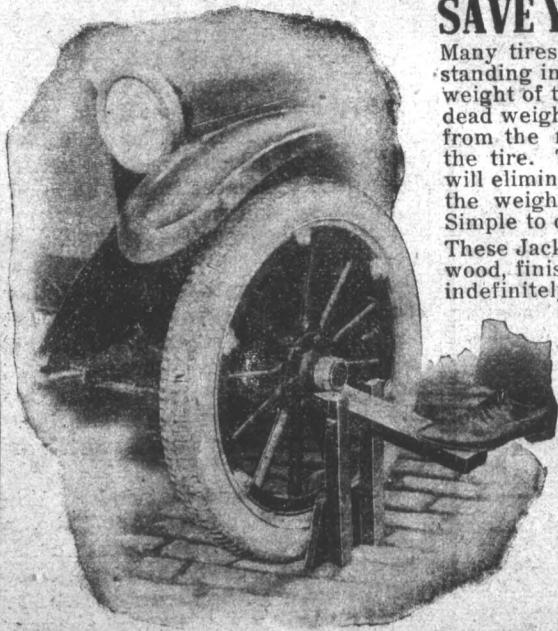


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"You kids are right at the head of the class in the detective game. Cass bought a brown hat, about 9:30 in the morning. Paid five dollars for it. He wouldn't let them deliver the old one but took it with him in a paper sack."

With her lieutenants flanking her Kate went straight to the office of the sheriff. Bolt heard the story out and considered it thoughtfully.

"You win, Miss Cullison. You have not proved Fendrick caused your father's disappearance by foul play, and you haven't proved he committed the robbery. Point of fact I don't think he did either one. But it certainly looks like he may possibly have manufactured evidence."

Curly snorted scornfully. "You're letting your friend down easy, Mr. Bolt. By his own story he was on the ground a minute after the robbery took place. How do we know he wasn't there a minute before? For if he didn't know the hold-up was going to occur why did he bring Mr. Cullison's hat with him punctured so neatly with bullet holes?"

"I'll bet a thousand dollars he is at the bottom of this whole thing," Mackenzie added angrily.

The sheriff flushed. "You gentlemen are entitled to your opinions just as I'm entitled to mine. You haven't even proved he took Mr. Cullison's hat; you have merely showed he may have done it."

"We've given you a motive and some evidence. How much more do you want?" Curly demanded.

"Hold your hawes a while, Flandrau, and look at this thing reasonable. You're all prejudiced for Cullison and against Fendrick. Talk about evidence! There's ten times as much against your friend as there is against Cass."

"Then you'll not arrest Fendrick?"

"When you give me good reason for it," Bolt returned doggedly.

"That's all right, Mr. Sheriff. Now we know where you stand," Flandrau, Senior, said stiffly.

The harassed official mopped his face with a bandanna. "Sho! You all make me fired. I'm not Fendrick's friend while I'm in this office any more than I'm Luck's. But I've got to use my judgment, ain't I?"

The four adjourned to meet at the Del Mar for a discussion of ways and means.

"We'll keep a watch on Fendrick—see where he goes, who he talks to, what he does. Maybe he'll make a break and give himself away," Curly said hopefully.

"But my father—we must rescue him first."

"As soon as we find where he is. Me, I'm right hopeful all's well with him. Killing him wouldn't help Cass any, because you and Sam would prove up on the claim. But if he could hold your father a prisoner and get him to sign a relinquishment to him he would be in a fine position."

"But father wouldn't sign. He ought to know that."

"No, not through fear your father wouldn't. But if Fendrick could get him some way he might put down his John Hancock. With this trouble of Sam still unsettled and the Tin Cup hold-up to be pulled off he might sign."

"If we could only have Fendrick arrested—"

"What good would that do? If he's guilty he wouldn't talk. And if he is holding your father somewhere in the hills it would only be serving notice that we were getting warm. No, I'm for a still hunt. Let Cass ride around and meet his partners in this deal. We will keep an eye on him all right."

"Maybe you're right," Kate admitted with a sigh.

CHAPTER VII.

Anonymous Letters.

SHERIFF BOLT, though a politician, was an honest man. It troubled him that Cullison's friends believed him to be a partisan in a matter of this sort. For which reason he met more than half way Curly's overtures. Young Flandrau was in the office of the sheriff a good deal, because he wanted to be kept informed of any new developments in the W. & S. robbery case.

It was on one of those occasions that Bolt tossed across to him a letter he had just opened.

"I've been getting letters from the village cut-up or from some crank, I don't know which. Here's a sample."

The envelope, addressed evidently in a disguised hand, contained one sheet of paper. Upon this was roughly lettered:

"Play the Jack of Hearts."

Flandrau looked up with a suggestion of eagerness in his eyes.

"What do you reckon it means?" he asked.

"Search me. Like as not it don't mean a thing. The others had just as much sense as that one."

"Let's see the others."

"I chucked them into the waste paper basket. One came by the morning mail yesterday and one by the afternoon. I'm no mind reader, and I've got no time to guess fool puzzles."

Curly observed that the waste paper basket was full. Evidently it had not been emptied for two or three days.

"Mind if I look for the others?" he asked.

Bolt waved permission. "Go to it."

The young man emptied the basket on the floor and went over its contents carefully. He found three communications from the unknown writer. Each of them was written by hand on a sheet of cheap lined paper torn from a scratch pad. He smoothed them out and put them side by side on the table. This was what he read:

WHEN IN DOUBT PLAY TRUMPS.

HEARTS ARE TRUMPS.

PLAY TRUMPS NOW.

There was only the one line to each message, and all of them were plainly in the same hand. He could make out only one thing, that someone was trying to give the sheriff information in a guarded way.

He was still puzzling over the thing when a boy came with a special delivery letter for the sheriff. Bolt glanced at it and handed the note to Curly.

"Another billy doo from my anxious friend."

This time the sender had been in too much of a hurry to print the words. They were written in a stiff hand by some uneducated person.

The Jack of Trumps, today

"Mind if I keep these?" Curly asked.

"Take 'em along."

Flandrau walked out of the grandstand at the fair grounds and sat down by himself there to think out what connection, if any, these singular warnings might have with the vanishing of Cullison or the robbery of the W. & S. He wasted three precious hours without any result. Dusk was falling before he returned.

"Guess I'll take them to my little partner and give her a whack at the puzzle," he decided.

Curly strolled back to town along El Molino street and down Main. He had just crossed the old Spanish plaza when his absorbed gaze fell on a sign that brought him up short. In front of a cigar store stretched across the sidewalk a painted picture of a jack of hearts. The same name was on the window.

Fifty yards behind him was the Silver Dollar saloon, where Luck Cullison



had last been seen on his way to the Del Mar one hundred and fifty yards in front of him. Somewhere within that distance of two hundred yards the owner of the Circle C had vanished from the sight of men. The evidence showed he had not reached the hotel, for a cattle buyer had been waiting there to talk with him. His testimony, and that of the clerk, was positive.

Could this little store, the Jack of Hearts, be the central point of the mystery? In his search for information Curly had already been in it, had bought a cigar, and had stopped to talk with Mrs. Wylie, the proprietor. She was a washed-out little woman who had once been pretty. Habitually she wore a depressed, hopeless look, the air of pathetic timidity that comes to some women who have found life too hard for them. It had been easy to alarm her. His first question had evidently set her heart a-flutter, but Flandrau had reassured her cheerfully. She had protested with absurd earnestness that she had seen nothing of Mr. Cullison. A single glance had been enough to dismiss her from any suspicion.

Now Curly stepped in a second time. The frightened gaze of Mrs. Wylie fastened upon him instantly. He observed that her hand moved instinctively to her heart. Beyond question she was in fear. A flash of light clarified his mind. She was a conspirator, but an unwilling one. Possibly she might be the author of the anonymous warnings sent Bolt.

The young vaquero subscribed for a magazine and paid her the money. Tremblingly she filled out the receipt. He glanced at the slip and handed it back.

"Just write below the signature 'of the Jack of Hearts,' so that I'll remember where I paid the money if the magazine doesn't come," he suggested.

She did so, and Curly put the receipt in his pocket carelessly. He sauntered leisurely to the hotel, but as soon as he could get into a telephone booth his listlessness vanished. Maloney had returned to town and he telephoned him to get Mackenzie at once and watch the Jack of Hearts in front and rear. Before he left the booth Curly had compared the writing of Mrs. Wylie with that on the sheet that had come by special delivery. The loop of the J's, the shape of the K's, the formation of the capital H in both cases were alike. So too was the general lack of character common to both, the peculiar hesitating drag of the letters. Beyond question the same person had written both.

Certainly Mrs. Wylie was not warning the sheriff against herself. Then against whom? He must know her antecedents, and at once. There was no time for him to mope them out himself. Calling up a local detective agency, he asked the manager to let him know within an hour or two all that could be found out about the woman without alarming her.

"Wait a moment. I think we have her on file. Hold the 'phone." The detective presently returned. "Yes. We can give you the facts. Will you come to the office for them?"

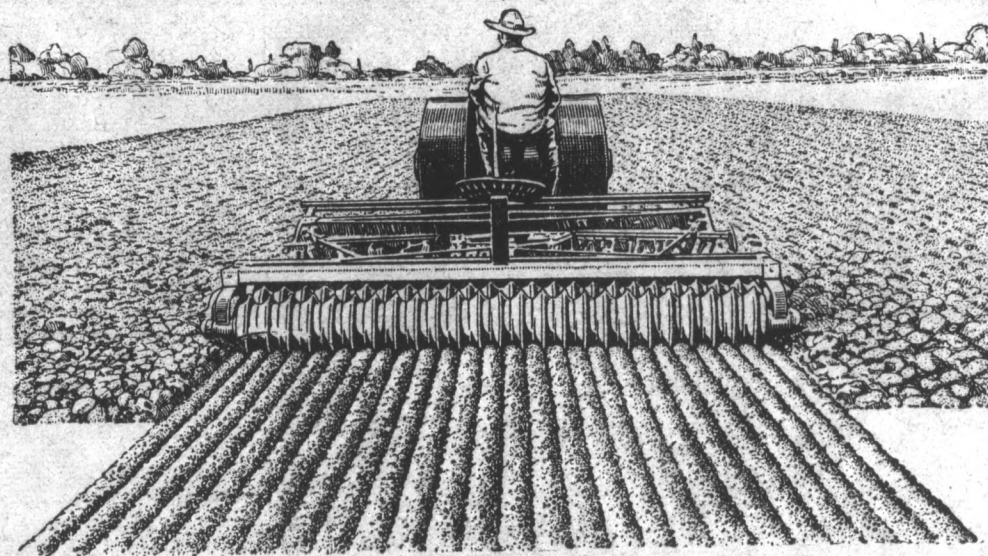
Fifteen minutes later Curly knew that Mrs. Wylie was the wife of Lute Blackwell. She had come to Saguache from the mountains several years before. Soon after there had been an inconspicuous notice in the Sentinel to the effect that Cora Blackwell was suing for divorce from Lute Blackwell, then a prisoner in the prison at Yuma. Another news item followed a week later stating that the divorce had been granted, together with the right to use her maiden name. Unobtrusively she had started her little store. Her former husband, paroled from the penitentiary a few months before the rustling episode, had at intervals made of her shop a loafing place since that time.

(Continued next week.)

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Woman's Interests

Could We Stop Pretending?

THERE isn't anything at which largely on the woman and the "front" the average human being is better than making good resolutions. Just now being the season for this pleasant habit it might not be amiss to suggest one for 1920.

Let us, one and all, resolve to be ourselves for at least one year.

Most of us are busily engaged the greater part of the time in pretending. If we aren't pretending to our friends and family, we are trying to fool ourselves, sometimes from a really good motive, but all too often for ulterior purposes. This idiosyncrasy of mankind is aptly analyzed by Dr. C. V. Paterno in a recent issue of "System." He says:

"The great American average public buys, dresses and lives with the idea above all in mind of appearing to have more money than it actually has. The only two classes which are not bothered in this way are those who are so poor that it is useless to try to conceal poverty, and those who are so rich they do not have to put a price mark on themselves.

"The family that acknowledges itself poor buys the cheapest thing it can get. This class is comparatively small. The next class buys that which looks as though it cost more than it actually does cost—they buy for 'front.' The very wealthy people insist on getting their money's worth."

This shrewd estimate of men and women has been made a working principle by the man who wrote those lines and, incidentally, has netted him a fortune. How he did it has nothing to do with the case. It is the fact we are after. That the most of us buy for "front" is so well known a business axiom that it has more than a little to do with the present high price of everything under the sun.

Take the mere matter of women's shoes, for one thing. You hear women say they can't get a shoe fit to wear for less than \$12, \$15 or \$20, depending

she wants to make. As a matter of fact, if the woman was willing to wear a shoe which didn't look as if it cost more than it really did she could get a good serviceable shoe for six or seven dollars. The same principle runs through everything women wear. Why should hats be so high this season? Simply because the cheaper hats were so palpably cheap looking that women will not wear them. They want "to make an appearance," so they paid the exorbitant prices demanded, as manufacturers shrewdly forecast they would.

And when it comes to buying food, how many have the courage to go in and boldly order cheap cuts of meat, and cereals and other things in bulk instead of in the highly advertised packages? How many times has the supercilious look on the face of the clerk, when you timidly suggested the cheaper grade, caused you to hastily change your mind and order the more expensive one, though you knew you couldn't afford it?

Seems to me that resolving to be ourselves would be about the best thing we could set our minds on this New Year's day. Certainly it would be far better for us. It would eliminate all the nervous chills we now suffer for fear someone will really see through our shams. And think of the load of worry lifted if we should stop trying to do things beyond our means.

As a business proposition for the keepers of shops it should work out better than our present system. Every year each firm has to write down as dead loss a list of things "charged" and never paid for by folks who thought they had to seem other than what they really were. It's too much to hope that everyone could resolve to be real and live up to the resolution. It takes courage to be "different." But if a few could make up their minds to eliminate sham for at least one year, wouldn't it be a splendid beginning?

DEBORAH.



Books for Children

DEVELOP early a fondness for books in your children. All children love fairy tales, nature stories and poetry. Wise selections of the best of these "time-tested stories" are now published by many publishing houses. Some of the Grimm stories are too gruesome to tell to children. Kipling's "Just So Stories," and poems by Robert Louis Stevenson, Eugene Field, James Whitcomb Riley and Jessie Wilcox Smith are all excellent for children to know.

Six years of age is not too early to begin to build a library for a child, and the books should be in his own room, where they can be easily reached and become constant companions.

