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## Phosphorus for Heavy Soils

*Increasing Soil Efficiency Through Fertilization*

A RECENT interview with Mr. Samuel Simpson, of Wakeshma township, Kalamazoo county, brought out that he is a very enthusiastic user of acid phosphate on heavy land. He showed us fields of wheat that were greatly benefited by the application of two hundred pounds of sixteen per cent acid phosphate per acre; in fact, two years ago cooperative tests on his farm showed that the yield of this crop was raised from twenty-eight bushels to slightly more than thirty-eight bushels per acre and that the clover this season following the wheat is about one-third greater in yield where the phosphate is applied to the land for the wheat than where no material was added to the soil.

Similar results have been obtained on the farm of W. J. Guthrie, near Mendon, Michigan. Where two hundred and fifty pounds of this material was used on stony silt loam land with a rather tight subsoil the yields were increased 16.2 bushels over the unfertilized soil. These men, and many others, are enthusiastic supporters of acid phosphate for the better grades of soil.

There is much interest in the use of phosphorus for soil improvement and, in fact, this is commendable because it is a plant-food and is removed from the soil by crops and its supply in the majority of soils is somewhat limited. We now know that the majority of the heavy soils of Michigan respond to its application by marked increase in the yields of several crops. If one contemplates using this material on his land it is advisable for him to know the forms in which it may be purchased, its effect on crop growth and on the soil, the time, manner and amount to apply and results that may be expected from its application as indicated by reports from different farmers and tests conducted by experiment stations on heavy land. In other words, he is more likely to use the material more intelligently if he is pretty well informed concerning it. In fact, the American farmer is rapidly realizing that it is advisable for him to know as much about his business as it is possible for him to know.

There is one carrier of phosphorus that is used extensively in Michigan at the present time, and three others that are of interest to the farmers of the state.

The one that is used far in excess of the others is the acid phosphate. This is obtained by mixing about one ton of raw rock phosphate, which is found in a number of our states, notably Florida, Tennessee and several of the western states, with about

the mixture is properly made and cured before shipment.

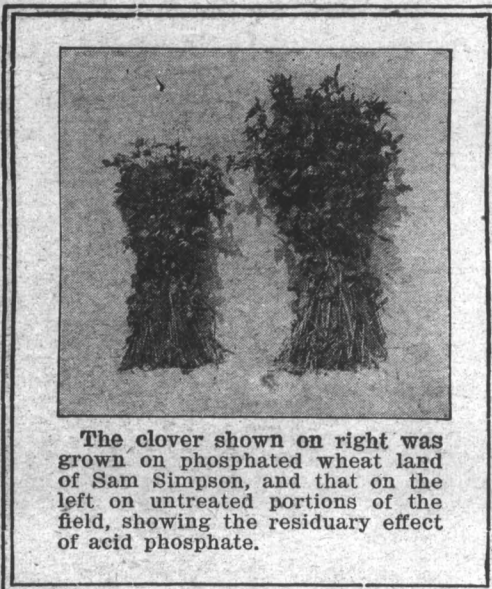
Another carrier of phosphorus is bone meal, which is obtained from the packing houses, usually after it has been steamed and finely ground. This is a slower acting carrier of phosphorus and therefore must be applied in larger quantities than the acid phosphate. This is not used very extensively in Michigan. In some instances the bones are mixed with sulphuric acid and forms acidulated bone, sometimes spoken of as bone phosphate. As a matter of fact, the phosphatic material that results from the mixing of bone and sulphuric acid is the same as that when raw rock phosphate and the acid are mixed and should be looked upon as acid phosphate.

Recently a treble phosphate has appeared on the market in Michigan. It is manufactured in Montana by the addition of sulphuric acid to raw rock phosphate, the practice being similar to that which is followed in the manufacture of sixteen per cent acid phosphate. When the material is placed on the market it contains forty-five per cent of available phosphoric acid or about three times as much as sixteen per cent acid phosphate. Tests in several places in Michigan by members of the soils department, during the past year, indicate that this is a successful carrier of phosphorus and should be used in about one-third the quantity of sixteen per cent acid phosphate.

The raw rock phosphate that is mined at the different depths, from the states mentioned above, after being very finely ground is placed on the market to be used on the soil without further treatment. In some states it is used very extensively, especially where the soils are rather high in humus and where stable manure is used quite abundantly. Results of experiments in Michigan to date are not in favor of this carrier of phosphorus for the majority of the farms of Michigan.

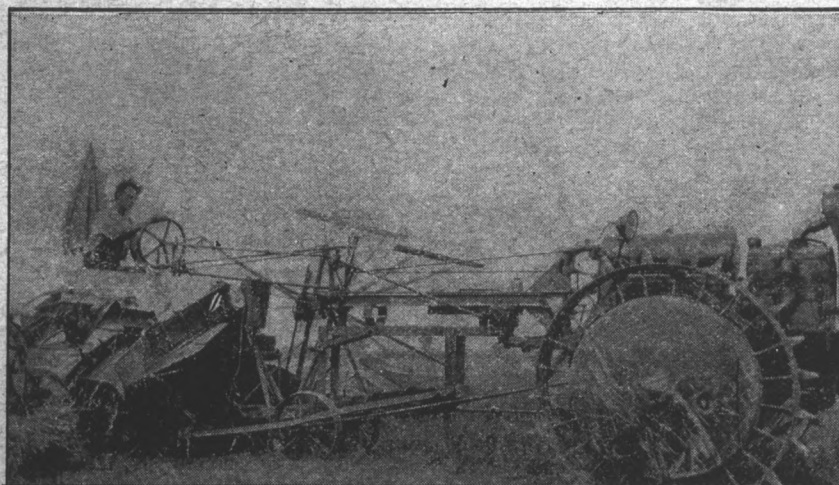
When phosphorus is applied to soils that are deficient in it the applications are beneficial in several respects. Contrary to popular belief and to earlier teachings, it is now recognized that it increases tremendously the root production of plants, causing them to strike more deeply into the

(Continued on page 59).



The clover shown on right was grown on phosphated wheat land of Sam Simpson, and that on the left on untreated portions of the field, showing the residuary effect of acid phosphate.

the same amount of strong sulphuric acid. As a result of this mixture we have acid phosphate, a readily available and usually a grayish pulverized material. The sulphate acid is destroyed by the mixture due to the lime and the other substances that are present in the raw rock phosphate, that is, when



Fertility Determines What the Harvest Will Be.





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DETROIT, JULY 16, 1921

### CURRENT COMMENT

#### Crop Risks and Diversity

THAT there is less risk in diversified production than in one crop production is a generally recognized fact. The diversity of our products makes Michigan attractive from an agricultural standpoint. One crop may be almost a total failure, due to unfavorable conditions for that particular crop, but other products will insure the general farmer a good living and a fair income, while in the one-crop section a failure of the main dependence is disastrous.

And it now appears that in addition to the greater freedom from crop risk which results from a diversity of crop production, there is, generally speaking, less risk on individual crops in sections where diversified production is the rule. Figures recently compiled by the Bureau of Estimates of the United States Department of Agriculture show that the risks in the production of the three great staple crops corn, wheat and oats, are greatest in the plains states extending from Texas to North Dakota.

This general fact is established by the average deviation of the yield per acre from the average yield. As this territory includes the sections of the country where these great staples are the principal crops grown, and where their production so greatly exceeds local consumption, this conclusion, established by the records of the department for a period of fifty years should add to the contentment of the farmers who are located in sections where the soil and climatic conditions favor diversified crop production, as is preeminently the case in Michigan.

#### Moves for World Peace

DURING the present month two important moves have been made by the government of the United States, looking toward the establishment and maintenance of world peace. The first of these was the passage of a resolution by congress declaring the war with Germany at an end, and the second was the sending of a note to the principal allied powers and the governments of the far east asking if they would look with favor on the proposition of calling a conference at Washington for the purpose of discussing the limitation of naval armament by the countries participating.

The first mentioned of these moves

may be looked upon as a step looking toward the adjustment of the country's European relations rather than their definite settlement, since it has accomplished little toward clearing up the involved situation. It is, however, a first step in the direction of their settlement, which indicates that definite plans are taking form for the ultimate settlement of the whole problem. There is no question in the mind of the average citizen that it is desirable to have the European complications growing out of the war, so far as our relations with Europe are concerned, adjusted at the earliest possible date that this can be accomplished without jeopardy to the future interests of the United States and her people. Sufficient time has now elapsed since the close of the war so that these problems can be approached calmly and without prejudice and settled in a statesmanlike way. It is no simple problem, but it is a problem which must be solved, and the first real step taken toward its solution is a matter for general congratulation.

The second move above noted is perhaps of even greater importance, not alone from the standpoint of the possible saving to the nations of the world from an ultimate agreement on the matter of the limitation of armament, but as well because of the proposed adjustment of questions relating to the Orient, which otherwise might become a source of friction in future years. The President, with apparent wisdom, has considered the settlement of these questions as vital in their relationship to the limitation of naval armament. If this program can be accomplished, it will be a step toward the perpetuation of world peace which will receive general approval from the rank and file of American citizens.

#### Congress and the Farmers

SENATE leaders at Washington who favored the adjournment of that body for four or five weeks while the house considers tariff legislation were defeated in their purpose by a group of senators from the south and west who represent agricultural states. This group insisted upon the importance of giving early consideration to a number of bills in which their agricultural constituents are interested, including the grain exchange regulation bill, the Norris farm export bill and a number of others.

That a sufficient number of United States senators are convinced of the need and wisdom of giving early attention to these matters relating to agriculture to hold their body in continuous summer session under prevailing weather conditions is a tribute to the manner in which the farmers of the country are presenting their problems for the attention of the national lawmakers, and a matter for general congratulation. Under these conditions if the just requirements of American agriculture are clearly presented they are likely to receive favorable consideration. At least a long step will have been taken toward a general appreciation and clarification of the farmer's needs and views.

Unfortunately some of the organization representatives at Washington are working at cross purposes. Congress has established a joint agricultural commission, which will begin its sessions in Washington this week. The American Federation of Farm Bureaus will undertake to present to this commission first-hand information regarding the American farmer's needs by having the question simultaneously discussed at a thousand meetings held by a thousand local county farm bureaus for the purpose. These meetings were held this week. The outcome will be most interesting and illuminating as a first attempt to get general and direct expression from a large

number of farmers regarding the present ills of agriculture and constructive suggestions as to practical remedies for them.

The educational value of such discussion will be great, whether any notable consensus of opinion is developed or not. But in the end the issue, like all others, is bound to become a local one to most members of the national legislative body. And probably in the end the most insistent demand will be for such restraining and enabling legislation as organization leaders deem necessary to enable the farmers of the country to solve their own problems, as they are in a fair way to do through constructive organization work and cooperative effort to that end.

#### Help for Commodity Marketing

WITH the idea of commodity marketing generally accepted as the most practical and most satisfactory method of disposing of farm products, the question of how best to insure the future of cooperative marketing institutions comes to the mind of the progressive farmer. Naturally those who are interested in this plan of selling, desire first of all, reliable information on the handling of the particular crop or crops which they grow or handle.

The department of agriculture is anticipating this demand for information and has already planned to give aid through the employment of commodity specialists who are also informed on cooperative marketing practices. In addition to their already acquired knowledge and experience, these men will make a careful study of the methods followed in the communities where their respective crops are now being marketed along commodity lines, and with this information they will be ready to aid other communities in laying the foundation of new cooperative marketing organizations on the rock of experience. The department of agriculture is to be commended on its attitude toward the marketing question at a time like the present when every assistance is needed to make certain that agriculture will be able to hold fast to that which she has found good.

#### Safeguarding the Community

THE escape of a pair of untamed lions from a wrecked circus train, suggests to one's mind the organization of the entire community to destroy a common menace. The scratch of the lion's claw is almost always fatal. This is due to the blood-poisoning germs that accumulate and develop on the claw as it remains within the moist and warm sheath.

Yet that familiar insect bred in unspeakable filth and known to us as the common housefly carries a million dangerous and deadly germs on its hairy body and is a menace far more hazardous to the community than all the lions and other animals that break from circus cages. Notwithstanding this danger due to the great number of these insects and to their pertinacious habit to inspect, touch and taste every object within reach of their active wings, folks are not inclined to get together on a community program looking for the destruction of the eggs and maggots of this pestiferous insect.

However, it is more than possible that in rural places individual effort with screens, traps, closed vessels for foods that attract these pests, sulphate of iron for the manure piles, etc., will bring a sufficiently satisfactory return in the reduction of the number of pestering flies with which the members of the family will have to contend, to well repay for the investment of time and cost of the necessary materials.

## News of the Week

Wednesday, July 6.

THE Teutons take United States peace declaration quietly.—Antrim county, Michigan, is holding forest fire probe.—United States Senate passes four billion dollar bonus bill.—Nineteen die and thirty-two are seriously injured at a fire in the plant of the Standard Oil Company at Whiting, Indiana.—June has been the driest month in more than a century in Great Britain, less than a quarter of an inch of rain having fallen.—Two hundred and fifty members of the American Legion will sail soon to visit the battlefields of France.

Thursday, July 7.

THE Department of National Property of Mexico intends to build a two million dollar hotel in Mexico City. The plans indicate that it will be one of the best hotels in the world.—The Irish agree to armistice. Jan Smuts, premier of South Africa, will take active part in peace negotiations.—American troops on the Rhine held the regular old-fashioned American Fourth of July.—The town of Frederick, South Dakota, was practically demolished by a cyclone.—The department of labor estimates that the cost of living has declined sixteen per cent in the past year.—United States gun boats have been ordered to Tampico, Mexico, to protect American interests during labor troubles there.

Friday, July 8.

BECAUSE of destruction of main ammunition dump at Smyrna, the Greeks in Asia Minor may be compelled to suspend operations against the Turks.—General reduction of the army at all military points in the United States and Porto Rico has been ordered.—Poland is confronted with a grave financial crisis, its money being almost worthless. An American dollar is worth 1900 Polish marks.—A gold medal was pinned on the collar of Studdy, a Boston terrier, a hero of the World War, by General Pershing.—The German-Chinese trade treaty has been ratified and is immediately effective.—Kansas producers of hay and grain face ruin unless they get lower freight rates.—A report on the permanent tariff shows that liquor importations have doubled since prohibition became effective.

Saturday, July 9.

THE town of Milwood, in northern Ontario, was destroyed by fire. Hundreds of pulp workers are homeless. Millions of dollars worth of timber have been destroyed.—The Pennsylvania Department of Labor says unemployment is increasing despite the call for farm labor.—Eight foundries in Chicago, employing 5,000 men, were forced to shut down because of excessive heat.—Navy Blimp 3-3 exploded at Hampton Roads, seriously burning four persons.—Postmaster Hayes promises investigation of the parcel post system with a view of effecting economies.—An appropriation of 400,000 will be awarded twenty-four states for the protection of their forest lands during the present fiscal year.—John D. Rockefeller celebrates eighty-second birthday.—The United States Steel Corporation announces a general reduction in steel prices.

Sunday, July 10.

THE French Senate votes ten million francs for relief of the unemployed.—The governor of Colorado announces that seven thousand people are in absolute need as a result of the Pueblo flood.—Five hundred small forest fires are raging in the vicinity of Grand Mere, Quebec.—Gunboats are withdrawn from Tampico, because the situation is not alarming.—Railroads of the country report \$37,000,000 increase in earnings.—Airboat in Detroit river kill two men in skiff by crashing into their craft in starting off.—Eight million dollars in gold is enroute from British vaults to United States bankers.—King George gives ball in London. This is the first dance given by the King since 1913.—The Turks seize American orphanages in Syria and have ordered the expulsion of foreigners.—American Federation of Labor warns rail workers against stopping work because of wage cut.—Upper Silesia is now clear of the Polish insurgents.

Monday, July 11.

PROFESSOR EINSTEIN, a German scientist, asserts that the United States is run by women.—The National Educational Association demands a secretary of education in President's cabinet.—Edgar Cole, an American in London, predicts that New York will slip into the sea during July.—The women of Germany want return of empire.



# Michigan's Experiment Station

*What It Has Done to Give Us a Better Knowledge of Soils, Fertility, Crops and Crop Production*

By R. S. Shaw

**T**HIS article is written to convey some idea as to the results accomplished by the sections of crops, soils, chemistry and farm mechanics, relating chiefly to problems connected with soils, soil fertility, crops breeding and cultural methods, and to farm buildings, drainage, sanitation, etc. As some of this work was done before the agricultural division and experiment station took on its present form of organization, classification of the work by departments entirely is not feasible for the entire period.

Between the founding of the college in 1857 and the organization of the experiment station in 1887, much attention was given to the investigation of methods relating to crop production, including cultural practices and the introduction and testing of new varieties.