Here is a list of books which children under ten will enjoy:

In Story Land, Elizabeth Harrison.
Kindergarten Story Book, Jane Hoxie.
Pinocchio, C. Collodi.
Tale of Peter Rabbit, Beatrix Potter.
Tale of Tom Kitten, Beatrix Potter.
Seem's So, L. J. Bridgman.
Story of Noah's Ark, E. B. Smith.
Pied Piper of Hamelin, Robert Browning.
Little Lame Prince, Dinah M. Mucklock.
Among the Farm-Yard People, Clara D. Pierson.
Among the night People, Clara D. Pierson.

Among the Meadow People, Clara D. Pierson.

Among the Pond People, Clara D. Pierson.

Among the Forest People, Clara D. Pierson.

Poems of Stevenson.

Poems of Field.

Poems of Riley.

Poems of Jessie Wilcox Smith.

The Hollow Tree and Deep Woods Book, Albert Biglow Paine.

The Hollow Tree Snowed in Book, Albert Biglow Paine.

The Book of Clever Beasts, M. Reed.

Two other subjects loom up in my mind for the far-away mother, and they are music and pictures.

The phonograph as an educational factor has tremendous value. Through this means the children can become familiar with all that is best in music, either vocal or instrumental; they can learn not only the music but about the composers, and the great men and women who sing and play various instruments.

A child's taste in pictures can be cultivated by having in his room pictures which are good both as to color and subject. Pictures dealing with nature in any form are always attractive to a child and if they are hung in the room so that the child can easily study them and even handle them if he wants to, this adds much to his enjoyment.

There are many book and picture firms that are only too glad to send catalogues upon request. The mother can obtain anything of this kind she may want by mail, and if, besides a garden and pets, a child can have books, music and pictures, it seems there is real education of the right kind going on.—United States Bureau of Education.

MOLASSES IN PORK CURING.

IF sugar is used for dry-curing it is better to make it into a syrup before using, for salt mixed with sugar will not stick on meat as well as salt mixed with syrup. The use of molasses or commercial syrup does away with this extra work.

The following formulas have been found to give good results:

Sweet Pickle or Brine Cure.—Select pieces of twelve pounds or less. Make a pickle consisting of three and a half pounds of salt, one and three-fourths pounds of syrup or molasses, or, if preferred, one and a quarter pounds of sugar, preferably brown, one ounce of saltpeter; two and a quarter gallons of water.

These amounts are based on fifty pounds of meat. If more or less meat is used, the amounts of the ingredients should be correspondingly increased or decreased, as the case may be. Under no circumstances should the individual piece of meat weigh over twelve pounds.

Place the meat in a stone jar or hardwood barrel, and weight it down with a board and stone. Do not use iron, for it will rust. Pour in just pickle enough to cover the meat. Leave the meat in the pickle for three days to the pound of meat, so that a ten-pound ham would be left in the pickle for thirty days, and a six-pound bacon, eighteen days. After the meat has been in cure a week, take it all out of the jar or barrel, remove the pickle, replace the meat, weight it down, and again pour the same pickle over the meat. Repeat every week.

Dry cure for light or heavy meat.—Mix thoroughly, three and a half pounds of salt, one ounce of saltpeter, one ounce of red pepper, one ounce of black pepper. Add one and a half pounds warm syrup or molasses, and mix until it assumes the appearance of a sawdust. Apply a liberal coating of the mixture to all surfaces of the meat excepting the skin.

The meat should then be placed on a table, clean floor, or in a hardwood barrel, after first sprinkling the surface of the table, floor, or bottom of the barrel with salt. Leave in cure undisturbed until the heaviest piece has been in for a period of one and a half days to the pound. Thus if the heaviest ham weighs twenty pounds, leave all the meat in cure thirty days. Meats cured in sweet pickle or brine should be consumed within ninety days from date of cure. Meats cured with dry cure may be consumed immediately upon removal from cure, but the flavor improves with age, and the meat is better sixty days after curing. Dry-cured hams have been known to keep three or four years.

INSECTS ON HOUSE PLANTS.

BY AGNES HILCO.

PLANTS grown in the house in winter do not have the vigor they have in the summer or as the days get longer in the early spring, and they are much more subject to insect attacks, or rather they are much easier injured by them. Insects are always present in most collections and it is the constant attention given their plants by some growers that keeps them healthy, rather than the lack of insects. They keep the insects reduced to the minimum by preventive measures.

Hot soapsuds is the handiest insecticide which most of us have to work with, and if we will give the plants that permit it a good washing every wash day we will not be bothered much by any of the common pests. As this is a busy day many will prefer to make a suds just for the purpose, and for such I would suggest the use of whale oil soap, or fir tree oil soap, as they have special value as insecticides. Fir tree oil has the same qualities, and is somewhat easier to handle than the soap, as it mixes with water by the simple process of pouring it into the vessel. These will rid plants of aphids, red spider, scale, and any other insect that will be likely to attack house plants. For scale or mealy bug some extra care is needed in applying it to make it penetrate the covering that protects the real insects. A stiff brush works well here.

Begonias are not much bothered by insects and in a dry atmosphere they will not stand having their leaves wet. For keeping them clean a soft camel hair brush is best. Mealy bug does attack them, and then they must be treated with the fir tree oil suds, but do it carefully, and then rinse the leaves with clear water and be careful to get all surplus water sponged off. If they are dried in a still, cool place it will be best for them. I have washed my begonias over and over without trouble, but I have seen and had the leaves badly burned when not careful enough about it.

When scale gets a start on ferns or palms it is hard to get rid of, especially on the ferns, as every scale must be dislodged for positive effects. Still keeping it up even without much brushing will finally get them all. Some may be secure each time, but at some time they will be so that the oil will penetrate to them.

Red spider is probably the most destructive house insect, as it is so minute it is never noticed until the plants are so badly infested that they are almost past saving. When the leaves begin to look rusty and yellow, and to drop, then they have about finished the plant. Because of this it is best to give the plants a thorough cleaning every week or two.

Turn fruit which has just begun to ferment, into a saucepan, boil for several minutes with half a teaspoonful of soda, then add spices, sugar and a little vinegar, and boil again until it thickens. This makes a nice relish to accompany meat.—M. A. P.

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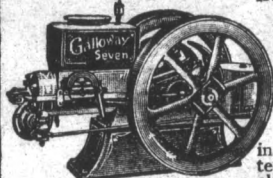
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Our Boys' and Girls' Page

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The magnitude to which this work has grown is indicated by the fact that in 1918 more than two million boys and girls were enrolled as club members, the great majority of them in rural districts, but an appreciable number in the gardening clubs of cities and towns. This great young army is regarded as one of the surest guarantees that American agriculture, which needed only the war to prove its power and resources, will continue to advance and develop as rapidly as American commerce and manufacturing.

The club work demonstrates how to make farming and home-making a practical business, and shows rural young people why they should decline to add themselves to the crowded thousands of the cities.

But the club work is just as important for city boys and girls as it is for those in the country. The rural young people need the club group work because of their isolation from social life and their lack of community leadership; the city boys and girls need it in order that their gangs and cliques with oftentimes detrimental atmospheres, may be transformed to associations with constructive, creative, and helpful programs through which they may become familiar with America's greatest industry, agriculture, and the fundamental principles of home-making. Club work does not recognize distinctions in the service of boys and girls. Members of both rural and city groups attend the same club meetings and work together on a common program of work for the improvement of agriculture and home life.



Bumper the White Rabbit Plays King

By George Ethelbert Walsh

STORY VII.

The Test of Wits.

OF course, Spotted Tail was glad that he had been relieved of making the terrible test of courage in crossing Swinging Bridge, but, at the same time, he was chagrined that Bumper had come out of the contest with greater honors than ever. It seemed as if in some way the white rabbit managed to make good by successfully crawling out of every corner in which Spotted Tail put him.

"It's just luck—blind luck," growled Spotted Tail to himself. And so it seemed to him, for he was unwilling to face the truth, and accept it. It is always easier to blame luck for our failures, and Spotted Rabbit was like a good many boys and girls in this respect.

Instead of feeling any gratitude to Bumper for saving him the humiliation of his life by forbidding any rabbit to undertake the crossing, Spotted Tail allowed his rancor to increase day by day until he was in a fine frame of mind. He wanted more than ever to "get even" with Bumper, as he expressed it.

Then one day when the opportunity seemed to come to him, he was prepared to take advantage of it. It was to be a test of wits, this time. Without his knowing it, this was the one ground on which Bumper was eager to be challenged. It is to be feared that Bumper had an inordinate conceit about his ability to get out of difficult places by using his wits.

So when Spotted Tail started in the usual way to work up to a challenge, Bumper readily encouraged him. "A good king is always a wise king, isn't he, Bumper?" he asked.

"He couldn't be a good king if he wasn't wise," was the smiling retort. "Just so. I agree with you. But what is wisdom? Can you describe it?"

"Can you describe the sunlight, Spotted Tail? You see it every day, and you know it when you see it. But can you describe it?"

"I can describe it by saying that it is just the opposite of darkness," Spotted Tail replied, a little at a loss for

a good answer to this unexpected question.

"Then I can describe wisdom in the same way. It's the opposite of ignorance."

Spotted Tail frowned when the others laughed and clapped their paws at this retort.

"But what I meant," continued the discomfited rabbit, recovering his composure, "is the application of wisdom. How do we know a thing is wise until we've tried it?"

"How do we know a thing is hot or cold until we've burnt or frozen our paw? By experience, Spotted Tail, we know that it isn't necessary to run into a fire and scorch ourselves every time we see one to find out whether it is hot."

"Exactly, Bumper, but some things we don't know by experience. Suppose you had never been in the water and didn't know how to swim, but you'd seen other animals swim. Now, if you fell in the water, what would you do? Would the knowledge that you'd seen others swim save you?"

"Perhaps," replied Bumper hesitatingly. Then, smiling, he added: "But the first thing I'd do would be to look around for a raft. That would be safer than trying to learn to swim. Don't you think that would be the wise thing to do?"

"Yes, if there was a raft handy. But suppose there was none in sight. What would you do then?"

Bumper stretched himself, and answered lazily: "I can't say, Spotted Tail, until I was put to the test. But I think I'd use my wits or try to."

They had been sunning themselves on a board some hunter had stretched across a bend in the river. Spotted Tail had lured Bumper to the far end of the board for his wicked purpose. The middle of the board rested on a stone, and sometimes the young rabbits used it as a see-saw. By running out to the ends two rabbits could make it jump up and down so that it splashed in the water and made a great commotion.

Spotted Tail was sitting next to

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Bumper on the far end which stretched over very deep water. He turned now to him, and asked:

"Can you swim, Bumper? Were you ever in the water over your head?"

"No," Bumper answered truthfully, "but some day I must learn. I think I'll begin to take lessons."

"Well, today is as good a day as any to begin," replied Spotted Tail.

Before Bumper realized what he meant by this remark, he leaped high in the air, and landed on the other end of the spring-board with a thud. The result was that Bumper was shot straight up into the air nearly two feet right over the deepest part of the river. He turned a complete somersault in the air, and made a frantic struggle to reach the end of the board as he came down. But he missed it by a foot, and fell plump in the river.

He went down, down, down out of sight. It seemed an age before he came up again, wet, bedraggled and puffing. The fright caused by his sudden ducking threatened to make him panicky, and his first thought was to squeal for help and splash around like a child in a bathtub.

But Spotted Tail's words aroused him. "Now, Bumper," he called, "you have got a chance to use your wits. Let me see what you can do to get ashore."

It was a cruel, cold-blooded thing to do, and the other rabbits who had seen the whole thing from the shore came scurrying to the rescue, shouting: "Shame! Shame on you, Spotted Tail!"

But, of course, this didn't help Bumper any. The water was very deep where he had fallen in, and there wasn't the sign of anything that could be used as a raft. Could he swim? Not much! By frantic efforts he could keep his head above water. Nearly every wild animal can do this even when a tiny baby. But that wouldn't get him to shore until he was exhausted.

But just when he was beginning to feel that he would drown his hind feet touched something. It was a big rock in the middle of the stream which could not be seen from the spring-board or the shore. Bumper found that by standing on his two hind feet on the rock, he could just keep his head and neck above the surface. This gave him sudden courage, and a thought. He stood stock still on the rock, and turned to the one who had thrown him in.

"It is much more dignified for a king to float upright, Spotted Tail," he said, "than to swim. Can you stand in the water like this?"

Spotted Tail and the others were amazed by the sight of Bumper standing perfectly still in the deep water, with his head and neck just above the surface.

"Come now, Spotted Tail, you have challenged me to everything you could think of," continued Bumper. "Now it's your turn to accept my challenge. Either show me that you can stand in the deep water, or desist from further attempts to humiliate me. You must do one or the other, or I shall hold your challenge in contempt hereafter."

Of course, Spotted Tail knew he could never perform this miracle, and he was at a loss to understand how Bumper could do it. "Then," continued Bumper when he showed no intention of coming in, "you are disgraced before all of your people."

All the while Bumper had been watching for a way to get ashore. He had been feeling with his hind legs for other rocks in the deep river. To his joy he found one, and quickly stepped to it. There was a series of stepping-stones, which hunters used to cross the river when it was shallow. They were hidden from view now by the flood. Bumper made his way cautiously from one to the other until he reached shallow water, and then he hopped gracefully ashore, much to Spotted Tail's chagrin.

MICHIGAN STATE GRANGE.
(Continued from page 8).

peal of the excess profits tax of any income tax laws and recommend that the law be amended and heavy penalties be provided to prevent all corporations from passing the income and excess profits tax on to the consumer.

Resolved, that the State Grange instruct the Master to use his best efforts through the National Grange Bureau at Washington to secure a tariff on beans in order that the American bean growers be protected.

We are in accord with the underlying principles of the League of Nations and urge upon the senate of the United States the necessity of early action in ratification of the treaty in the interest of peace and welfare of the world.

Resolved, that the farmer is entitled to a reasonable wage, a reasonable interest on capital invested and should have the right to cooperate to that end, without being subject to criminal prosecution.

Resolved, that the State Grange is in favor of a federal law to stabilize the currency, and that the Master send a copy of this resolution to the National Grange representative at Washington.

Resolved, that we respectfully request the State Grange executive committee to investigate the advisability of organizing the Live Stock Shipping Associations of Michigan into a cooperative commission company to handle stock of the said shipping association in the terminal markets, the said cooperative commission to be financed by the local shipping association. If after investigation they find the above plan is advisable, then the executive committee be instructed to hire a man or men to perfect the organization of a cooperative commission company; that the said cooperative commission company through the said committee, and for above services reimburse a small per cent of all business transacted to the State Grange; and further resolved that the executive committee cooperate with the Michigan Live Stock Exchange.

Resolved, that the law for taxing the secured debts of other states, Act 173 of Session Laws of 1917, be amended to apply also to all Michigan bonds, notes or debts secured by mortgages recorded in the state of Michigan, other than state bonds and that teeth be put in the present law to force the recording and the payment of a specific tax equal to the specific tax on mortgages or all bonds before they can be sold.