#### Excels in Crop Breeding Work.

The Michigan Experiment Station now has the most extensive crops breeding department of any institution in America. The breeding work, including cereals, hay and forage plants, root crops, etc., now requires annually an area of over one hundred and forty acres, including the plots required to increase desirable varieties. The Agricultural Experiment Station has given to Michigan a superior variety of wheat known as Red Rock, originating from a single kernel planted in 1908; it is winter hardy, is a high yielder, with stiff straw, and is a good bread producer. The Michigan Experiment Station has given to Michigan and her northern sister states—Rosen Rye; an unexcelled yielder of the best quality and as yet unbeaten in competition even at such shows as the great International Hay and Grain Show with several states competing. This rye originated from a Russian importation and now the crops department of the experiment station controls the entire rye production—all pure head-selected Rosen—of South Manitou Island in Lake Michigan, in order to perpetuate the pure strain and prevent cross-breeding.

The Michigan Experiment Station selected from and improved strains of Worthy, Alexander, Wolverine, Swedish Select and College Wonder oats, which are now so commonly grown throughout the state, excelling in yield and quality most of the common varieties heretofore grown. The station has also given to Michigan the Robust Bean, known for its excellent disease-resisting qualities and large yielding abilities. When Hubam sweet clover (annual white) was discovered the Michigan station was the leader in testing its merits and reproducing it in large quantities to meet the demands for seed, not only from this state but for many other states as well. Individual alfalfa, clover, timothy, cowpea, soy-bean and plants by the hundreds, as well as many others, are to be found in the crops breeding plots. The crops department is achieving valuable results in the determination of corn varieties best suited for particular purposes in the various zones into which the state is divided on the basis of soil and meteorological conditions.

#### Work Extends to Practical Farmer.

The achievements of the crops breeders of the experiment station resulted in the organization of the Michigan Crop Improvement Association as a means of increasing meritorious varieties and placing them in the hands of the farmers. Much of the most effective work of the extension division has

been based on the results of the experiment station crops breeders.

#### Put Michigan on the Sugar Beet Map.

The Michigan Experiment Station was responsible for the establishment of the sugar beet industry in Michigan. The names of two men are inseparably linked with this work, Dr. R. C. Kedzie as the result of studies and observations of the beet-growing industries in European countries attacked the problem from the standpoint of suitable soils, fertilizers and environmental conditions. Director C. D. Smith's work included investigations of cultural methods comprehensive and complete in their scope. Dr. Kedzie published a bulletin on beet sugar in 1891 and his publications and those of other investigators numbered over a dozen in the years that succeeded. The magnitude of the industry growing from this humble start from the experiment station may be appreciated upon consideration of the fact that Michigan now has eighteen factories representing an investment of over \$30,000,000, returning to the farmers annually about \$10,000,000, from about 123,000 acres of beets grown.

#### Soil Investigations Extensive.

Investigations reveal that the experiment station since 1887 has furnished many valuable aids to agriculture by investigating and analyzing many types of soils, crops, etc. Some of the miscellaneous projects investigated include the following, viz.: Jack pine plains, comparative yields of old and new meadows, two plants for sand land, rape, millet, crimson clover, sand

The protection thus afforded the farmer may be surmised by a statement from the chemist's office for the year 1920, during which 964 samples were analyzed, representing a total tonnage in the state of 101,000 tons. The approximate value of fertilizers sold in the state was \$400,000 for that year. During the past five years the experiment station has inspected and licensed commercial feeding stuffs; in 1920, 1,011 samples were analyzed from an approximate tonnage of 250,000 tons in the state, with sales valuations representing about \$15,000,000. During this year the cost of fertilizer and feeding stuffs inspection was approximately 7.2 cents per ton.

As early as 1885 a bulletin on the nature and uses of marl by Kedzie, appeared, followed by the results of various investigations, including reports of results on manurial value of ashes, plaster ashes and salt as a top-dressing for meadows and pasture lands, fertilizers for the various cereal and root crops, the comparative value of farm manures, and the losses and preservation of farm manures, etc.

#### Leads in Amount and Quality.

From 1909 on to the present time the Michigan station excelled in the amount and quality of its purely scientific research work bearing either directly or indirectly on soil fertility problems. During this period three technical bulletins have appeared on the subject of organic nitrogenous compounds in peat soils. Other publications related to soil temperatures, effects of temperature on physical

were attacked by chemists, crops experimenters and others independently or in cooperation. Since the establishment of the crops department, a decade and a half ago, investigational projects have been put on a well organized basis. Soil survey work is now under way in the state. Last year a report was issued on the soils of the Detroit area, including nearly three counties. Surveys are being made of four other counties during the present summer. These surveys consist, in part, of an interpretation of soil conditions from an agricultural standpoint, including classification, mapping, composition and topography, erosion, productivity, utilization and recommendation for soil improvement. During the present season the soils department is conducting fertility tests in about ninety localities, distributed throughout the lower peninsula, including a great variety of soils under varying environmental conditions. The purpose is to determine the fertilizer needs from the most economic standpoint. The projects not in progress include moisture and structural relationships of the soil, fertilizer needs of representative soils, immediate and residuary effects of different forms of lime, immediate and residuary effects of different forms of lime, and immediate and residuary effects of acid, double superphosphate and raw rock phosphate respectively, partial substitution of mineral fertilizers for stable manure, soil fertilization for sugar beets, value of top-dressing soils with mineral and organic fertilizers, investigation of the value, nature and duration of the residuary effects of different texture, a comprehensive study of muck soils as well as many others of a highly scientific character, the outcome of which are to throw light on Michigan's complex soil problems.

#### Helping the Farmer with Building.

Though the department of farm mechanics did not receive recognition until 1906, much had been accomplished prior to this time in both educational and investigational work by various members of the staff of the department of practical agriculture, from which the present eleven departments of the agricultural division emanated. As early as 1889 a bulletin on silos, by Johnson, appeared, followed in 1896 by another bulletin—building soils, and then followed by a third in 1909 entitled, "Cement Silos in Michigan." The first silo built in Michigan by the college occupied the present site of the office of the director of the experiment stations. Bulletins on building construction first appeared in 1890, with one entitled greenhouse building and heating, the college farm buildings, protection of buildings from lightning, equipment for breeding, feeding, care and management of swine, poultry house construction and yardage. In 1912 a complete and comprehensive discussion on the subject of drainage was issued by Jeffery, followed by two bulletins on the durability of concrete tile. An expert devotes part of his time to drainage demonstrations in the state. Much drainage investigational work was carried on by the college prior to 1887. The farm mechanics department has aided in testing and perfecting septic tanks for use in farm sewage disposal and is prepared to mail blueprints to those desiring to install them. Other subjects akin to the work of the farm mechanics department published on are, draft of farm implements, shrinkage of farm products, etc.



County Agents Gather Data from Experimental Plots.

lucerne, cowpeas, soy-beans, winter vetch, influence of nodules on composition of cowpeas, alfalfa, legumes other than alfalfa, succotash as a soiling crop, bean improvement, sandy soils of western and northern Michigan, hairy vetch, barley improvement, short season hay crops, sweet clover and numerous other things about which the farmer desired information.

During the period beginning in 1885, two years before the organization of the experiment stations, up to the present time, the Michigan Agricultural Experiment Station published sixty-two bulletins resulting from the investigations relating to soil fertility, crop requirements and fertilizer problems. The first report on Analyses of Commercial Fertilizers, by Dr. R. C. Kedzie, appeared in 1887 and for thirty-four consecutive years, without a break, the collection and analyses continued with annual reports informing the farmers as to the quality and value of the fertilizers they were using.

character of soils, soil acidity, measuring concentration of soil solution, determination of the nature of soil acidity and lime requirements, obtaining soil solution by oil pressure, classification and measurement of different forms of soil water by the dilatometer method, soil solution as an indication of biological changes in soil, relationship between the unfree water and the heat of wetting of soils and its significance, soluble salt content of soils and factors influencing it, effects of fertilizer salts treatments on composition of soil extracts, uses of solutions of ammonium citrate for estimating the reverted calcium phosphate, rate and extent of solubility of minerals and rocks under different treatments and conditions. In all eighteen bulletins in this class reported important results basic to the further solution of soil fertility problems.