Be it further resolved, that the State Tax Commission be authorized and empowered to employ tax inquisitors on a percentage basis to locate property; especially credits, both secured and unsecured; that are not now on the tax rolls; also provide by law penalties for tax dodgers; such penalties to be at least the payment of five times the amount of the taxes for the current year.

The Grange favored a state constabulary to be used for protecting the rural sections, but not for strike-breaking purposes.

The Grange endorsed the Boys' and Girls' Club work and invitation to the state club leader and the college was given to establish such clubs in subordinate Granges throughout the state.

Endorsement was given to the plan of consolidation of rural schools. The state superintendent of public instruction was asked to further the plan of bringing agriculture and home economics into the rural schools.

Resolved, that it is the sense of the State Grange that congress immediately enact the necessary legislation to extend the time for government operation of the railroads for the period of two years from the time that it would cease under the present law; also that the master forthwith wire this resolution.

(Continued on page 31).

GASOLINE ENGINES

For Sale—at a Sacrifice

Used Less Than One Week

NEW ENGINES

2 6-H. P. Fairbanks Morse Style Z

Cost us \$204.25 each
Price - 150.00 each

2 3-H. P. Fairbanks Morse Style Z

Cost us \$127.25 each
Price - 95.00 each

1 5-H. P. Model NKE Gray

Cost us - \$175.00
Price - - 140.00

Refitted Engines First-Class Shape

1 6-H. P. Ideal

Cost us - - - \$230.00
Price - - - 150.00

1 6-H.P. Refitted Fairbanks Morse

Cost us - - - \$150.00
Price - - - 100.00

2 3-H.P. Refitted Fairbanks Morse

Cost us - - \$70.00 each
Price - - 50.00 each

TERMS—Cash with Order—F. O. B. Detroit

Murchev Machine & Tool Co.
Detroit, Michigan

Make Sure of Your DE LAVAL Cream Separator Early in 1920



There's no happier or better way of starting the New Year right than by making sure of a new DE LAVAL, if you are either without a cream separator or are using an inferior or half worn-out machine that should be replaced.

For three years now, thousands of those who wanted a DE LAVAL have had to wait weeks for it and many have had to buy a second grade separator. The demand has simply exceeded the possible supply, though more DE LAVALS have been made each year than ever before.

More and better DE LAVALS will be made this year than ever before—as many as available plant additions and skilled workmen can produce—but the demand gives every indication of being even greater still.

Order your DE LAVAL now. Make sure of getting it. Let it save half its cost by Spring.

See the nearest De Laval local agent at once, or write the nearest De Laval office below for any information desired

THE DE LAVAL SEPARATOR CO.

165 Broadway
NEW YORK

29 East Madison Street
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61 Beale Street
SAN FRANCISCO

50,000 Branches and Local Agencies the World Over

BREEDERS' DIRECTORY

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

Wildwood Farms Angus

Bulls in service are, Black Monarch 3rd, Grand Champion Bull, Michigan State Fair 1914, 1915, 1916.

Imp. Edgar of Dalmeny, Grand Champion Bull, Michigan State Fair 1918.

President Wilson 4th, Grand Champion Bull, Michigan State Fair, 1919.

We offer for sale 6 choice young bulls by Black Monarch 3rd.

Edgars Calves, are as yet too young to offer for sale but are a promising lot of calves, and are going fast.

A visit will interest you, write for particulars to

WILDWOOD FARMS

ORION, MICHIGAN

W. E. SCRIPPS, Prop., Sidney Smith, Supt.

WOODCOTE AUGUS

1919 Winnings to Date

Mich. State Fair	12 1sts	2 cham.	1 gd. ch.
N. Y.	9 1sts	2	1
West Mich.	11 1sts	2	2
Saginaw	10 1sts	4	2

International—2 firsts including the undefeated calf herd for 1919.
Every Animal Bred At
WOODCOTE STOCK FARM, Ionia, Mich.

Cloversly Angus, 5 cows with calves, rebred; 2 bred cows; 1 two year old, 2 yearling heifers. Price \$2800. 6 yearling bulls, \$225 each. Geo. Hathaway & Son, Ovid, Mich.

For sale at reasonable prices, several Aberdeen Angus bull calves and yearling bulls sired by Lord Ida 2nd No. 248330. Lang Bros., Davison, Mich.

GUERNSEY BULLS FOR SALE

Atta Boy of Maple Crest born April 1919. Sire imp. Spotswood, Sequel A. R. 19 A. R. daughters Dam imp. Albion price \$175.00. Pride's May King of Avondale born June 1919 Sire Nora's May King of Bailey Falls dam Queens Pride of Harrison A. R. price \$150.00. May Boy of Halcyon born April 1917 Sire Byron S. dam Mixer Mildred price \$250.00.

Avondale Farms, Wayne, Mich.

GUERNSEYS

QUALITY
Distinguishes Guernsey Products
The highest natural Golden Yellow color, delicious individual flavor, and high content of butter fat—combine to make Guernsey milk in greatest demand by discriminating consumers. Write for our free booklets.
The American Guernsey Cattle Club, Box 139, Peterboro, N. H.

GUERNSEYS

Two fine bull calves for sale, by our A. R. May Rose Herd Sire. Priced to sell. Send for pedigree and description. GILMORE BROTHERS, Camden, Mich.

Registered Guernseys

A two year old bull, and nearly four months old bull calf. E. E. ROBSON, Room 307, M. C. R. R. Depot Bldg., Detroit, Mich.

REGISTERED GUERNSEYS

Those choice helpers we have gone to good homes. We have a fine bull calf—worth the money. J. M. WILLIAMS, North Adams, Mich.

GUERNSEY bull calves whose sire, 909.05 lbs. dam in de 19,460.20 milks milk, 778.80 lbs. Their mother's sire's dam made 15,109.10 milk, 778.80 lbs. T. V. HICKS, Battle Creek, Mich.

GUERNSEYS Reg. bull calves, 6 mos. old, at \$75 each. Write your requirements. Walter Phipps Farms, 80 Alfred St., Detroit, Mich.

Reg. Guernsey bull calves for \$50.00 delivered, sired by the best bred bull in Michigan. Also heifer calves for sale. E. A. BLACK, R. 3, Howard City, Mich.

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

Hatch Herd (State and Federal Tested) Ypsilanti, Michigan. Offers young sires out of choice advanced registry dams and King Kornelke Artis Vale: Own dam 34.16 lbs. butter in 7 days; average 2 nearest dams 37.61, 6 nearest 33.93, 20 nearest 27.83.

Holstein-Friesian Cattle

Herd Headed by

Segis Pontiac De Nijlander

A 32-lb. grandson of Michigan's great 35-lb. champion. His dam Oak Valley Kornelke Beets Segis Fan, 32.06, is also a Michigan prize winner. Write for calf list. Wah-be-me-me Farms, White Pigeon, Mich.



CHEAPEST PROTEIN FEED.

What would be the best protein feed to make a balanced ration for milch cows; also fattening two-year-old cattle, with the following: I have plenty of clover hay, bean straw, corn silage, cornstalks, corn and oats. Also, how much should I feed?

Sanilac Co.

H. P.

Oil meal and cottonseed meal would undoubtedly be the cheapest and best protein feeds to feed with the other feeds which you have for your ration. You have two good protein foods in your roughage rations, clover hay and bean straw. For your grain ration, however, you lack protein, although corn and oats are a splendid basic grain ration. I would suggest that you feed each cow two pounds of oil meal a day or two pounds of cottonseed meal a day and then a sufficient amount of corn and oats ground to make a pound of grain, including oil meal and cottonseed meal, for every three or four pounds of milk she produces in a day. The roughage should be fed liberally but without waste.

C. C. L.

BEETS FOR DAIRY COWS.

Please tell me the best way to feed my cows. I have plenty of beets, one-third mangels, two-thirds sugar beets, corn fodder, corn on the cob.

Allegan Co.

H. R.

Beets for a part of the ration is a splendid food for dairy cows, but I would not feed over one peck night and morning to a cow. Your roughage of corn fodder is not sufficient to get best results. You ought to get one feed a day of hay, also corn on the cob does not contain a sufficient amount of proteins to get good results. If you can't get hay, of course you can get along with corn fodder, but you ought to feed more grain. I would suggest that you mix corn meal and wheat bran, equal parts, and then feed about two pounds of oil meal. And besides, you should feed enough of corn meal and bran with two pounds of oil meal so that each cow will get a pound of grain for every three or four pounds of milk she produces.

C. C. L.

FAT CATTLE SCARCE.

NEVER before in the history of the Chicago cattle trade was there a time when there was such a scarcity of properly finished fat cattle throughout all of the large feeding districts of the corn belt states. Comparatively few of the stock feeders who are engaged in producing fat beefs for the market went in this year for maturing cattle well, the popular idea being that the best policy was to market cattle after grazing in pastures and furnishing a little corn on grass. Warmed up and short fed cattle have greatly predominated in the markets of the country. Such holdings were mostly marketed during the last few months, with numerous reservations for marketing during the week of the International Live Stock Exposition, part being exhibited in the big stock show and competing for prizes. A few remaining lots of prime beefs were kept back for the Christmas holidays, but the country's supply of fat beefs is nearly exhausted. Prices for prime steers are now little more than nominal, the best steers offered on Monday of last week selling for \$17@18 per hundred pounds, while prime steers were nominal at \$19@20. Stockmen everywhere are of the opinion that it does not pay them to feed much high-priced corn and other dear feeds to cattle, although those who have tried this plan

have made it pay handsomely. The eagerness of owners to market their stock is indicated by the fact that during two consecutive weeks close to 200,000 head of cattle arrived on the Chicago market. These extensive marketings have included lots of stockers and feeders, and great numbers have gone back to feeding districts, the larger share selling at marked reductions in prices. It is believed that stock cattle purchased carefully will make good returns to their owners if fed right. Fat cattle are selling at far higher prices than in years prior to 1918, and turning back to 1911, it is recalled that steers were selling late in December for \$4.65@9. F.

THE HOG TRADE.

WIDELY varying prices for hogs offered on the Chicago market are common still, these depending very largely on the volume of supplies furnished by country shippers. The greatest uncertainty has prevailed all the time regarding prices, and the evident fear of many stock feeders that prices will go lower than ever ultimately explains the liberal receipts much of the time. Everywhere owners are hurrying their hogs to market as soon as they get fair size, most of the hogs being either medium or light weights, the proportion of heavy hogs being very small. The materially enlarged purchases made by eastern shippers imparted more strength to the market at times, the outgo being on a large scale quite recently, so that there is at last real competition between buyers of the better class of swine. Seldom in the past has the spread in prices been so narrow as it is now, with the great bulk of the offerings selling within a range of fifteen cents and heavy and light butchers going at same prices:

MARKETING LIGHT CATTLE.

CATTLE of very light weights predominate greatly this year in the receipts in western markets. During the expired eleven months of 1919 the seven leading markets received in the aggregate 11,209,878 head of cattle, showing a decrease of 657,600 head from the receipts for the corresponding months of 1918; while the receipts of calves reached a total of 1,561,833 head, a gain of 294,503 head. Stockmen are marketing their cattle much younger in ages than in former years, and old-fashioned heavy steers are seldom seen these times, baby beef being marketed extensively. There has been an almost unbroken decline in the average weights of cattle receipts in the Chicago stock yards since 1915, when the average stood at 1,046 pounds, comparing with 941 pounds in 1918, and with 930 pounds this year. Many farmers are enthusiastic about growing baby beefs, and these cattle are raised more and more every year. F.

NUT GROWERS' OFFICERS NAMED.

THE Northern Nut Growers' Association, in session at Battle Creek, December 10, elected officers as follows: President, W. F. Linton, Saginaw; vice-president, James S. McGlenon, Rochester, N. Y.; secretary and treasurer, Willard G. Bixby; executive committee, W. F. Linton, James S. McGlenon, Willard G. Bixby, and the two last retiring presidents, W. C. Reed, Vincennes, Ind.; and J. Russell Smith, Swarthmore, Pa. The next annual meeting will be held in Washington, D. C.

\$226.80 FROM HALF-ACRE OF PICKLES.

THE above record was made by E. M. Vannocker of Denver township, Newaygo county, Michigan, last year, and shows what results may be accomplished from a small amount of ground when intelligently handled.

Newaygo county has long been noted as a great pickle country, there being several large pickle concerns operating there. Many large yields of pickles have been recorded, but it is doubtful if any other has ever made this record.

The half-acre used was new land which had been pastured for several years. It was plowed eight inches deep and harrowed three times. No fertilizer was used. The hills were made five feet by three and a half feet. It was cultivated twice with a five-tooth cultivator twice in a row, and hoed once.

Harvesting the crop took two adults, one full time and one part time, and three children part time, picking every other day. The pickers were paid thirty-five cents a bushel. The pickles were delivered to the receiving station about a half mile from the farm, from where they were taken to the factory at Fremont, thirteen miles, with a truck.

They were sorted into three grades. The yield was as follows: Vat run, 7,130 pounds; dills, 4,145 pounds; nubs and crooks, 710 pounds, a total of 11,985 pounds. The prices paid were as follows: \$2.50 per one hundred pounds for vat run, and \$1.00 per hundred pounds for dills and nubs and crooks.

MAKING HATCHING EGGS PAY.

(Continued from page 3).

both the buyer and the seller a chance to bear some of the risk of poor hatches. Some poultrymen will replace all infertile eggs but most of them only guarantee a certain per cent of fertility.

One breeder of much experience told me that he would not sell hatching eggs in one-hundred-egg lots to strangers to place in incubators. This was because some buyers had purchased large numbers of his best eggs and placed them in poor incubators which were given worse attention. Of course the hatches were poor and then the buyers wished more eggs free or their money back. That poultryman caters only to the buyers of one or two settings who place the eggs under hens and he does a good hatching egg business and the buyers are satisfied.

Before selling hatching eggs the breeder must have quality stock of good vigor and laying ability. The eggs must be gathered frequently in the early spring to keep them from chilling. Late in the season the overheating of the eggs will be as dangerous as chilling. The germ will start to grow and then become chilled and die. Of course, these things all reduce the quantity and quality of chicks hatched. The customers are not pleased and it is the business of the seller to build business by delivering the quality goods which bring repeat orders and more customers.

The farmer with purebred stock can do his best to sell eggs of quality. Then it is up to the buyer to bring out successful hatches. The fact that most owners and breeders of purebred stock are honest reduces the risks of the business and helps to make it more pleasant than it would be under other conditions. The big laying months of the year are March, April and May. That is the time of hatching and also the time of low-priced eggs. If the spring eggs can be sold for hatching at a good price it brings up the yearly average and the poultryman who has good luck with his hatching egg business receives considerable pleasure and profit from the flocks of purebred poultry.

R. G. KIRBY.

SCALECIDE

THE COMPLETE DORMANT SPRAY

"Makes a Tree Outgrow Its Troubles"

Controls Aphis Too

ALL FORMS of aphis, except the woolly aphis, pass the winter in the egg stage. These eggs hatch in early Spring. And since every aphid produces from 50 to 100 offspring, it is of the utmost importance to the fruit grower, to control the first brood in the Spring as they are hatching. This can best be done by spraying with "Scalecide" just as the buds show green.

Bulletin 184 of the Massachusetts Experiment Station shows on page 52 that "Scalecide" 1 to 15 is 100% efficient in killing aphids while hatching—and with only "slight injury" to the foliage when "3/4 inch open," whereas lime sulphur 1 to 8 killed less than 10% of the aphids, and lime sulphur 1 to 8 with nicotine sulphate 1 to 800 added, altho effective, caused "considerable injury."

"Scalecide" used just as the buds are opening will also do effectively all that can be done by any dormant spray for apples. And the cost is less than for the combined spray of lime sulphur and nicotine sulphate. Besides, "Scalecide" goes twice as far, consequently it can be applied in one-half the time.

"Scalecide" controls scale, leaf roller, bud moth, case bearer, blight canker and collar rot, all at this spraying. It is a perfectly soluble oil (if not, don't use it). It penetrates the diseased bark, destroying the disease without the slightest injury to the delicate plant tissues—in fact, even invigorates them.

Write today for our guarantee and the name of our nearest dealer. Address Dept. 13

B. G. PRATT COMPANY

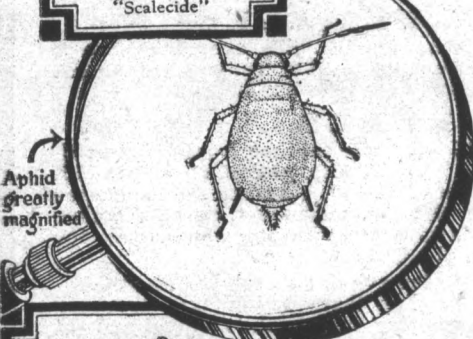
Manufacturing Chemists

50 Church Street

New York City



Time to commence spraying with "Scalecide"



As late as it is safe to spray

Giant Bronze Turkeys

Young stock for sale from our wonderful 55-pound tom—BLOOMFIELD KING—Buy our Turkeys and improve your flock.

Pullets and Hens . . . \$20.00 to \$25.00
Cockerels and Toms . . . 25.00 to 50.00

Order eggs now for spring delivery from

RING NECK PHEASANTS

WILD MALLARD DUCKS

GIANT BONZE TURKEYS

RHODE ISLAND REDS

Bloomfield Farms

America's Largest Game Farm.

1714 Penobscot Building

Detroit, Mich.

Write for Price List and free descriptive Booklet of Instructions.

The Extra Eggs

will soon pay for one of these Automatic Self-Heating Poultry Fountains and Heaters



keeps water at the right temperature day and night in the coldest weather and makes of Galvanized Steel. A long felt want supplied. Every Hen-House needs one. Price of 1 heater and 2 gallon Automatic Fountain complete \$1.85. Also made in 3 and 4 gallon sizes. Write for Circular 1 and testimonials. Agents wanted.

C.A.S. FORGE WORKS, SARANAC, MICH.

64 BREEDS Most Profitable Chick-boys. Choice pure-bred, northern raised. Poultry, eggs, incubators at low prices. America's greatest poultry farm. 27th year. Valuable new 108 page book and catalog free. **R. F. NEUBERT Co., Box 514, Mankato, Minn.**

\$12.95 Buys 140-Egg Champion Belle City Incubator

Hot-Water, Copper Tank, Double Wall, Fibre Board, Self-Regulated. With \$7.55 Hot-Water 140-Egg Chick Brooder—both only \$18.50. Freight Prepaid East of Rockies. Allowed on express. Guaranteed. My Special Offers provide ways to earn extra money. Order Now, or write for book, "Hatching Facts." It's free and tells all. Jim Egan, Pres. Belle City Incubator Co., Box 14, Racine, Wis.

150 EGG CHICK Both for \$17.25. Incubator & Brooder both are made of California Redwood. Incubator covered with asbestos and galvanized iron; triple walls, copper tank, nursery, egg tester, thermometer. 30 days' trial—money back if not O.K. Write for FREE catalog. Ironclad Incubator Co., Box 97, Racine, Wis.

130 Egg Incubator & Brooder Both for \$16.25. If Ordered Together, Freight Paid. East of Rockies, Hot water for copper tanks, double walls, dead air space, double glass doors, all set up complete, or 180 Egg Incubator and Brooder \$20.00. FREE Catalogue describing them. Send for it TODAY or order direct. (2) Wisconsin Incubator Co., Box 82, Racine, Wis.

60 BEST PAYING VARIETIES Hardy Northern raised Chickens, Ducks, Geese, Turkeys, Pure-bred heavy laying strains. Fowls, Eggs & Incubators all at low prices. 24 years experience. Large new Poultry Book & Guide FREE. **W. A. Weber, Box 2, Mankato, Minn.**

POULTRY

Baby chicks: Standard Bred S. C. White and Brown. Also English White Leghorns. Bred to lay large white eggs. Safe arrival guaranteed. shipped up to your door by parcel post. Free catalogue with list. **WOLVERINE HATCHERY, R. 2, Zeeland, Mich.**

Barred Rocks egg contest winners, eggs from strains with records to 250 a year. \$2.00 per setting prepaid by P. P. Circular free. **FRED ASTLING, Constantine, Mich.**

Barred Plymouth Rock Cockerels, large, from prize-winning laying strains, \$3.00 each. **J. A. BARNUM, Union City, Mich.**

Barred Rock Baby chicks a specialty. We are booking orders now for 1920. Apply **H. H. PIERCE, Jerome, Mich.** for terms.

HOMESTEAD FARMS DAY OLD CHICKS

New Spring Catalog

Those who want Day Old Chicks should order early. There will be a big demand again this year. With eggs 75 cents in your home town, people will buy heavily of the laying breeds. For six weeks we have booked orders for spring delivery.

Let us know now the breed you will want. New Catalog ready by January 15. All standard breeds. You will be especially interested in the extra heavy laying breeds we offer: colonies of Leghorns endorsed by the Poultry Extension Specialist of the Michigan Agricultural College.

Eggs for Hatching—Sittings or for incubators, all breeds. Eggs for Broilers.

Cockerels—We still have a few strictly high quality Cockerels. Let us describe them and give you our price: Barred, White and Buff Rocks; R. and S. C. Reds; White Wyandottes; S. C. Black Minorcas; W. and B. Leghorns, both combs in each.

Yearling Pullets—S. C. Brown Leghorns. One pen White Rocks.

Let us know what you will want and enter your name now for new Catalog.

STATE FARMS ASSOCIATION

Desk F. Kalamazoo, Mich.

Buff Leghorns and White Leghorn cockerels at reduced prices, if ordered soon, from great laying strains. **Dr. William Smith, Petersburg, Mich.**

Barred Rock cockerels, Ringlet strain, A. A. WOOD & SON, Saline, Mich.

CHICKS We have shipped thousands each season since 1894. Are booking orders now for Spring delivery, booklet and testimonials. **FREEPORT HATCHERY, Box 12, Freeport, Mich.**

Cockerels and yearling hens, Orpingtons, Rocks, Reds, Wyandottes, Leghorns, Spanish, Minorcas, Campines. **Tyrone Poultry Farm, Fenton, Mich.**

DANGER If chicks and eggs are not shipped right. 100,000 Chix this season. Best Blooded stock ever produced at low prices. Quoted. Selected Utility, Exhibition trapnested stock. 16 varieties. Hatching eggs. Hens, Ducks, Turkeys, Geese. Book your orders early. Avoid disappointment. Stamps appreciated. **Beckman Hatchery, 26 E. Lyon, Grand Rapids, Mich.**

Fowler's Buff Rocks: Cockerels, cock birds and pullets. Write for prices. **R. B. FOWLER, Hartford, Mich.**

For sale "Buy the Best" eggs for hatching from 250 Egg strain Barred Plymouth Rock, \$2.00 per 15, \$3.00 for 5 eggs. **H. B. PROCTOR, Grand Haven, Mich.**

John's Big beautiful Barred Rocks are hatched grow quick, good layers, sold on approval, males \$4 to \$5. Circulars photos. **John Northon, Clare, Mich.**

Poultry Ads. Continued on Page 31

Facts in BLACK & WHITE

You be the Judge and Weigh the Evidence

A test made by the Cornell University proves the value of a purebred Holstein bull in grading up a herd of ordinary cows. A cow, three-quarters Holstein, in 45 weeks, produced 11,693 pounds of milk containing 413 pounds of butterfat, and another three-quarter blood Holstein cow, in 48 weeks, produced 13,574 pounds of milk containing 430 pounds of butterfat. A purebred Holstein bull is one of the most business-like investments a farmer or dairyman can make. Send for the complete and absorbing story of these wonderful Black-and-White cattle.

THE HOLSTEIN-FRIESIAN ASSOCIATION
164 Hudson Street
Brattleboro, Vermont

\$125 Liberty Bonds or terms gets bull calf born May 23, 1/2 white, 9 nearest dams avg. 23.85 lb. bu., 533 lb. milk in 7 days. Dam gddam of Pontiac Cornucopia M. L. McLAULIN, Bedford, Mich.

Seven Yearling Heifers

FOR SALE—These heifers are of King Segis and Pontiac Korndyke breeding. All will be bred this month to "The Milk and Butter Champion", the only bull in the world whose dam is a world's record milk cow and whose sire's dam is a world's record butter cow, and both are yearly records. A good chance to get started right. L. E. CONNELL, Fayette, Ohio.

"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.

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 30 lbs. Write for pedigrees and quotations, stating about age desired.

TRAVERSE CITY STATE HOSPITAL
Traverse City, Mich.

GRADE UP YOUR HERD

with a young son of Spring Farm Pontiac Cornucopia 18th, whose five nearest dams have an average record of 36.22 pounds of butter in seven days. Have several priced to sell.

JOSEPH H. BREWER, Grand Rapids, Michigan

GET A BETTER BULL WINNWOOD HERD

BREEDERS OF

Registered Holstein-Friesian Cattle

We have bull calves ready for service and a new crop of baby bulls coming all of Maplecrest breeding. We have one of the largest pure bred herds in Michigan and this will be the last chance to buy sons of Flint Maplecrest Boy, cheap. For his daughters start to freshen this winter and they will all go on yearly tests. We own them all and will develop them. Don't wait, a bankable note is the same as cash to us and our price will be right. Tell us your wants.

JOHN H. WINN, (Inc.)

Lock Box 248, Roscommon, Mich.

Alcartra Pontiac Butter Boy

One of the best sons of the \$50,000 bull now has a list of Jr. two year old daughters surpassed by none.

Lucy Canary De Kol 24.78-lbs., Lakeside Pontiac Queen 23.12-lbs., Alcartra Pontiac Elzevier Vale 22.70-lbs., Alcartra Pontiac Hengerveld Girl 21.75-lbs. and several others above 20-lbs.

We have for sale one of his sons ready for heavy service from a 24.24 Jr. 4 year old, that gave over six hundred pounds of milk in 7 days. He is a splendid individual fit to head any herd. Price \$300.

SINDLINGER BROS., Lake Odessa, 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.

Reg. Holsteins Herd bull, a double grandson of De-Kol 2ds. Butter Boy 3d. A splendid individual, kind, sure server. Dams record at 6 yrs. butter 7 days 28.53 lbs., milk 69.365 days at 24 yrs. butter 82 lbs. milk 1922 lb. N. B. Reader, Howell, Mich.

LAST CALL

Michigan Holstein Breeders First Annual Sale Tuesday, Jan. 13, 1920

A T

Michigan Agricultural College,
East Lansing, Mich.

Held under the direction of the Michigan Holstein Breeders Association.

The Cattle are consigned by responsible men whose herds are under state or federal supervision which makes them safe cattle to buy. These breeders are in the business to stay and buyers may feel sure they will be given such treatment that will leave them with a "come again" feeling.

SEVENTY FEMALES

with records up to 32.69 lbs. butter 716 lbs. milk seven days, five of them above 30 lbs. and many others up to 29.91 lbs. Jr. 4 yr. old that will be a mighty profitable investment for the purchasers.

SIX BULLS

One from a 33.5 lb. cow with 675 lbs. milk; another from a cow with 32.47 lbs. butter 745.5 milk at 9 yr. 10 mos. 20 days sired by a bull from a 43 lb. 4 yr. old daughter of a 42 lb. 9 yr. old cow. Dam and sires dam average 37.88 lbs. butter 692 lbs. milk seven days. Another from a 30 lb. 3 yr. old sired by a son of a 38 lb. 3 yr. old. Ready for heavy service. A 9 mo. old son of a 32.11 lb. 5 yr. old cow.

The sale will be followed in the evening by the Breeders' Banquet. Plan to come to the sale and buy that "Better Bull or Cow" you have been considering then stay over to the Banquet and get acquainted with the other fellow playing on the same "team".

Send for catalog to

CHAS. A. DANIELS, Sec'y, Okemos, Mich.

Sale Committee; H. W. Norton Jr., Albert E. Jenkins, Chas. A. Daniels.

CLUNY STOCK FARM

A Semi-Official Bred Bull to Head

Your Herd

Maplecrest Application Pontiac No. 132652, heads

Your Herd

His dam's record is 1344.3 lbs. butter, 23,421.2

lbs. milk in 365 days, and 35,103 lbs. butter and

515.6 lbs. milk in 7 days.

One of his sons from our good record dams will

carry these great blood lines into Your Herd.

For Pedigrees and Prices write to

R. BRUCE McPHERSON, Howell, Mich.

HOLSTEIN BULL half brother to Rag

Apple the Great, the

\$125,000 bull. His dam a 19-lb. 3 year old, granddaughter

of Colantha Johanna Lad and World's Record

Cow, Pontiac Gladi, a daughter of Hengerveld De

Kol. He was sired by Rag Apple Korndyke 8th. Will

be 5 years old next March. A chance to get the best

blood lines at a big bargain.

ALBERT G. WADE, WHITE PIGEON, MICH.

Give Yourself or Boy a real CHRISTMAS present—

Buy a finely marked Holstein Bull

Calif. Sept. 18, 1919. Great blood lines, Dam 15-lbs. at

2-years A.R.O. \$75.00 delivered with registered papers.

Your chance. Good enough for any farmer.

JAMES BOYCE, R. 8, Holland, Mich.