#### Mapping Michigan Soils.

In the earlier history of the institution soils and soil fertility problems



# LATE AGRICULTURAL NEWS

## BUTTER TAX AGAIN POSTPONED.

THE proposed federal tax of ten per cent on all butter made from neutralized cream has been postponed to August 1 by Commissioner Blair, says H. F. Frary, secretary of the Michigan Creamery Owners' and Managers' Association. It is believed that the proposition will eventually go back to the attorney-general's office for a rehearing. Mr. Frary reports that the better cream campaign being waged by the dairymen of the state is continuing to show good results. Creamery owners speak of a steady improvement in the quality of cream sent to market.

## NUMBER OF IDLE FREIGHT CARS DECREASE.

AN increased demand for all classes of freight cars except those for coal was noted during June, says the American Railway Association in advice to the State Farm Bureau. The railway's report said that on June 23 there were 377,850 cars in excess of current freight requirements, or a reduction of 3,896 cars as compared with the total of idle cars on June 15.

## BETTER CREAM CAMPAIGN SUCCESSFUL.

CREAMERIES and buttermakers throughout the state are informing the Michigan Association of Creamery Owners and Managers that their better quality cream campaign is getting results. Creamerymen agree that there is a steady improvement in the quality of cream that is now coming to them. The association continues to push its educational drive for qual-

ity production and payment for cream on the basis of a graded product.

## VETCH CROP SHORT.

RESET by dry weather in some parts of western Michigan and an additional plague of grasshoppers in the northwestern part of the state, the Michigan seed vetch crop is likely to be somewhat lighter this year, according to the State Farm Bureau. The state produces between eighty and ninety per cent of the American-grown vetch. The 1921 vetch harvest is just getting under way. Sales of the old crop of Michigan vetch are reported to be doing very well, in face of the great imports of foreign-grown vetch. Careful American growers seem to prefer Michigan seed. New seedings of vetch should be made before August 15 for best results, says the farm bureau, quoting Michigan Agricultural College information on the handling of vetch.

## WATER RATES ON MICHIGAN FRUIT.

Water rates on fruit over the Michigan Transit Line to Chicago from Bowers Harbors, Boyne City, Charlevoix, Glen Arbor, Glen Haven, Harbor Springs, Mackinaw Island, North Manitow Island, Northport, Old Mission, Omena, Petoskey, St. Ignace, Sault Ste. Marie, St. James, Suttons Bay, Traverse City and Wildwood have been reduced as follows: Barrels and three-bushel crates, less than carload lots, from 87 to 75 cents; bushel baskets, 33 to 30 cents; half-bushel baskets, 27 to 20 cents, and one-third, quarter, and half-bushel baskets, 20 to 10 cents.

Reductions from Ludington, Manistee, Onkama and Frankfort to Chicago are as follows: Barrels, and three-bushel crates, less than carload lots, 84 to 65 cents; bushel packages, 33 to 30 cents; half-bushel baskets, 25 to 20 cents, and one-third and quarter bushel packages, 20 to 15 cents; fifth-bushel packages, 17 to 10 cents.

Reduction on carlots and less than carlots of apples, berries, currants, grapes, cherries and also celery from Grand Haven, Muskegon, Montague, and Whitehall to Chicago on the Goodrich line range from fifteen to twenty-cent and better, according to the tariff recently adopted.

The carlot rate from Grand Haven to Chicago on apples has been reduced from 28 to 22 cents; berries and currants, 80½ to 63½ cents; grapes and cherries, 68½ to 64 cents, and celery, 42 to 40½ cents, says the farm bureau, adding that proportionate adjustments have been made from Muskegon, Montague and Whitehall to Chicago.

## BILLS AFFECTING FILLED MILK.

HEARINGS on the Voigt filled milk bill before the house committee on agriculture were resumed July 8. The opponents of the bill admitted that the label did not protect the consumer, but they argued that this was a matter for the pure food laws to handle. They also admitted that the filled milk was not as good as whole milk when fed to children. In filled milk production, they extract the butter-fat in milk and sell it manufactured into butter. Then they replace this butter-fat with coconut oil, costing twelve cents a pound, and sell the resultant filled milk in competition with

whole milk. From six to seven per cent of the filled milk is vegetable oil, the other product being sweet skim milk. They argued that "as skim-milk is a waste product, heretofore being fed to hogs and poultry," they were doing the country a favor by mixing it with vegetable oil and selling the mixture in the place of whole milk.

Congressman Fordney, chairman of the ways and means committee, has introduced a bill in the house to tax filled milk, which is almost identical with the Beck bill, except that the terms are more comprehensively defined, and the manufacturers' license and product taxes are larger.

## TO HEAD AGRICULTURAL DEVELOPMENT WORK.

MR. HALLIDAY, Commissioner of Agriculture of Michigan, has selected John A. Doelle, secretary-manager of the Upper Peninsula Development Bureau to be director of the Bureau of Agricultural Development in the newly created State Department of agriculture. Mr. Doelle's work will embrace the divisions of immigration, settlement, agricultural fairs, agricultural statistics, land problems, drainage, orchard and nursery inspection, and apiary inspection.—CHASE.

## RAINS RELIEVE DROUTH.

A SEVEN weeks' drouth was broken by a series of rains which visited Benzie county on July 7. Crops in general, and especially late potatoes and beans, will profit by the rain. The Benzie county Farm Bureau, acting for cherry growers of this district, sold the sour cherry crop to Chicago dealers for \$2.87 per sixteen-quart case.

# ACTIVITIES OF FARM BUREAUS

*Latest News From Local, State and National Organizations*

## LIVE STOCK LOADING IN TRANSIT PRIVILEGE RESTORED.

STOPPING of live stock cars in transit to complete loading, a privilege which was revoked by the railroads early in the war, has been restored by the Michigan Central Railroad, effective July 30, according to the State Farm Bureau traffic department. The concession is expected to again effect marked savings to shippers of live stock and to provide an economical method for several shippers on the same line to make arrangements for the shipment of small lots of stock to market.

The Michigan Central is the first railroad to announce the restoration of the loading of live stock in transit privilege. The farm bureau report says that it placed the proposition before the Michigan Freight Committee and the Central Freight Association, both of which passed favorably on restoring the privilege and that other roads may be expected to duplicate the action of the Michigan Central.

## DIAGNOSING THE FARMING BUSINESS.

NINETY-SEVEN thousand State Farm Bureau members were asked during the week of July 4 by the state organization, "What, if anything, is the matter with the farmer's business?"

The inquiry was made in accordance to instructions from the American

Farm Bureau Federation, which is gathering from forty-seven farm states first-hand information on farm problems for the congressional committee investigating the condition of agriculture.

The State Farm Bureau questionnaire was scheduled to be carried out in the form of community hearings where there was an opportunity to call a meeting in the limited time available for conducting the questionnaire. Farmers considered authorities on their respective commodities were scheduled to be heard in each county on their experiences on the present conditions of credit, transportation and marketing facilities. They were also to be asked for suggestions to remedy existing evils.

The congressional joint commission of agricultural inquiry began its sessions July 11. It is charged with investigating the present condition of agriculture and is expected to report and to recommend remedial legislation where needed within ninety days.

## WOOL POOLS EXCEED THOSE OF 1920.

WOOL pools in all the eighteen American Farm Bureau Federation states engaged in pooling wool this year are exceeding all expectation, says the national organization. Ohio is reported to have pooled 4,000,000 pounds to date, 1,000,000 more than the 1920 pool. Michigan, now in its third million, is far in advance of last year. New York already has as

much as was pooled last year and the prospects are that the New York pool will double the 1920 figure. Kansas, Iowa, Illinois, Indiana, Wisconsin, Minnesota, South Dakota and Missouri are placing great amounts in the American Farm Bureau Federation pool.

## ELEVATOR EXCHANGE TO HOLD ANNUAL MEETING.

REPRESENTATIVES of eighty-five cooperative elevator associations and farm bureau locals, members of the Michigan State Farm Bureau Elevator Exchange, will attend the first annual meeting of the organization, to be held at State Farm Bureau headquarters in Lansing, Tuesday, July 19. The delegates will find awaiting their further guidance a young elevator giant which has grown from twenty-three to eighty-five elevators within a year.

The elevator exchange actually began business October 20, 1920, with twenty-three elevators using it as a selling agent for grain and beans. During November of that year it did a business of about \$61,000. During June, 1921, the exchange turned over a business of \$600,000. Three sales specialists direct the sales of the elevator exchange, which now occupies an entire wing of the State Farm Bureau headquarters at Lansing.

Close connection at all times with the great grain, bean and hay marketing centers has enabled the elevator exchange to keep farmers' elevators

informed all the time on the best markets and to enable them to take advantage of all opportunities, says the elevator exchange. During the recent upturns in the wheat market the exchange forecasted the trend of events so accurately that scores of Michigan elevators unloaded thousands of bushels of grain at the peak price, it is declared.