LONG DISTANCE

Holstein calves of either sex. Can spare a nicely

marked heifer backed by seven dams that average

above 1200 lbs. butter and 24000 lbs. milk in one year.

Choice Duroc Sows. A. FLEMING, Lake, Mich.

Beautiful Holstein bull calf nearly white born Oct. 23

19. Price \$75.00 reg. and del. Better wire for

him. J. ROBERT HICKS, St. Johns, Mich.

REGISTERED Holstein bulls sired by King Zerma

Alcartra Pontiac, son of the \$50,000 bull; some from

good A.R.O. cows. O. H. Giddings, Gobleville, Mich.

The Wildwood Jersey Farm

Bulls for sale by Majesty's Oxford Fox 134214 and Emment

Lady's Majesty 150834, and out of R. of M. Ma-

jesty dams. ALVIN BALDEN, Capac, Mich.

BUTTER BRED JERSEY BULLS

CRYSTAL SPRING STOCK FARM,

Silver Creek, Allegan County, Michigan.

Maple Lane R. of M. Jersey Herd. For sale Blue

Belle's Premier son of Sophie's. Premier that sold

for \$1750 this fall. Bulls and bull calves. R. C. Red

cockerels. IRWIN FOX, R. 3, Allegan, Mich.

LILLIE Farmstead Jerseys—A few heifers bred to

freshen soon, heifers bred to freshen next fall, 3

cows, R. of M. bull calves. C. C. Lillie, Coopersville, Mich.

Bulls ready for service from our herd bull Marguerite

Premier, gdson. of Pops 99th of Hood Farm, and cows

now on test for R. of M. Smith & Parker, Howell, Mich.

FOR SALE Registered Jersey Cows with

Calves and Herd Sire. Latter

carries 32% of Sophie 15th blood. CHAS. B. COOK,

R. 1, Box 103, Owosso, Michigan.

HARWOOD HEREFORDS

Young stock both sexes for sale.

"Keep On 508019" heads the herd. Write us

your wants. Visitors welcome.

JAY HARWOOD, Ionia, Mich.

Farm six miles south of Ionia.

MICHIGAN JERSEYS

Michigan is an ideal place for the raising of Jersey Cattle and there are no better cattle for dairying than Jerseys.

Jerseys mature early, live long, produce persistently, give the greatest amount of butter-fat obtainable from every pound of feed. They are hardy and vigorous, always on the job and the greatest mortgage-lifters that ever entered a barn.

Michigan should have more Jerseys and the Jersey breeders of the state are anxious to cooperate with anyone who is interested in successful dairy farming.

MICHIGAN JERSEY
CATTLE CLUB

HEREFORDS

of Quality. Renner Bullion, sired by the \$9500.00 Bullion the 4th, now heads our herd. Inspection invited. COLT & GARDNER, Hudson, Mich.

HEREFORDS

3 Prince Donald, 3 Farmer and one Polled bulls from 7 to 13 months old, for sale.

ALLEN BROS.

PAW PAW, MICHIGAN

Herefords. Just purchased 3 new herds, now have either sex, horned or polled, any age. Priced reasonable. THE MCCARTYS, Bad Axe, Mich.

HEREFORDS: young stock of either sex for sale. RALPH S. SMITH, Kewadin, Mich.

Hereford Herd Headers only the upper crust retained, undesirables unsexed, not the largest herd, but few as good. Come and see. Farm adjoins town. E. J. Taylor, Fremont, Mich.

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

For Sale Shorthorns of Quality Scotch and Scotch-Topped descendants of Archery Hope, Avondale, Maxwain Sulton and White Hall Sulton. Model Type, by the Oscola Co. Shorthorn Breeders Ass. John Schmidt, Sec. Reed City, Mich.

BIDWELL SHORTHORNS

Registered bulls, cows and heifers. Good Scotch and Scotch-Topped for sale. In prime condition. Modern sanitary equipment. Herd under state and federal supervision. Farm 10 minutes from N. Y. O. depot, 1 hour from Toledo, Ohio. Automobile meets all trains. Write

BIDWELL STOCK FARM
Box B, Tecumseh, Mich.

Richland Stock Farms

Home of the Michi an Champions.
Shorthorn Sires in Service:

IMP. Lorne, IMP. Newton Champion, Sterling Supreme. Why not buy a young bull to head your herd that carries the blood that is making Shorthorn History. Only a few real headers left. Write your wants.

C. H. PRESCOTT & SONS, Tawas City, Mich.

Ionia Co. Breeders Ass'n

Have for sale Reg. Shorthorns, Herefords, Angus, Holsteins, Jersey, Red Polls and Brown Swiss Cattle. Shropshire, Hampshire and Rambouillet sheep. Poland China and O. I. C. swine. FRED W. BRICKLEY, Sec., R. 3, Ionia, Mich.

Scotch Shorthorns Imp. Royal Bruce heads a select herd of females consisting of the Rosewood, Lovely Orangeblossom and Roan Lady and several other good females. Two bulls ready for service for sale also a few females. JARR BROS. & CO., Bad Axe, Mich., Address Norman Car, Secretary.

MILKING SHORTHORNS Clay bred bull calves. Davidson and Hall, Tecumseh, Mich.

Branch County Farm breeders of American Polled Shorthorns. Herd headed by Grand Champion bull, Sultan's Standard, son of Sultan Creed. For sale choice young bulls & heifers priced to sell. Address G. E. Burdick, Mgr., Coldwater, Mich.

MEADOW Hills Shorthorns. Herd headed by Silver King, full brother of Lavender Sultan Purdue University's great sire. For sale females of all ages, a few young bulls. Geo. D. Doster, Doster, Mich.

For Sale Several choice young Shorthorn cows and heifers Airdrie Duchess and Rose of Sharon families. E. S. Batcheler, R. 6, Howell, Mich.

Shorthorns Good Scotch bred bulls, cows and heifers priced right. W. B. McQUILLAN, R. 7, Howell, Mich.

SCOTCH Shorthorns for sale. Special—A roan 17 mo. old, bull suitable for herd header. Lawrence P. Otto, Charlotte, Mich.

Milking Shorthorns of best Bates breeding one bull 10 mo. old for sale. Price \$150.00. E. H. KURTZ, Mason, Mich.

Bulls all ages, 6 yr. cow due in Jan. \$300; 2-2 yr. old heifers \$250.00 each. Central Michigan Shorthorn Assn., Oscar Skinner, Sec., Gowen, Mich.

Small Herd of Registered Shorthorns for sale. R. 5, Flint, Mich.

The Kent Co. Shorthorn Assn. have males and females of quality for sale. L. H. LEONARD, Sec., Caledonia, Mich.

FOR SALE One car load registered Shorthorn Cattle. H. W. HUBBARD & SON, Ovid, Mich.

HOGS

Registered Berkshire Boars: ready for service. A few gilts and sows bred for sale, and some farrow. Also spring pigs. CHASE STOCK FARM, Marlette, Mich.

Berkshires Bred and open gilts serviceable boars: can furnish pairs or trios. RUSSELL BROS. R. 3, Merrill, Mich.

Registered Berkshire boars, one yearling, two spring boars priced reasonable and guaranteed to be O.K. B. B. REAVEY, Akron, Mich.

Duroc Opportunity

What would the earning capacity of a Brookwater Boar be in your herd? A mid-west breeder states that the Brookwater boar he used added from \$75 to \$100 to every gilt bred to him. It paid this man to use one of our boars it will pay you.

We have several that we are offering at prices which appeal to the small breeder who must of necessity be a conservative buyer. We have a few that are good enough to be used in high class herds at prices in keeping with their individuality and breeding. Money invested in a good herd boar very speedily increases the value not only of what you sell but what you keep. Send for price list or better, visit the farm.

BROOKWATER FARM, Ann Arbor, Mich. HERBERT W. MUMFORD, owner. J. BRUCE HENDERSON, Manager.

DUROC JERSEYS
CAREY U. EDMUNDS, Hastings, Mich.

DUROC BOARS

of size, quality and breeding. All are sired by State Fair Winners. Come see herd. NEWTON BARNHART, St. Johns, Mich.

For Sale Spring Boars, Bred and open Gilts. Dams Isabella 12, granddaughter of Joe Orion 11. Sire Isabella 10 sired by Ideal Col. FLOWER CITY DUROC FARM, R. E. Stitt, Route 4, Box 89, Niles, Michigan.

Mr. Boar Buyer. The best bargains in the state in boars, breeding, individuality and price considered, is at Michigan Farm. All ages. Sired by Panama Special, Brookwater Orion Specialty, and the Principle 19th. Satisfaction guaranteed. O. P. Foster, Mgr., Pavilion, Mich.

DUROC JERSEYS Boars sired by a son of King the Col. E. D. HEYDENBERG, Wayland, Mich.

MICHIGAN BREEDERS AND FEEDERS MEET.

Live Stock Men Hold Big Annual Meeting at M. A. C.

THE twenty-ninth annual meeting of the Michigan Improved Live Stock Breeders' and Feeders' Association will be held at the Michigan Agricultural College, East Lansing, on Tuesday and Wednesday, January 14-15. The various breeders' associations will hold their annual meetings in conjunction with the general sessions. The following excellent program has been arranged:

General Session Tuesday, 9:30 A. M., at Room 402, Agricultural Bldg.

Secretary's report; appointment of committees; president's address by Colon C. Little, of Coopersville; "The Agricultural Outlook," by L. Whitney Watkins, Manchester; "The Operation of the Packing Industry and Stock Yards Under Government Control," C. E. Brown, Chicago, president of the National Live Stock Exchange.

At the afternoon session C. E. Bradfute, of Ohio, director of the American Farm Bureau Federation, will speak on the "Organized Farmer," and Dean Shaw on "Live Stock on the Diversified Farm." Committees will report and officers will be elected.

Wednesday's General Session at 5:00 P. M.

A joint meeting of the allied breeders' organizations will be addressed by H. H. Halladay, president of the State Live Stock Sanitary Commission, who will discuss the "Health of Michigan Live Stock." Secretaries of the various associations will report. The State Board of Agriculture tenders a banquet to the members of the general association.

Sectional Meetings.

Michigan Sheep Breeders' Association.—President, E. G. Read, Richland; secretary, B. A. Freeman, Lachine. Meeting called to order at 10:00 a. m., Wednesday, Room 109, Agricultural Building. "The Outlook for Wool and Mutton Production in 1920," by L. L. Heller, Chicago, Assistant Secretary National Wool Growers' Association; "What we Have Accomplished in Co-operative Marketing of Wool in Ohio," by J. B. Walker, Gambier, Ohio; "Why we Should Have an Active Michigan Wool Growers' Association," C. A. Tyler, Detroit.

Michigan Swine Breeders' Association.—President, J. B. Hibbard, Bennington; secretary, E. R. Leonard, St. Louis. Meeting called to order at 1:30 p. m., Room 109, Agricultural Building. "Swine Feeding Experiments at M. A. C.," H. W. Norton, Jr.; "Boosting the Purebred Swine Industry through the Boys' and Girls' Pig Clubs," W. A. Anderson; "The Public Sale as a Means of Disposing of Breeding Stock," W. J. Clark, Eaton Rapids.

Michigan Horse Breeders' Association.—President, Jacob DeGeus, Alicia; secretary, R. S. Hudson, East Lansing. Meeting called to order at 1:30 p. m., Wednesday, in Room 316, Agricultural Building. "The Inauguration of the American Horse Publicity Association Campaign," G. E. Wentworth, superintendent of the Chicago Horse Market Company.

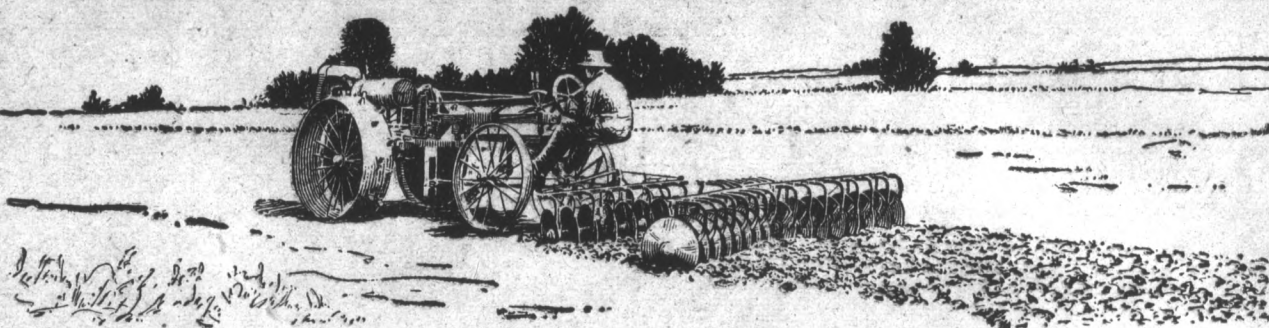
Michigan Holstein-Friesian Association.—President, M. W. Wentworth, of Battle Creek; secretary, Charles A. Daniels, Okemos. The first annual sale by the Michigan Holstein-Friesian Association will begin at noon on Tuesday, when seventy-five head of inspected and guaranteed animals, all choicely bred, and with high records, will be sold. The annual banquet of the association will be held at Plymouth Congregational Church, Lansing, Tuesday evening at 6:30. On Wednesday at 9:00 a. m., in Room 402, Agricultural Building, the president's address and the report of the secretary-treasurer will be given, also the awarding of prizes for 1919, the report of sale committee and the regular business session. In the afternoon R. W. Chapin, of Chicago, will discuss "The Feed Situation;" M. S. Prescott, Syracuse, N. Y., "Holstein Policies for the Future;" D. D. Aitken, of Flint, "Organizing the Holstein Industry."

Michigan Guernsey Cattle Club.—President, E. J. Smallidge, Eau Claire; secretary, C. G. Parnall, Jackson. Meeting called to order in Room 111, Agricultural Building, at 9:30 a. m., Wednesday. "The Sale of Guernsey Products," H. W. Wigman; "Judging of Guernsey Cattle in Pavilion," Prof. A. Anderson. After the election of officers and the regular business session of the club at the afternoon session, Harry W. Griswold speaks on "Guernsey Cattle on the Island of Guernsey and in America."

(Continued on page 31).

RELY ON MOLINE

For a Good Seed Bed



Use a Moline Disc Harrow and you will get a good seed-bed—one that is mellow, fine, deep and clean. No matter what your requirements, for horse or tractor use, there is a Moline Disc Harrow suited for you.

Moline Leverless Disc Harrow

For All Makes of Tractors

This is the handiest and best disc harrow for tractor use ever made. There are no levers to bother with. To angle the discs, release a latch and drive the tractor forward. To straighten the discs just reverse the tractor. The tractor does all the hard work. It is built extra strong and durable, has great flexibility and penetrates well. Built in 6, 7, 8, 9 and 10-foot sizes, double or single cut, and can be used with any tractor.

See your Moline Dealer or write nearest Moline Branch for full information.

Moline Plow Company, Moline, Illinois

Nearest Branches at Jackson, Columbus and Indianapolis

SINCE 1865 "MOLINE" ON A FARM IMPLEMENT HAS BEEN A MARK OF QUALITY

Moline Three Lever Disc Harrow



Ideal for use with horses. Has great flexibility and end thrust is taken up by the frame. Gangs cannot bump or ride, making very light draft. Third lever regulates depths of gangs and can be instantly adjusted. Very strong and durable. Made in a variety of sizes—single or double cut.

HUDSON TANK HEATER

(Formerly Called Nelson)

Just put a few cobs into the fuel box when you do your chores and have drinking water at 70° for your stock all winter. No ice to chop. No chilled stomachs. No bother or fire danger with a Hudson Tank Heater. Stock gain faster—keep healthier. Milk checks increase \$2 to \$3 monthly per cow. Heater soon pays for itself.

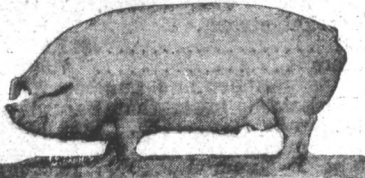
Burns Straw, Cobs, Wood or Coal

Heats water twice as fast as any other heater and with less fuel. Made of 20 gauge galvanized metal with cast flanged joints bolted and packed with one piece asbestos. No welded seams to leak or rust. End of tank and pipe cast in one piece to above water line. Won't rust out. More than one inch of clearance for water to circulate under heater. Ashes easily removed. Get one for your stock NOW. WRITE FOR FREE CIRCULAR.

HUDSON MFG. COMPANY

MINNEAPOLIS, MINN.

THE FAMOUS O.I.C. SWINE



We have the undefeated Herd of the World. Winning premier breeder and exhibitor at every fair shown in 1919-1918-1917, including the following state fairs—Ohio, Michigan, Indiana, Illinois, Missouri, Kentucky, Tennessee, Oklahoma, New York, Alabama, Tri-state fair Memphis, and the National O.I.C. twice. Stock of all ages for sale. Registered free in the O.I.C. association. Order now. We will ship any of our stock on approval allow you to keep three days before you have to pay for it. You will be your own judge on your own farm.

CRANDELL'S PRIZE HOGS,

Cass City, Mich.

O. I. C. BOARS FOR SALE

One of the Best Herds in Michigan

Big type, growthy boars of all ages. I ship C. O. D., pay express and register in buyer's name. If you want a real choice boar, guaranteed right in every way, write me.

J. CARL JEWETT,

R. 5, Mason, Michigan.

MICHIGAN LIVE STOCK INSURANCE COMPANY

INDEMNIFIES Owners of Live Stock—Horses, Cattle, Sheep and Hogs

Against Death by Accident or Disease

308 Davidson Building,

Bay City, Michigan

HOGS

Registered Duroc Boars

We have a choice lot of spring boars, sired by Michigan Cherry Col. No. 12549. Let a selection selected this boar to head our herd. Our prices are within every farmer's reach. The Jennings Farm, Bailey, Mich., R.F.D. No. 1

Duroc Jerseys

Our herd won 15 firsts, 9 seconds, 3 thirds, 4 fourths, 3 fifths at leading Michigan fairs including State Fairs. We have some choice boars ready for service, reasonable prices. Some bred sows later on. RUSH BROS., OAKWOOD FARM, Romeo, Mich.

MICHIGANA FARM has a few good farmers Boars at farmer's prices. Also boars good enough to head good pure bred Duroc herds. Get our prices on bred gifts and sows. They will interest you whether you are planning to get a bred sow or not. O. F. FOSTER, Mgr., Pavilion, Mich.

Duroc Jerseys

Two good yearling boars that are good enough to head the best herds in Michigan, also spring boars large enough for service. Sired by the Grand and Junior Champion boars. F. J. DRODT, B. I. Monroe, Mich.

Duroc Boars.

Spring boars, fashionable breeding, right prices. BOARDMAN FARMS, Jackson, Mich.

Duroc bred sows and gilts sired by Orion Cherry King Col. 2nd., bred to All Col. of Sangamo 2nd. First class lot, reasonable. W. C. Taylor, Milan, Mich.

Duroc

Boar, Senior yearling registered. Excellent breeding, individual and breeder. Weight over 400. A Bargain at \$50. F. R. BAYLES, Dexter, 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 5 months old. Write for my plan—More Money from Hogs. G. S. BENJAMIN, R.F.D. 10, Portland, Michigan

Chester Whites, spring and fall stock for sale either sex. At Saginaw fair we won highest honors against strong competition. F. W. ALEXANDER, Vassar, Mich.

O. I. C. and Chester White Swine

Strictly Big Type with quality. Spring pigs of March and April farrow. A choice lot of boars. Will only spare a few more gifts at pres. at. Will ship C. O. D. and record them free. Newman's Stock Farm. Marlette, Mich. R. No. 1

O. I. C. Pigs. 35 to 40 lbs. Pairs and trio, no to you on approval C. O. D. \$20, each. Reg. HARLEY L. FREY, Scott, Ohio

Additional Stock Ads on Page 31

LATEST MARKET REPORTS

FIRST EDITION.

The markets in this edition were revised and corrected on Tuesday afternoon, December 30.

WHEAT.

Quotations on wheat in Canada have suddenly advanced fifty cents a bushel. The wheat market in this country holds steady and so does the flour market. Receipts in Detroit on Monday were one car, against five a year ago. Shipments were 3,000 bushels. Stocks are 72,000 bushels, against 72,000 a year ago. There is not much activity in the market for wheat or flour, but mill feeds are eagerly sought. Detroit quotations are as follows:

No. 1 red	\$2.49
No. 1 mixed	2.47
No. 1 white	2.47
No. 2 red	2.46
No. 3 red	2.43

CORN.

Reports from Chicago indicate that farmers are not selling any corn at present prices. After the small supplies now held at country elevators is moved there will be very little good corn available unless prices advance. The outlook for the new crop in Argentina is very favorable and if present weather conditions continue generally we can look for a substantial harvest from there along in March. In Detroit the corn market was considered rather high Saturday and prices have not advanced. There is a general feeling in market circles that values will continue to advance as the farmers are not likely to continue to sell corn unless the market is favorable. In Detroit the prices are as follows:

Cash No. 3	\$1.46
No. 3 yellow	1.48
No. 4 yellow	1.44
No. 5 yellow	1.40
No. 6 yellow	1.36

In Chicago No. 3 mixed corn is quoted at \$1.36½ and No. 2 yellow, old, at \$1.43; January \$1.31; May 1.29.

OATS.

The oat market is exhibiting considerable strength as a result of the heavy buying for export purposes. The recent advance in quotations on wheat in Canada has stimulated the demand for oats and the trend of the market is upward. At Detroit the market has advanced slightly during the past week although half a cent per bushel is the maximum gain. Quotations in Detroit are as follows:

Cash No. 2	89
No. 3 white	88½
No. 4 white	87

RYE.

Rye is holding steady and there is considerable talk of a heavy export demand, although no heavy sales have been reported. Local prices for Cash No. 2 are \$1.78 per bushel.

BEANS.

The bean market is improving, but only moderate activity is reported. Detroit beans for prompt shipment are quoted at \$7.35 per cwt. for hand-picked pea beans. January at \$7.45 per cwt. At Chicago moderate activity is noted at former prices. Supply is ample to meet present requirements. Pea beans, hand-picked, choice to fancy, are now quoted at \$7.50@8 per cwt.; red kidneys \$13.50@13.75 per cwt. There is no indication of a slump in prices during the next few days.

HAY.

The hay market is holding firm owing to small receipts. Detroit dealers are doing no shipping. Present values are as follows: No. 1 timothy \$30.50@31; standard \$29.50@30; light mixed \$29.50@30; No. 2 timothy \$28.50@29; No. 3 timothy \$25@27; No. 1 mixed at \$28.50@29; No. 1 clover \$28.50@29; rye straw \$13.50@14 per ton in carlots.

FEEDS.

The feed market shows no changes since last week. Quotations are as follows: Bran \$48@49; standard middlings \$50@51; fine middlings \$61@63; coarse corn meal \$60@63; cracked corn \$65; chop \$53@56 per ton in 100-pound sacks.

SEEDS

The demand for seeds is moderate and the market is steady, with prices

showing an upward tendency. Prime red clover quoted in Detroit at \$31.60 per bushel for spot and March; alsike \$31.50 per bushel; timothy \$5.75@5.85.

POTATOES.

The supplies are moderate and the market firm with little change in prices. Quality and condition is good, a few frosted shipments reported. Detroit market, sales to jobbers, of U. S. No. 1 well-graded Michigan stock of round whites in 150-pound sacks mostly at \$5 per sack. Canadian round white stock selling at about ten cents per sack lower. At Chicago the market is slightly weaker. Track sales of Michigan U. S. Grade No. 1 round white stock are reported at \$3.45@3.50 per cwt. In Cleveland the market is steady and the movement moderate with no change in prices. New York round white stock U. S. Grade No. 1 is selling at \$5.25@5.50 per 150-pound sack.

BUTTER.

The market is slightly lower and the consumption at the lower prices is hardly taking care of the surplus. At Detroit fresh creamery butter is quoted at 61½¢ per pound; fresh creamery in one-pound bricks, 62@64¢; storage bricks 62¢.

EGGS.

This week's quotations are lower although the demand continues quite good. New-laid eggs are scarce and the offerings are promptly picked up at a wide range of prices. Consumption has decreased and enough eggs are in sight to meet the market requirements. At Detroit fresh eggs are worth 62¢ a

dozen; storage eggs, according to quality, 42@51¢ per dozen.

GRAND RAPIDS

Retail price of farm seeds advanced last week on all varieties except timothy, which is steady at \$6.50 a bushel. Prices of other seeds are: Medium clover \$32.50; mammoth \$33.50; alsike \$33; alfalfa \$25@29; sweet clover at \$22; vetch \$24. Wholesale dealers and jobbers report the largest Christmas business in their history, notwithstanding prices were double on most products before the war. Retailers of poultry report employers and employees alike bought turkeys at 55¢ per pound, none questioning the price. Loose timothy hay dropped to \$27 per ton at the city market during the week. Baled is preferred as it has also declined in price. Demand for Christmas trees and holly is growing less each year. Jobbers had fewer cars of trees, yet one car of trees and one of holly went to the city dump. Owing to short crop of rutabaga turnips in this section of the state, ten cars have already been imported from Canada this season. Some winter-made dairy butter is arriving on the market, but little No. 1 grade. Price paid is 50¢ a pound. Potatoes are \$1.90 per bushel and some farmers sold for \$2 last week. Receipts continue light.

WOOL

A rather quiet week on the Boston wool market has developed one interesting phase. The situation in medium wool is not so hopeless as former reports appear. It is being intimated that stocks of the wool which were so long neglected have been reduced dur-

ing the past few days more than surface indications indicate, and are not holding the market down as they were.

NEW YORK PRODUCE MARKET.

Butter.—The Christmas season caused a sharp change in the general conditions of the market. As usual during the holiday season, buyers curtailed their purchases and the price fell three cents on Tuesday. However, slow delivery by the railroads brought about a price recovery of half a cent on Friday. At the present time the market appears to be gaining strength. Business has been confined to buying for current needs. There is no speculative trading and export buying is at a standstill although one firm has signed a contract to deliver one million pounds of firsts to an Italian exporter in the near future. Under-grades still sell at a disadvantage, as also do all grades of centralized butter. Quotations are: Extras 70½¢; higher scoring than extras 71@71½¢; firsts 61@69¢; seconds 56@59½¢.

Cheese.—The cheese market has been very quiet. Receipts are moderate, local buying is light and there is no export demand. Production seems to be above the average for the season in the west but is light in the east. Established quotations are: Current make, common to good 29@30¢; average run 30½@31¢; specials 31½@32¢. Held cheese, under-grades 26@30½¢; average run 31½@32¢; specials 32½@33¢.

Eggs.—Receipts of eggs according to reports, show a falling off of practically forty per cent this week. However, demand was lacking and the market received a severe setback on Monday and Tuesday. On Monday, quotations declined about six cents and on Tuesday an equal break resulted. On Wednesday, demand began to develop which continued on Friday, with the result that prices recovered about five cents. The quality of eggs received show a marked improvement. Quotations are: Firsts 70@72¢; extra firsts 73@74¢; extras 75¢.

Poultry.—The poultry market was firm during the first part of the week. Since Christmas the demand has declined and there has been an over-supply of all classes of poultry. Turkeys were in short supply just previous to Christmas and prices soared correspondingly. Quotations are: Spring chickens 32@34¢; heavy fowls 34@40¢; light to medium fowls 31@33¢; old roosters 22¢; turkeys 45@55¢; ducks 37@39¢; geese 30@35¢.

Live Stock Market Service

Reports for Tuesday, December 30th

BUFFALO.

Hogs \$15; lambs \$19.50; calves \$23; cattle steady.

DETROIT

Cattle.

Market strong.
Best heavy steers\$12.00@13.50
Best handy wt bu steers... 10.50@11.50
Mixed steers and heifers.. 9.00@10.50
Handy light butchers 8.00@ 9.00
Light butchers 7.00@ 8.00
Best cows 9.00@10.00
Butcher cows 7.00@ 8.50
Cutters 6.00
Canners 5.50@ 5.75
Best heavy bulls 9.00@10.00
Bologna bulls 7.00@ 8.50
Stock bulls 6.50@ 7.50
Feeders 9.00@10.50
Stockers 7.50@ 8.50
Milkers and springers.... \$65@ 125
Veal calves.
Market strong.
Best\$21.00@22.00
Others 7.00@18.00

Sheep and Lambs.

Market 50¢ lower than Saturday.
Best lambs\$18.00@18.50
Fair lambs 16.00@17.00
Light to common 12.00@15.50
Fair to good sheep 9.00@ 9.75
Culls 4.00@ 7.50

Hogs.

Market 25¢ higher.
Pigs\$14.75
Mixed hogs 14.50

CHICAGO.

Hogs.

Estimated receipts today are 60,000; holdover 3,700. Market 20@25¢ higher. Bulk of sales \$14.15@14.35; tops at \$14.40; heavy 250 lbs up medium, good and choice \$14.20@14.40; medium 200 to 250 lbs, medium, good and choice at \$14.15@14.35; light 150 to 200 lbs, common, medium, good and choice at \$13.75@14.25; light lights 130 to 150 lbs, common, medium, good and choice \$13.60@14; heavy packing sows 250 lbs up, smooth \$12.75@13.50; packing sows 200 lbs up, rough \$13@14.