## WOOL GRADING SCHEDULES.

THE farm bureau wool pool is now going into the third million and continues to grow at the rate of 360,000 pounds a week. Grading schedules for the week of July 18 are as follows:

Monday.—Boyne City, Whittemore, Vassar, Manchester and Fremont.

Tuesday.—Charlevoix, Caro, Branch county.

Wednesday.—Petoskey, Lincoln, Cass City, Branch county.

Thursday.—Fairview and Fairgrove.

Friday.—Lachine and Deckerville.

Saturday.—Ossineke and Marlette.

The wool department has placed one hundred and thirty grading warehouses to date. Seventy-five of these have been visited for the first time and a few have had second and clean-up visits, with the result that more than 1,500,000 pounds of wool have been pooled. It is assured that grading stations are to be located in the upper peninsula, where 100,000 pounds of wool are in sight, according to upper peninsula farm bureau wool growers.



# Fire Blight---By G. H. Coons

It is questionable if anything new can be said on the subject of fire blight. The story of fire blight, its potentialities for damage, and the like, have been told often. Yet, in a large district of the state, an epidemic is upon us and valuable orchards stand in grave likelihood of being badly injured.

Growers always meet me with the question, "Have you discovered a spray for blight?" The answer has to be given sadly, "No," and it is extremely likely that such will always be the answer for fire blight is not a disease of the type amenable to spraying. My sadness arises, not so much from the lack of the spray, as from the realization that growers do not understand the nature of the disease which is doing the damage.

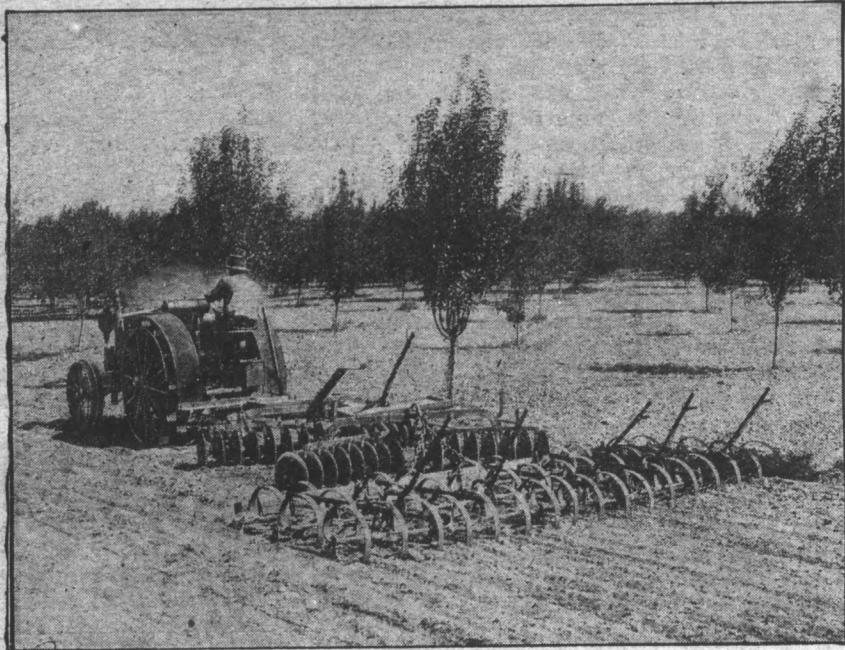
The nature of the disease is such that sprays cannot reach it and no amount of claims by fire blight cure purveyors will change the natural course of this bacterial parasite as it goes about producing the dread disease.

Fire blight starts in the spring from hold-over cankers. For the most part, these are large and are located at the

Waiter saw this relation and proved the case by capturing bees which had visited cankers and isolated the fire blight germs from their mouth parts. They were "caught with the goods."

The germs introduced into the nectaries grow, invade the flower stalk and the twigs. They produce a condition difficult to distinguish from frost injury except by use of the microscope. The frosted blossoms are free from germs, the blighted blossoms simply teem with germs. In some cases the distinction can be made in the orchard. The frosted blossoms commonly come off at the base of the pedicel, whereas the blighted ones frequently break off clear down to the woody portion, all the blighted parts coming off.

It is evident that blossom blight in and of itself is not usually serious. It brings about a thinning; but this year it not only thinned out but it cleaned up the whole crop in places. The greatest menace of the blighted blossoms is the fact that they serve to augment the breeding places of the germs. In about one-third of the blighted blossoms the germs pass down into the twigs. The blight germs work in the growing tissue of the twig or fruit



Trees that Make Excessive Growth Are Susceptible to Blight.

bases of blighted twigs. The blighted twig died the preceding season and the blight germs invaded the tissues of the larger limb and remained alive at the edge of the canker.

With the first warm rains the germs started to grow and filled the tissue with a slime. So plentiful did they become that they oozed out of the crevices in the bark and then were picked up by bees and other insects. These agents which visit the cankers because of the sweetness of the exudate carry the germs to the flowers on the trees. Any tree not in flower is likely to escape the first form of fire blight, "blossom blight."

Recent work has shown that the blight germs may also be carried about the orchard by wind-blown rain. The canker exuding the bacteria as the rain beats upon it loads the mist with germs which blow about. Those varieties in flower become infected. Even if only a blossom here and there has the germs brought to it the nature of the case is such that the spreading far and wide is likely to occur. The germs grow in the nectar of the flowers finding this sweet juice a most excellent culture medium. The bees visit the flower, become contaminated with the germs and carry them from flower to flower.

Let no ardent bee-keeper get excited about this. It isn't the bees' fault that a grower left fire blight cankers in his orchard. But there is no guess work about this. Years ago Mr. M. B.

spur. They are not on the outside, nor in the wood—they are rather in the cambium zone.

They are out of the reach of sprays for the bark of the tree is impervious.

A tree with abundant blossom blight usually develops abundant twig blight, or at least some twig blight. If a dry spell comes on immediately after the blossom blight many cases of blight are nipped outright and the germs dry and die. We must bear in mind that the fire blight germ is active only in actively growing tissue.

But even a few cases of twig blight are serious because they in turn can cause more twig blight. Nearly every twig harbors some sucking insects. When a twig is blighted and begins to die, the aphids and other insects leave. Then, too, certain generations of aphids are winged. These insects feeding in the very tissues where the fire blight germs live pick up the germs on their mouth parts and carry them from twig to twig and tree to tree.

There is no mystery to the matter, when we know that at least eighteen kinds of insects have been proved to be carriers of the blight germs. What if the Duchess had the blossom blight and the Wealthy apples were free? The insects go from tree to tree.

But the twig blight is dangerous only in that it leads to the blighting of the larger parts—the bearing limbs or perhaps the main branches. The blighting of the water sprouts is the most

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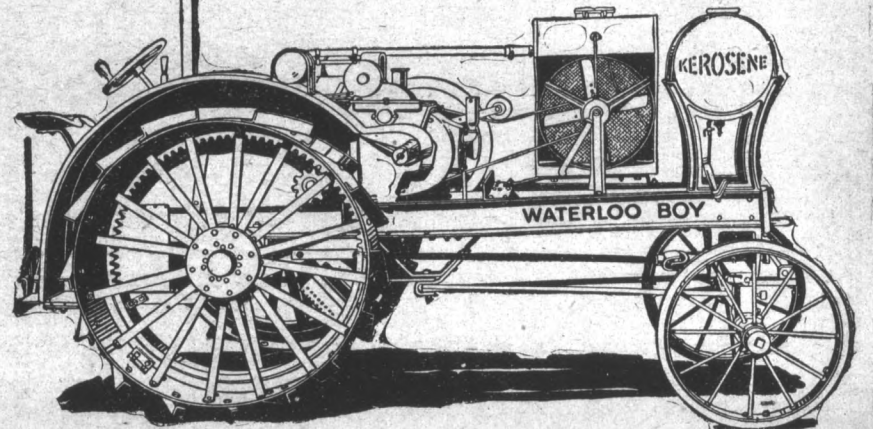
practically automatic. And hitched to a three-bottom plow, a center hitch is secured on both plow and tractor—an important factor in reducing wear and draft.

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dangerous of all, for these lead directly into the trunk of the tree and blighting of the sprouts often leads to collar rot or body blight.

The thing that is most puzzling to growers is the relation of the fire blight to the vigor of the tree. A neglected tree, unpruned, in a quack grass sod, let us say, will stand uninjured, whereas the cared for tree will blight badly. This comes about because of the relation already mentioned—the blight germs can only advance in succulent growth. The tree that is making a strong growth is subject to the blight. The tree that is standing still is immune.

Old trees that are growing but little often have abundant blossom blight and occasionally some twig blight, but this does not lead to any injury because of the comparative immunity of the older branches which are growing so little.

For decades, fruit men have recognized this relation and the first explanation offered to explain blight was "souring of the sap," a condition supposed to arise when the trees were making excessive growth.

For several years fire blight has been getting established in Michigan orchards. For the last three years I have urged in the college publicity matter the elimination of hold-over cankers while they were few and when the job could be done without any great expense. With the rush of the seasons and the shortage of labor this has not been done. The attitude of the grower has made him overlook the matter. The disease was so scattered and seemingly of so little moment that a clean-up seemed unnecessary. Now we have it and the problem of eradication confronts us. The ideal way to fight fire blight is to eliminate hold-over cankers and then remove promptly any twig blight which may occur. If the first cases of twig blight are removed completely the job is trifling and the orchard saved.

It must be remembered that what is being said applies to trees up to twenty years of age which are making active growth. With older trees, the removal of blight, if it is more than an occasional branch, is not possible because of the size of the tree. But it must be emphasized that the old trees seldom blight extensively and blight does not work far on them.

Since it is the young orchard which is now in danger, let me say that the only way to fight the blight is to cut it out and to keep it cut out. It is true that there is a chance that a summer's drought will stop the blight. It did last year. But the heavy down-pour of the last of June certainly is going to lead to remarkable recrudescence of the blight. If any grower takes a chance with his trees he must do it on his own responsibility. My advice is to cut out blight early and often.

How far back should it be cut? Prune severely and make a good pruning job. To control fire blight one needs to have proper tools and a disinfectant. The most efficient tools are a pair of short-handled pruning shears, a pruning hook, a saw, a knife, and a carpenter's gouge. For a disinfectant, mercury bichloride (corrosive sublimate) one to 1000, a deadly poison, is best. Five per cent carbolic acid will do.

The procedure is as follows: Look over the tree and size up the job. If a limb is festooned with blight it probably will be well to cut out the whole limb. Do this first. Then with the pruning hook clip off the smaller twigs as far below the blight as possible. Do not leave a bit of blight on the tree. If any of the water sprouts are blighted down to the trunk, gouge to healthy tissue around the base. Then with a sponge on a stick or on the pruning hook disinfect all the large cuts. The corrosive sublimate can conveniently

be carried in a wooden pail or a jar. It must not be put in a metal vessel. It will surprise any grower how quickly a bad case of blight on a tree of the age mentioned (up to twenty years) can be cleaned up.

Go through the orchard thus and remove all blighted twigs and branches. These cuttings should be gathered up and burned at once.

The orchard must be gone over again within the next week. Now is a good time to paint stubs with white lead paste. It is impossible to get all the blight the first time over. In some of the twigs the blight is working but not yet evident. Some parts may not have been cut back far enough. If the first job is thorough the new cases can quickly be "spotted" and the clean-up quickly accomplished.

Weekly inspections must be kept up throughout the season but these will not take long after the first clean-up. But if these are neglected then the orchard will soon be back to its former blighted condition.

So there is no spray for fire blight. No method is known but this one—destruction of the source of infection and elimination of the small limbs before the blight passes into the larger ones. Big as the job may look from a distance, there is no other way. The tree is worth saving and the average badly blighted tree can be cleaned up in less than a half hour with the proper tools. Even if it took a man two hours, the question is, "Is the tree worth a dollar's worth of time or not?" But the grower says, "We'll cut out the blight next fall, we believe in cutting out hold-over cankers, not this summer cutting." Let me point out that the job will be as big, or bigger, next fall and besides the blighted parts will keep right on menacing other parts.

If old trees are interspersed with young trees, the definite eradication of all blight in the vicinity may be impossible. Even in such a case the cutting out is advisable from the point of view of saving the branches of the young trees. The presence of the blight in the old trees will make the job harder, but it makes it even more necessary that the trees be carefully watched. With these trees among the old ones, if every bit of blight is removed a glance at the time of the weekly inspection tells whether the tree is free from blight or not. If the blighted twigs are left all over the tree, new advances can not be seen.

A word may be said about sod. As has been pointed out, fire blight is influenced by the amount of growth. If a tree is in competition with sod for water and nutrients, naturally its growth is checked. After trees have reached the proper size it is probably advisable to put them in sod and then "feed" them.

The question before us is not the theoretical one, "which is better, sod or cultivation?" The question is, with fire blight working in our orchards, "what are we to do?" The only answer is, "Get Busy."

**GARDEN NOTES.**

Plants of late celery, cabbage and cauliflower are commonly set early in July.

A good distance for planting the late large-growing varieties of cabbage and cauliflower is two and a half by three and a half feet.

White or light colored stalks of celery are secured by blanching, which consists of growing the plants in darkness so that the coloring matter of the stem is destroyed. Blanching also makes the stalks more crisp and tender and improves the quality.

The soil should be moist and well prepared for planting, otherwise transplanting from the seed-bed into the garden or field may not be successful unless plants are carefully watered in.

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## Our Service Department

### REMEDY FOR RENT.

I leased forty acres of land for \$85 a year, payment due November 1, and now the man does not pay his rent on time. He now owes me \$20, and I would like to know what steps I should take to collect. The lease states: "Eighty-five dollars on the first day of November of each year during the continuance of this lease."—S. L.

The lessor may bring an action of assumpsit for the rent, or may maintain summary proceedings before a circuit court commissioner to recover possession and put an end to the lease. J. R. R.

### MOVING SURVEY STAKES.

Has a man the right to set stakes over after a road has been surveyed and the stakes set on line? Because one man has set his fence over on the road, can a commissioner throw the road over on the other man?—J. E. M.

The removal or destruction of a survey stake or monument is a misdemeanor punishable criminally, and any person injured by such removal may also, by civil action, recover the damages suffered by him. The highway commissioner has no jurisdiction to alter a survey.—J. R. R.

### GROWING CROPS.

If A rents a farm by the year from B and buys the farm in the fall, would A have any right to part with a rye crop which was self-seeded from previous harvests?—J. E. M.

The purchase of land carries with it all crops growing on the land at the time of the sale, even to the extent of including a crop of corn, ripe but uncut in November.—J. R. R.

### REMEDY FOR FRAUD.

I bought a farm last fall. The real estate man and the man from whom I bought it misrepresented it to me. They both told me there was a good well on the place, that the water ran from the well to the house and from the house to the barn. I tried the water tank in the house, and it worked all right, and the tank was full at the barn, so I took it for granted that the water was all right. We made the papers out, and when I went back to the farm I found that the well had not worked for more than ten years. The owner had been getting the water from a spring on the next farm with a ram which they had taken out at that time. They had filled the tanks in the house and barn by carrying it. I would like to know if I could not do something to make them help me get a well on the farm.—T. J.

The purchaser may void the sale because of a fraud, have his money refunded to him, and claim a lien on the property purchased for such payment until the payment is made; or he may maintain an action of deceit for the damages suffered thereby.—J. R. R.

### LIABILITY OF CARRIERS.

A hires B, who has a motor truck and does hauling, to transport five cattle to a distant sale. Enroute one cow valued at \$150, gets a leg through enclosure and lifts stakes off, and three head of the cattle fall of the truck. One has leg run over by the truck, necessitating killing. Who is to blame, and who should stand loss?—R. W. T.

If the carrier was doing a general carriage business so as to come within the term of "common carrier," he would be liable, in the absence of contract expressly limiting the liability, for any loss resulting from any defect in the vehicle, and also for any loss resulting from failure to furnish fit, sufficient, and safe conveyance, unless the shipper selected truck with knowledge of defects and assumption of risk.

If the particular truck was selected by the carrier was not engaged in the general business of carrying for all comers he is liable only for losses resulting from his negligence or that of his servants and is bound to exercise only reasonable care, whereas the responsibility of common carriers amounts almost to insurance.—J. R. R.

### DESTROYING MILKWEEDS.

Will you please give the best methods of eradicating the common large milkweed, and also the best method to destroy sandburrs, this for fields that are in crops every year. Allegan Co. J. L. F.