Cattle.

Estimated receipts today are 17,000. Market slow and steady. Beef steers medium and heavy weight 1100 pounds up, choice and prime \$18.75@20; do medium and good \$10.75@18.75; do common at \$8.75@10.75; light weight 1100 lbs down, good and choice \$13.50

@19.25; do common and medium \$8@13.50; butcher cattle, heifers, common, medium, good and choice \$6.40@14.75; cows, common, medium, good and choice \$6.25@13.50; bulls, bologna and beef \$7.75@11.75; canners and cutters, cows and heifers \$5.25@6.25; do canner steers \$6@7.75; veal calves, light and handy weight medium, good and choice \$15.75@17; feeder steers, common, medium, good and choice \$7@12.25; stocker steers, common, medium, good and choice \$6@10.25; stocker cows and heifers, common, medium, good and choice at \$6.25@8; stocker calves, common, medium, good and choice \$7.25@10.50.

Sheep and Lambs.

Estimated receipts today are 25,000. Market 25¢ lower. Lambs 84 lbs down medium, good, choice and prime \$15.50@18.40; do culls and common \$11.75@15.25; spring lambs, medium, good, choice and prime \$11.65@16; ewes, medium, good and choice \$8.25@10.75; do cull and common \$4.25@8; yearling wethers, medium, good and choice at \$13.50@16.

BUFFALO.

December 29, 1919.

Cattle.

Receipts 80 cars; best fat grades 25@50¢ higher; common steady; prime heavy steers \$16@17; best shipping steers \$13.50@14.50; medium shipping steers \$11.50@12.50; best native yearlings 950 to 1000 lbs \$15@16; light native yearlings of good quality \$12@13; best handy steers \$11@11.50; fair to good kind \$10@11; handy steers and heifers mixed \$9.50@10.50; western heifers \$10@11; state heifers \$8@9; best fat cows \$10@11; butchering cows \$6.50@7.50; cutters \$6@6.50; canners \$4.50@5.50; fancy bulls \$9@10; butchering bulls \$7@8; common bulls \$6@7; best feeders 900 to 1000 lbs \$10@11; medium feeders \$8@9; stockers \$6.50@7.50; light to common \$5@6; best milkers and springers \$100@150; mediums \$75@90.

Hogs.

Receipts 40 cars; market 25¢ higher; heavy and yorkers \$15; pigs and lights \$15.50.

Sheep and Lambs.

Receipts 30 cars; market 25¢ higher; top lambs \$20; yearlings at \$14@16; wethers \$12@13; ewes \$10@11. Calves \$7@21.



THIS all-steel churn is just what you have been waiting for. Make good butter without the hard work. Drawn steel barrel, heavily tinned inside—easy to clean—sanitary—cannot soak up moisture. Beautifully trimmed in red and blue. Ask your dealer or write us for Circular No. 5

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A magazine giving the FACTS in regard to the land situation. 3 months' trial subscription FREE. If for a home or investment you are thinking of buying good farm land, simply write me a letter and say, "Mail me LandoLOGY and all particulars free." Address: EDITOR, LANDOLOGY, Skidmore Land Co., 381 HALL AVE. MARINETTE, WIS.

MICHIGAN BREEDERS MEET.

(Continued from page 29).

Michigan Hereford Breeders' Association.—President, Jay Harwood, of Ionia; secretary-treasurer, Earl C. McCarty, Bad Axe. Meeting called to order in Room 110, Agricultural Building, at 1:00 p. m., Wednesday. "Outlook for Herefords," Allen Brothers, Paw Paw; "Does a Show Herd Pay as an Advertising Proposition?" Tony B. Fox, Pewamo; "Breeding and Feeding," Louis Norton, Nashville; "Outlook for Herefords in the Northwest," by Gid Granger, Gaines; "Polled or Horned the Most Profitable to Breed," W. H. Anderson, Grand Rapids; "Foundation for a Breeding Herd," E. J. Taylor, Fremont; "Fashionable or Plain Breeding for the Average Breeder," Earl C. McCarty, Bad Axe; "Herefords the Best Breed to Feed for Beef," J. F. Brend, Saginaw.

Michigan Red Polled Breeders' Association.—President, N. C. Herbison, of Birmingham; secretary, E. J. Peabody, Grand Ledge. Meeting called to order in Room 113, at 1:30 p. m., Wednesday. "Influence of Sire on Herd of Native Cows," J. M. East, Marcellus; "Improving and Advancing the Red Polled Cattle in Michigan," Jacob Turner, Grand Ledge; "Benefit Derived from Exhibiting at Fairs," N. C. Herbison; "Red Polled Steer as a Feeder," E. J. Peabody; "Red Polled Cow in the Commercial World," J. M. Chase, of Ionia.

Michigan Aberdeen-Angus Breeders' Association.—President, Alex. Minty, Ionia; secretary, Ward Hathaway, of Ovid. Meeting called to order in Room 405 at 2:00 p. m., Wednesday. "Breeding Aberdeen-Angus Cattle for a Third of a Century," O. E. Bradfute, Xenia, Ohio; "How we can Promote and Further the Interests of Aberdeen-Angus Cattle," F. M. Higgins, Assistant Secretary of American Aberdeen-Angus Breeders' Association.

Michigan Shorthorn Breeders' Association.—President, J. Smith, Ann Arbor; secretary, W. W. Knapp, Howell. Meeting called to order in Room 109, at 4:00 p. m., Thursday. "The Advancement of Shorthorn Cattle Interests in Michigan," by representative of American Shorthorn Breeders' Association. Sale of Shorthorn cattle takes place on Friday, January 16.

Michigan Jersey Cattle Club.—President, Alvin Balden, Capac; secretary, C. F. Bassett, Kalamazoo. Meeting called to order in Room 403, at 3:00 p. m., Tuesday. An interesting program is being prepared by the secretary and president, and every breeder and lover of the Jersey in the state is urged to be present.

Michigan Poland-China Breeders' Association.—President, P. P. Pope, Mt. Pleasant; secretary, Wm. J. Clark, of Mason. Meeting called to order in Room 207, at 10:00 a. m., Wednesday. President's address, "I Like the Good Ones, Don't You?" Wesley Hile, Ionia; "The Purebred Sires' Campaign," R. J. Baldwin, Director of Extension, M. A. C.; "Publicity, Prices, Pedigrees and Other Things," Tony B. Fox, of Pewamo.

Michigan Duroc Breeders' Association.—President, F. J. Drott, Monroe; secretary, O. F. Foster, Ann Arbor. Meeting called to order in Room 110, at 10:00 a. m., Wednesday. "How to Boost Pig Clubs in Michigan," by T. F. Marston, Bay City; "How to Grow Pigs Successfully Without Milk," by Ralph Carr, agricultural agent, Monroe.

Michigan Chester White Breeders' Association.—President, H. T. Crandall, Cass City; secretary, J. Carl Jewett, Mason. Meeting called to order in Room 316, at 10:00 a. m., Wednesday. The annual meeting and election of officers will be followed by an interesting program now being prepared.

Michigan Oxford Sheep Breeders' Association.—President, O. M. York, of Millington; secretary, I. R. Waterbury, Detroit. Meeting will be called to order in Room 113 at 1:00 p. m., Wednesday. The annual meeting and election of officers for the ensuing year will be held.

Visitors to these sessions will find it to their advantage and convenience to secure rooms for the night in Lansing before coming to the College.

MICHIGAN STATE GRANGE.

(Continued from page 25).

tion to each Michigan representative and senator in congress.

Resolved that consumers be enlightened through publicity regarding cost of production of farm products, and where the major portion of cost goes. Let city people in their city papers know where the money goes in delivering food to the consumer.

Great Hog Profits



Hustles Heavy Hogs to Market

Cuts your feeding costs. Have bigger pigs, fatter hogs. Get them ready for market in far less time. You can do it. Prove at our risk that Milkoline is the surest farm money maker known.

Guaranteed Trial Offer We will ship you ten gallons, half a barrel, or a barrel. Take 30 days—feed half to your hogs and poultry. If not absolutely satisfied return the unused part and we will refund every cent you paid us—no charge for the half you used.

Milkoline has a base of Pure Modified Buttermilk to which essential fats and acids are added. Milkoline comes in condensed form. Will keep indefinitely in any climate. Will not mould, sour or rot. Fills will not come near it.

2c a Gallon For feeding mix one part Milkoline with 60 parts water or swirl and feed with your usual grain feeds. It helps keep hogs healthy, their appetites keen and makes more pork per bushel of grain. Stop buying buttermilk of uncertain quality. Use Milkoline and you will always be sure of uniform acidity, and at a cost of 2c a gallon or less when fed as directed. Many users say Milkoline saves them one-third on feed bills because it makes their hogs and poultry assimilate all their feed.

1400% Profit W. H. Graham, Middleton, Mo., writes that he got an extra \$120 worth of pork from \$30 worth of this lot of hogs in comparison with another bunch. We could quote hundreds of testimonials, but the best proof is that we legally guarantee Milkoline to be satisfactory or refund your money, (you are the judge) and refer you to S. W. Bird, Bank of Kansas City, Mo., and R. G. Dunn & Co., MILKOLINE is just as good for Poultry as for Hogs.

Order from Nearest Dealer or Direct from this Ad. Send check or money order and ask for free booklet, "Hustles Heavy Hogs to Market."

6 Gals. at Creamery \$1.50 per gal. \$9.00
10 " " " 1.25 per gal. 12.50
15 " " " 1.10 per gal. 16.50
22 " " " 1.00 per gal. 22.00
55 " " " .90 per gal. 49.50

No charge for bags or barrels. Pure F. O. S. Dealer or Kansas City, Mo.

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TESTED 30 YEARS Appleton frames are so strong and rigid, they don't get rickety or out of line. Appleton boxes don't get dust-clogged; don't beat and quickly cut out, because they are non-rigid, dust-proof, non-heating and self-adjusting. These qualities mean safety under any strain, and service for years. Write today for Free Booklet showing 10 styles and sizes—tilting and sliding table types, drag and circular log saws, complete mounted saw rigs, etc.



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Pure Bred Holsteins

17 head Registered Holstein Friesians. All 2 and 3 yr. old, fresh or will freshen soon.

10 hd. High Grade Holsteins 150 Grade Shropshire and Ramboulet Breeding Ewes. Also complete farming equipment and farm of 220 acres. Modern 10 room house and plenty of farm buildings; including two tenant houses.

Monday, Jan. 5, 1920

Write for Full Particulars

MILLARD McCREERY

R. F. D. 7

St. Johns, Mich.

HOGS.

O. I. C. Gilts bred for March and April farrow, guaranteed safe with pigs. Fall pigs and a few service boars. Herd immunized by D. T. F. C. Burgess, R. 3, Mason, Mich.

O. I. C's. Last spring boars all sold. Have an extra good lot of last spring gilts, and fall pigs not akin. Good stock, registered free, 15 miles west of Depot. OTTO B. SCHULZE, Nashville, Mich.

O. I. C's Am offering a few September pigs that combine size and quality. O. J. THOMPSON, Rockford, Mich.

O. I. C's. One June boar and fall pigs not akin. Also Shorthorn bull calf 7 mos. old. Stock registered free. JOHN O. WILK, Alma, Mich.

O. I. C's. Big type serviceable boars, summer farrowed boars. Gilts, long bodied, short nosed, open or bred. G. P. ANDREWS, Dansville, Mich.

O. I. C's Have some choice spring boars and gilts; also this year's fall pigs. WEBBER BROS., R. 2, Phone 408, Royal Oak, Mich.

O. I. C's Service boars, fall pigs not akin also CLOVER LEAF STOCK FARM, Monroe, Mich.

L. T. P. C. 1 spring boar, (by Long Jones) the best pig you ever saw; price \$100.00; send check with first letter or the other fellow will beat you. If you don't like description will return check. A few good spring boars left at farmer's prices. Gilts will be bred to a grandson of Giant Buster and a Grand Son of Dishers Giant, no better pair of young boars in the state, and Wiley's King Bob. H. O. SWARTZ, Schoolcraft, Mich.

Boars also sows and pigs. Real Big Type Poland Chinas. Bred big for 25 years. Sired by Mich. Buster by Giant Buster. Litter 14 out of Mouw's Miss Queen 2nd, some breeding, also by Butler's Big Joe by Rust's Big Joe, out of a Wonder Queen, and said. Write us your wants, we will treat you right, our prices are low. J. C. BUTLER, Portland, Mich.

LARGE TYPE P. C. the largest in Mich. Spring boars now ready to ship. Boars for the breeders and boars for the farmers. Come and see the real large type with quality. Free delivery from Parma furnished visitors. Look up my exhibit at the Great Jackson Co. Fair, Sept. 8th to 12th, expenses paid if not as advertised. W. E. LIVINGSTON, Parma, Mich.

M. R. P. C. Breeder if you want to get in the King row. Buy a Gilt bred by Big Bob Mastodon, more Grand Champion Blood in his veins than any other Boar in Michigan. C. E. GARANT, Eaton Rapids, Mich.

B. T. P. C. spring Boars all sold. One Oct. 21st yearling boar, wgt. 425 lbs., as near perfect as any pig in Michigan. Price \$125. Gilts ready Jan. 1. Bred to a good son of \$10,100 Harrison's Big Rob. Every pig recorded free. JOHN D. WILEY, Schoolcraft, Mich.

T. P. C's for sale, our herd boar, Mouw's Wonder B. der 19025 bred by Mouw, extra good one. Price \$100. Spring boars and gilts from prize winning sires and dams. W. BREWSTER & SONS, R. 5, Elsie, Mich.

P. C. Boars Long bodied, heavy boned, with best of breeding. Satisfaction guaranteed. R. W. MILLS, Saline, Mich.

Big Type P. C. Boars, best breeding, best of blood. A. A. WOOD & SON, Saline, Mich.

Big type P. C. Choice spring boars from Iowa's great; best herds out of 100 lbs. sire and mammoth sows. big boned fellows. E. J. Mathewson, Burr Oak, Mich.

Big Type Poland Chinas. Spring boars by BIG BOB. Out of sows by Grand Master and Hillcrest Wonder. Also Fall Pigs. HILLCREST FARM, Kalamazoo, Mich.

TWO HERD BOARS

for sale. Ask for description of a real boar, live wires. Also have a few fall pigs, pair not akin. C. A. BOONE, Blanchard, Mich.

Large Type Poland Chinas for sale; something good in spring boars; write or see them; free delivery from Manchester. A. A. Feldkamp, R. 2, Manchester, Mich.

Big Type Poland Chinas. Sired by Smooth Mastodon litter mate to the Ill. Grand Champion. The big boned, deep, long bodied kind at farmer's prices. Wah-be-me-me Farms, White Pigeon, Michigan.