Milk weeds are difficult plants to destroy because they are so deep-rooted. They have a long tap root that penetrates in the subsoil and are not easily eradicated. Persistent mowing in the summer time will destroy them. No plant can live if you cut the top off every little while. This prevents the plant from getting any air and the roots will soon decay, but it is quite a persistent job. Milkweeds do very little harm in growing crops, the looks of them are the worst thing. They do not seem to take very much plant food that other crops use. They get their food down in the subsoil below and usually when no particular pains are taken to eradicate milkweeds they will not survive for more than a year or two. In a cultivated field they become eradicated in a short time. From ordinary field cultivation sandburrs also disappear rapidly, where the field is fertilized properly so that other crops will grow rapidly. They bother but little, even on rather thin soil that is thoroughly cultivated.—C. C. L.

### POSSIBLY TUBERCULOSIS.

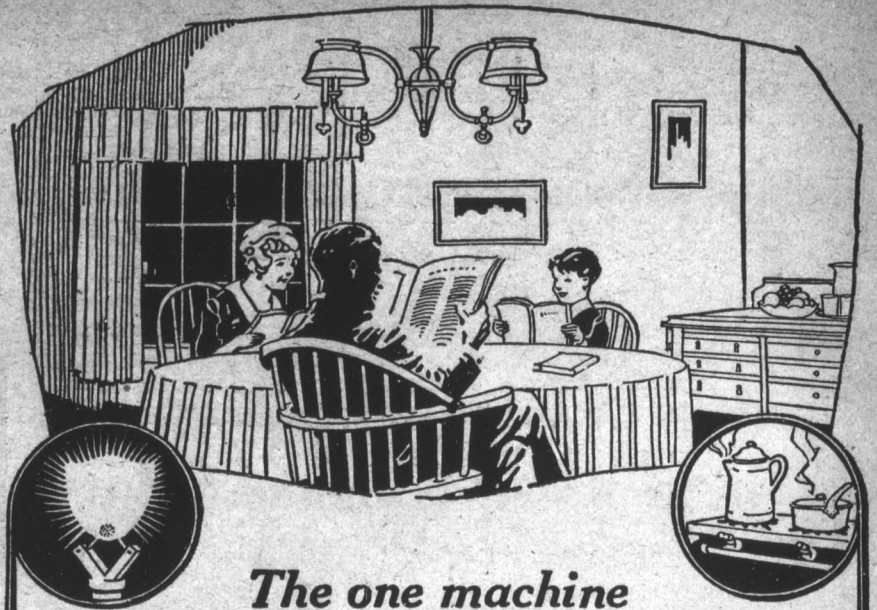
For several months we have been fighting a disease in our flock, which from the description given by writers, may be tuberculosis. The points of resemblance to the usual descriptions are lameness, enlarged liver with nodules on both liver and intestines, and looseness of the bowels, although this last is not always present, even in advanced cases. The points of difference are the fact that the fowl does not become emaciated, even in advanced cases, but the hens stop laying. The fowls do not die, but we keep them isolated from the rest of the flock, and as we do not consider them fit for food, we kill and bury them. There is no outward sign of the disease except the lameness, the comb and wattles remain red. Last fall we had a fine flock of a laying strain of our favorite breed, but now we are wondering what we should do, whether we should sell everything fit to sell and quite for awhile.—H. C. V.

Some of the hens may have rheumatism and this would cause lameness. Whether a hen with tuberculosis will emaciate rapidly or not might depend on the progress of the disease and whether the individual was very susceptible or not. This would be true with hens the same as it is with other animals having tuberculosis. Some of the symptoms you mention indicate tuberculosis. It would pay you to have a veterinarian make a personal inspection of the flock.

### REGISTERING FARM NAME.

I wish to give my farm a name. Will you please advise me to whom I should apply for registry? What action is necessary and what will be the cost?—F. A. S.

We do not find in statutes any provision for registry of farm names. A proposal was made in the legislature two or three sessions back for such registry but it seems not to have passed.—J. R. R.



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The Farmer's Own Company

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As he said: "I'm a cautious driver and thoroughly understand my machine. Why paint a lot of fictitious pictures to base your selling up on. Automobile insurance is all right for some drivers, but I tell you I don't need it."

But the bitter has to be reckoned with the sweet and, one evening, his caution served him naught. He had driven his family into town to do some Saturday night shopping and not wishing to leave the car on the main street, parked it off just the avenue.

Shopping over, his wife suggested a movie and after being in the theater for an hour or so, he suddenly recalled that he had forgotten to put his lights on. Excusing himself instantly, the farmer made for his parking place and found, to his amazement, a crowd of curious by-standers surrounding his machine. Fate had chosen his car as victim, in that, a rear-end collision had practically demolished it.

The case was taken to court and his suit lost because proof showed that his lights were not on and that his car was in a secluded spot at the time of accident.

Today this farmer carries full coverage insurance and has influenced several of his friends to do, likewise.

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## News From Cloverland

By L. A. Chase

### CLOVERLAND SOIL SURVEYS.

PROF. M. M. McCool, of the Michigan Agricultural College Department of Soils, was in Marquette, July 2, making arrangements for the forthcoming soil survey of the upper peninsula. He went over the plans with Mr. J. A. Doelle, of the Upper Peninsula Development Bureau, and it was determined that the work should be inaugurated in Ontonagon county and the territory in the limestone country adjacent to Chatham, Alger county, and to the southward. Eventually a reconnaissance survey will be run throughout the district north of the Straits, it is understood.

These areas seem to have been wisely selected. Both are promising agricultural sections, rapidly being developed. The Ontonagon district comprises a large area of very deep and fertile clay soil—the bed of a pre-historic glacial lake known as Lake Ontonagon, and is commonly regarded as containing some of the very best agricultural land of the state. Dairying is well established in this area. The Alger county district is underlain with limestone and is also very fertile. Both areas deserve the designation, "Cloverland," par excellence.

Professor McCool's force of men is already on the ground ready to go to work. I learn, too, that Professor McCool has taken kindly to the suggestion that a conference of experts should be held to formulate plans for the state-wide soil survey. The job is plainly too big for one man without outside counsel. It should be attacked from many angles with a view to ascertaining just what are the points, good and bad, of every tract of land, especially in the, at present, undeveloped areas, that are wanted for farm or other purposes. It is proposed to make this conference one of practical farmers, soil experts, foresters, economists, development men, and interested officials.

### THE MARQUETTE PEACH.

PROF. C. P. HALLIGAN, of the Michigan Agricultural College Department of Horticulture, is still interested in testing the hardiness of the "Marquette" peach—a variety developed originally at Marquette on the Lake Superior shore, and which has been used as budding stock at the agricultural college. It is hoped that from this variety a hardier type can be established which will be cold-resisting. In a letter to Mr. J. A. Doelle, of the Upper Peninsula Development Bureau, Professor Halligan states that, in the cold winter of 1917-1918, trees of the Marquette variety alone survived at the college, among fifty or more types, which he believes, demonstrates the superior endurance of this peach, both as to wood and bud. He proposes to furnish budding-stock, this autumn, for further trials in this district. He suggests that plum trees be used to graft these buds upon, because of their greater hardiness. The Lake Superior country, while it makes no claims to being a peach country, has occasionally produced some very good samples of this fruit, which may be serviceable to growers in the real peach country farther south.

### CLOVERLAND WEATHER.

PEOPLE in the lower regions of the state may have a wrong notion about the prevailing temperatures of the upper portions, and wonder that there should be any market for ice cream in our supposedly sub-arctic climate; if they will note the figures

published by the United States Weather Bureau from day to day, they will observe that our thermometric readings often run higher than those to the south of us, even for towns directly on Lake Superior. Marquette's record of 108 degrees in 1901, has never been surpassed anywhere in the state, even in Detroit, which is said to be a hot town also. The fact is, if the wind is off shore, or there is no wind at all, it can be very warm even with Lake Superior—which is always icy cold, except in its sheltered bays and inlets—a stone's throw away. Marquette was as hot as New Orleans on June 16, this year, and the Gazette of Houghton, reports that place the hottest north of the Gulf of Mexico for a similar date. All this means that, with abundant rains this summer, our crops are booming—incidentally, too, are potato-bugs and grasshoppers, but we have no monopoly of these pests. As the frosts did not get our fruits, we have good prospects, too, under this head. Home-grown strawberries came onto the market in mid-June, and are very fine indeed. This is a berry country par excellence, and we are well supplied with both wild and cultivated types. As for the hoppers, tri-calcium arsenate is being purchased from the copper companies, and, if properly used, will help the situation very materially.