Large type P. C. Spring boars and gilts now ready to ship. Also one fall yearling boar and fall pigs. CLYDE FISHER, R. 3, St. Louis, Mich.

Big Type P. C. sows bred to Ls Big Bob & THIRTY Ls Giant, fall pigs; none better, call or write. E. R. LEONARD, St. Louis, Mich.

Big Type Poland Chinas. We aim to keep our herd in size and in quality. We have sows sired by Big Bob, the Yankee, Gerstale Jones and Gerstale King. Our herd boar is one of the largest and smoothest and of choice breeding. He is proving to be a great sire. We like the good ones and believe you do also. We now have a litter of 10 "Glansmans" and the dam booked again for spring litter to the Glansman. Visitors welcome. Wesley Hile, R. 6, Ionia, Mich.

Big Type P. C. Gilts bred to Big Orange Model and O. H's Defender. None better in State. Priced to sell. W. J. Hagelshaw, Augusta, Mich.

Bargains on big type Poland Chinas, both sex, all ages. Shorthorn calves, either sex, and B. P. Rock cockerels. Robert Neve, Pierson, Mich.

Big Type Poland Chinas with quality, at reasonable prices. Pigs of both sex, and bred sows and gilts. G. A. BAUMGARDNER, R. 2, Middleville, Mich.

Miller Meadows. L. T. P. C. Ready to ship immune. None better in Mich. Write or come and see. 2 1/2 miles west of Marshall. Clyde Weaver, Ceresco, Mich.

B. T. P. C. Spring boars for sale. The best I ever bred. Weighing 250 lbs. and up. Inspection invited. Recorded free. L. L. Chamberlain, Marcellus, Mich.

HAMPSHIRE

Steuben's Hampshire Farm

Spring Gilts and boars. Orders taken for bred gilts. Weanling boar pigs priced to sell. Hogs of the large and winning type carry the richest blood lines. Address your wants to

STEUBEN'S HAMPSHIRE FARM ANGOLA, IND.

Pine Grove Hampshires. "Quality First" Michigan Boy, Grand Champion boar of Michigan, bred and owned by us. Many other prize winners at Michigan State Fair 1919. Hog's for sale all ages, both sex. "Lookout Joe," a \$1000 boar heads our herd. GEO. COUPAR & SONS, R. 1, Marietta, Mich.

Edgewood Hampshires, spring boars sired by our prize winning and Grand Champion boars. Make the right buy today and get a good one. either for Hampshire breeding or for a cross on your other sows. Depew Head, Edgewood Farm, Marion, O.

Hampshires Bred gilts now ready to ship, a few 150 lbs. boars left and fall pigs from new blood lines. JOHN W. SNYDER, R. 4, St. Johns, Mich.

HORSES

Percherons, Holsteins, Angus, Shropshires, Durocs DORR D. BUELL, Elmira, Michigan.

For Sale Reg. Percheron Stallions and Mares, also a car of grade draft colts. CHAS. A. BRAY, Okemos, Ingham Co., Mich.

SHEEP.

IT PAYS TO BUY PURE BRED SHEEP OF PARSONS

"The Sheepman" I sell and ship every where and pay express charges. I will start one man in each town. Write for club offer and descriptive price list. Oxford, Shropshires, Ramboulets and Polled. PARSONS, Grand Ledge, Michigan R

KIDS of Mich. You are the future farmers of the state. I am one of the best sheep breeders in the state. Let's get together that you may start your own flock of registered Shropshires now. A lot of kids have already done so, but I want more. I will buy your ram lambs and cooperate with you in every way. Write me for my proposition and prices. KOPE-KON FARMS, S. L. Wing, Prop. Box 4, Coldwater, Mich.

Whittum Farm Shropshires 50 good ones including 10 imported ewes and 15 states. Last lambs. None better to start a new flock or improve the old one. 10 imported, one and two year old rams. THE WHITTUM FARM, Eaton Rapids, Mich.

BUY A SHEEP

Wait a minute, buy Hampshires. The American Hampshire Sheep Association wants to send you a dandy little booklet with list of breeders. Some near you. Write COMFORT A. TYLER, Secretary, 22 Woodland Ave., Detroit, Mich.

Idle Wild Stock Farms Shropshire yearling rams from prize winning stock. Make your selection early. Cliff Middleton, proprietor, Clayton, Mich. R. 3.

Registered Shropshire bred ewes. 1 to 8 years old. Large, healthy, well fleeced representatives of this flock give satisfaction in 15 states. Last season rams all sold. C. Lemen, Dexter, Mich.

Shropshires Registered ram lambs sired by Imp. Buttar. Also choice bred ewes. W. B. McQUILLAN, R. 7, Howell, Mich.

For Sale REG. YEARLING SHROPSHIRE RAMS, with quality and fleece. Priced to sell. H. F. Mouser, R. 6, Ithaca, Mich.

Shropshire Ewes bred to an imported Minton Ram. For sale by DAN BOOHER, R. 4, Ewart, Mich.

Polled Delaine Rams for sale. Good heavy shearers. F. L. BROKAW, Eagle, Mich.

POULTRY

Maple Valley Farm Extra Fine Buff Rock Cockerels for sale. MRS. M. J. HARTOM, Bellevue, Mich.

Parks Strain Banded Rock Cockerels. \$1.00 each. Pullets \$3.00. O. E. WRIGHT, L. B. 103, Ypsilanti, Mich.

R. C. Br. Leghorn Hens and unrelated Cockerels. Mrs. CLAUDIA BETTS, Hillsdale, Mich.

Silver Golden and White Wyandottes. Choice quality cockerels and pullets \$3.00 to \$5.00 each until Dec. 15. C. W. Browning, R. 2, Portland, Mich.

Vigorous Banded Plymouth Rock Cockerels. Trapped M. A. C. 250 egg strain. Improve your flock. \$3 to \$5 each. Rosemary Farms, Williamston, Mich.

WHITAKER'S R. I. REDS BOTH COMBS. Bred for color and eggs. Choice, farm raised cockerels at reasonable prices. Day old chicks. Order now for early spring delivery. Write for prices. INTERLAKES FARM, Box 39, Lawrence, Mich.

White Plymouth Rocks Stock for sale, breeding and quality of the best. Write wants. Richard M. Grotton, Mason, Mich.

White Wyandotte: out of choice stock for sale; cocks, cockerels \$3.50 each, send for my circular. DAVID RAY, Ypsilanti, Mich.

Buy Turkeys Now Michigan's best Giant Bronze breeding stock, young turkeys 2 lbs., pullets 15. Excellent color. Health and vigor guaranteed. N. Evelyn Ramsdell, Ionia, Mich.

FOR SALE:- Mammoth Bronze Turkeys hens \$6, toms \$12 Mrs. WALTER DILLMAN, R. 5, Doravac, Mich.

DETROIT

The Auto Center is the
Logical Place
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Training for
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LEARN AUTO AND TRACTOR BUSINESS

With a hundred thousand or more automobiles, trucks and tractors being manufactured each month, thousands of them are finding their way to the farms. Who will keep this vast amount of farm machinery in operation and repair?

**Train at Detroit
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This is your chance! Come to Detroit, the heart of this great industry. If you don't care to engage in the garage business, prepare to operate, adjust and repair your machines yourself—save thousands of dollars in repair bills as well as avoid costly delays at busy seasons. Think, too, of the money you can make in your spare time adjusting and repairing your neighbor's machines, either in a small shop on your own farm or at some conveniently located place nearby.

Earn \$100 to \$400 Monthly

Hundreds of our students go right from our school into business of their own—many of them had never before thought such a thing possible. These students are successful. They write us of having incomes way beyond their expectations, all because of the training received at the M. S. A. S. Factories, Garages and Service Stations all over the country are continually asking for our men.

Your success in the auto business depends upon your training—what you know plus what you are taught and trained to do correctly. Here at the M. S. A. S. you are thoroughly instructed in every phase of the work by actually doing it. Such a training enables you to earn the biggest salaries in the business. Our training gives you a thorough knowledge of the various makes, enabling you to give expert advice on autos, trucks and tractors. It gives you a big advantage in the selling of these machines.

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This is a very important feature of our Course of Instruction. Students

are made familiar with every known type of starting, lighting and ignition system. So thoroughly are our students taught this subject that none of them have any difficulty in locating and correcting any trouble occurring in auto electric systems.



In this room the student becomes thoroughly familiar with every type of starting, lighting and ignition systems

Complete Tractor Course Included



The growing importance of the tractor industry led us to include a complete tractor course with our regular auto course thereby giving our students the broadest possible training.

Our Students are also given complete and thorough instruction on the care, repair and operation of Farm Tractors as a part of our regular Auto Course. The constantly increasing use of tractors has created a big demand for trained tractor men, hence this addition to our Course without extra charge. Further assistance is realized from Manufacturers who have placed machines with us for the benefit of our Students.



Monee, Ill., Nov. 28th, 1919.

Dear Sirs:
I am surprised to hear from you, you sure have not forgotten me. I am well and happy, married but not in business, as you were looking for. I am a farmer, but have all the work I can take care of, in my spare time. Sure appreciate my education which I received at your school. I am working a one hundred acre farm myself, have a tractor and automobile, so it does not cost much to run them for I do my own work, and the neighbors, in my spare time. I have tractors to repair now and then, and automobiles.
I have a 12x25 tractor, which I do my work with, and outside work too, such as silo filling and so forth.
I have heard you have moved and suppose you have a larger business than ever. No I have not one of your new catalogs, wish you would send me one.
I am sending a picture of myself, plowing with my tractor, which may interest you. No charges for it, but just a good word, and I give the same, too, for you.
Signed, Yours respectfully,
ARNOLD F. KNOOP, R. 2, Monee, Ill.

Big Demand for Detroit Trained Men
Big factories want Detroit trained men; garage men and service stations are constantly asking for our graduates. Everywhere there are big opportunities for M. S. A. S. Graduates, Detroit trained; either to enter good paying positions or go into business for themselves.

Money-Back Guarantee
We guarantee to qualify you for a position as chauffeur, repair man, demonstrator, auto electrician, garage man, automobile dealer or tractor mechanic and operator paying from \$100 to \$400 monthly or refund your money.

Big Factories Endorse School



View of our block test department where we have from sixteen to twenty-five motors all the time for students to work on. Sprague Electric Dynamometer shown in center background.

The thoroughness of our methods and the completeness of our equipment are well known in the Auto Industry. The biggest factories in the Country heartily endorse our Course. In fact, many of the leading Auto Manufacturers assisted in outlining our Course and they give our Students the fullest co-operation possible. These factories are constantly calling on us for graduates because they know the type of men we turn out. Everywhere in the Automobile Industry, M. S. A. S. graduates are given the preference because Ours is the Factory Endorsed School.

Brazing, Welding and Tire Repairing Taught

These subjects are fully covered in complete Courses separate from the Auto Course. Brazing and Welding have become a most important part of the Auto Industry and Students taking the Course are thoroughly instructed in the subject. Our Tire Repair Course is most complete and comprehensive and furnishes a valuable addition to the equipment of a student entering the Auto Industry. There is always a big demand for trained, competent tire repair men.



Here is shown the Electrical Lecture Room where the elementary principles of auto electrics are explained to the students.

This Is the Way the Big Auto Factories Endorse Our School

The Auto Factories here in Detroit are constantly receiving letters asking about our School. Below are copies of replies made to such inquiries:

HUDSON MOTOR CAR COMPANY
DETROIT, MICH. U.S.A.

The Michigan State Auto School, in our opinion, is the finest institution of its kind in the country. In fact, we endorse its method of instruction.

We have recommended a great many students to them and the results were satisfactory.

The Michigan State Auto School ranks highest in the standard of schools. Its equipment and personnel is second to none.

This school is thought very highly of by the automobile men of Detroit and is considered one of the most efficient schools in the country.

If you intend to visit any school, then by all means choose the best one. The Michigan State Auto School, so far as we know, is the best.

You will make no mistake by entering for a course.

Yours faithfully,
HUDSON MOTOR CAR COMPANY,
(Signed) F. W. Moissels, Service Department.

MAXWELL MOTOR COMPANY
DETROIT, MICH.

Mr. James Williams,
20 Lincoln St., Gloversville, N. Y.

Dear Sir:-
Your letter of February 23, making inquiry regarding the Michigan State Auto School received.

Their methods of instruction, lectures and theories are 100% perfect. With all of their equipment and with the practical work that students are able to get in their own organization, I really believe that mechanics throughout the country are missing one great opportunity if they do not take advantage of their course. I do not know of another place in the country that has the number of different type motors, chassis, and the thoroughness of going into various electrical appliances and equipments as used on modern motor cars, that I found in this school.

I most heartily endorse the course.

We have a great many graduates from this school in our employ and every one has given entire satisfaction.

Very truly yours,
MAXWELL MOTOR COMPANY, INC.

KING MOTOR CAR COMPANY
DETROIT, U.S.A.

Replying to a recent letter addressed to Mr. Artemus Ward making inquiry as to the reputation of the Michigan State Auto School, will say that as far as we know all Detroit Automobile manufacturers endorse the work they are doing.

It is managed very efficiently and they have been turning out some pretty good men for the automobile industry, and cannot see any reason why you should hesitate about taking a course with this institution.

Yours very truly,
KING MOTOR CAR COMPANY

INTERNATIONAL HARVESTER COMPANY OF AMERICA
CHICAGO

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 thru our 90 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



School Open All Year

There is no need to lose time because of vacations, etc. Our instruction never stops. No matter when you arrive, our Welfare Department helps you to find a place to live; gives every assistance you need either of a personal or business nature and keeps in touch with you throughout the Course and after graduation.

Start Any Time—Don't Wait

Instruction can begin same day you arrive—no wasted time. We have three classes daily. Students are given every possible assistance. If necessary, we aid you to get a job where you can earn money to help pay expenses.

Ask For Catalog— Write Today

Get a letter—on the way to us Right Now asking for our new 176-page catalog. It tells the complete story of our school and our several courses. Gives the names and letters from our graduates who have made good because of the training received here at the Old Reliable M. S. A. S.—“The Detroit Auto School.” Get Catalog NOW. Or, better still, tell us when to expect you, then jump on train and come at once as hundreds have done. Don't Delay! Don't Wait! Write—or come—NOW—Today!

Not A One-Man School

This school is founded on the best, most practical and newest principles in the Automobile, Truck and Tractor business. It is the result of the closest 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.

A. G. ZELLER,
President.



MICHIGAN STATE AUTO SCHOOL
“Most Progressive Auto School in America”—“In the Heart of the Auto Industry”
1001 Auto Building
687-89-91 Woodward Ave. **DETROIT, MICH., U.S.A.**

Train in Detroit—and go back on the Farm