### SHEEP RAISING IN THE UPPER PENINSULA.

MR. J. WADE WESTON, assistant state leader of county agents for the upper peninsula district, recently gave out a statement regarding sheep raising in the upper peninsula, in which he calls attention to a sale of sixty-four lambs in 1919, which were fed on grass alone, and which, when sold, averaged 80.3 pounds and topped the market at \$15.50 per one hundred pounds. Another group of 775 lambs, finished on grass alone, averaging 66.8 pounds, giving a dressing percentage of 50.1 pounds. A third consignment of that year, numbering 482 lambs, averaged 76.1 pounds, of which 104 lambs dressed out 51.8 per cent, and fifty others 49.4 per cent. These lambs never had any feed save grass. Another group of 121 lambs dropped early in May, 1920, sold on October 2, 1921, averaged seventy-seven pounds, topped the market at \$12.85 per cwt.

Mr. Weston says some protection is needed for the winter, but this need not be expensive. The shelter should be well ventilated, without draughts, and should afford room enough for exercise. Home-grown feed should be relied on, he points out, as it will be impossible to make a profit, if hay, etc., must be purchased. Clover is best although oat and pea hay are very satisfactory. Sunflower ensilage has been successfully made a part of the ration at the Upper Peninsula Experiment Station. Grains, especially peas, oats and barley, do very well, Mr. Weston states, and roots make an excellent succulent feed, especially for breeding ewes. He also notes that sheep are valuable in clearing the land of brush; that twenty sheep will clear as much as one man, and "will pay you for doing it." Woven wire fence surmounted by two barbed wires are desirable for the sheep pasture. He calls attention to Act 339, of the Public Acts of Michigan, 1919, regarding the protection of sheep from dogs.

Crystal Falls township, Iron county, is opening up several short roads, this season, thus benefiting recent settlers in several portions of the township and affording work during the shut-down of the iron mines of the district.



# WORLD EVENTS IN PICTURES



Miss Curtis, of Boston, marries Russian Prince.



Mary Miles Minter, popular film actress, is enjoying London sights with her mother and sister.



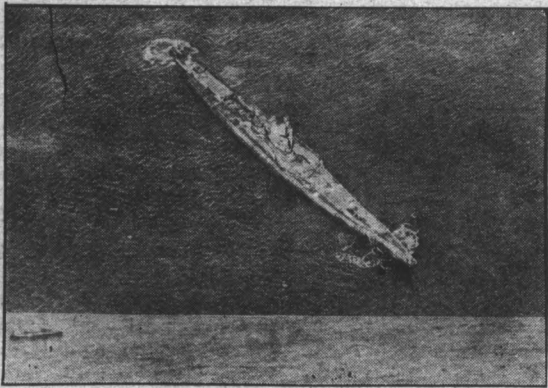
Introducing new commander of Atlantic fleet, Vice-Admiral Jones



Two Los Angeles high school girls hit the mark with 249 out of 250 shots in recent army rifle contest.



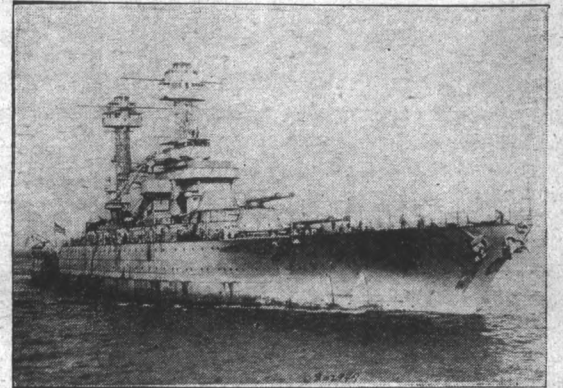
The Passamaquoddy tribe of Indians, of Maine, honors member who lost life in the World War.



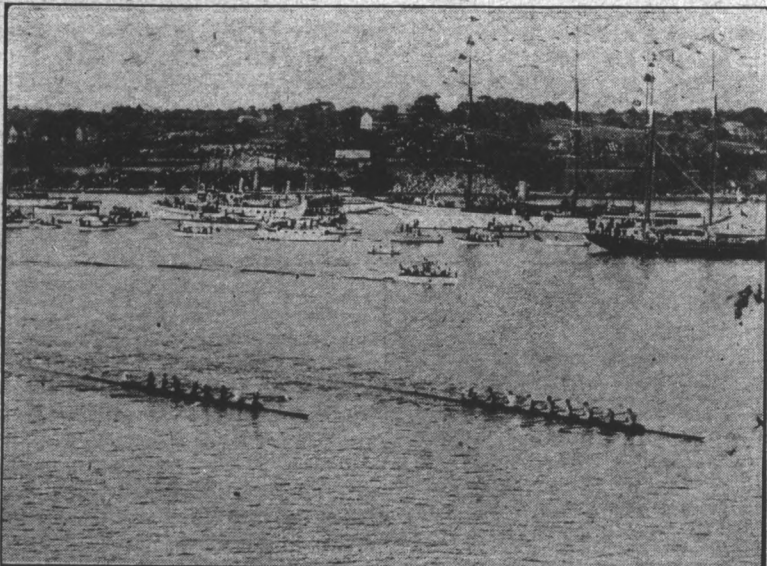
The U-boat 117 just before navy aviators bombed it.



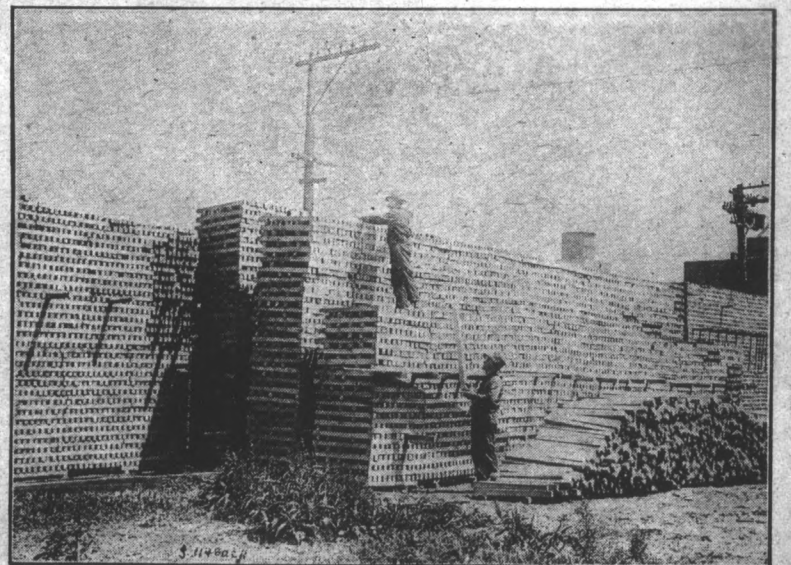
Frank Schwarts, poor attic artist, receives Prix de Rome.



Maryland, America's most powerful battleship, makes good in trial.



Yale Varsity crew wins over Harvard in hotly contested race, covering four-mile course in 20.41.



Each piece, after being properly seasoned, will be made into a stick of joy for boys, a base ball bat.



# THE CLAN CALL

By HAPSBURG LIEBE Copyright 1920, Doubleday, Page & Co.

CHAPTER XVII.

A Letter and a Proposal.

THE Moreland Coal Company's two big rough buildings were completed in record time. There had been no further manifestations of interference from the Balls and Torreys, and Henderson Goff had been nowhere in evidence since the night of Bill Dale's ironclad verbal ultimatum. Work on the little railroad was progressing like wildfire, and everybody was in high spirits.

By Heck had just arrived with the mail. He stalked with an air of great importance into Dale's office, and threw the mail down on the new roll-top desk; then he stepped backward, dropped into a straight-back chair and began to nurse his rifle tenderly on his knees. There was a puzzled look on his leathery face. Dale had received half a dozen letters, and By Heck was at a loss to figure out the why of such an overwhelming amount of mail.

Dale finished his figuring, leaned back in his swivel-chair, and took up a letter that seemed altogether too bulky for a business letter. Moreover, its address was in pencil, and somewhat scrawled, though a chirography expert would have said that the handwriting showed strength of character.

"I wonder who it is," Dale muttered, "that mistakes us for a newspaper office and is sending us copy?"

"Just what I was a-thinkin'," drawled By Heck through his Niagara Falls moustache. "Open her up, Bill, mebbe it's money, by Jake!"

Dale saw the postmark then, and his brows drew with interest. It was the postmark of his old home city.

"From Babe," he told himself—and it was.

He opened it and read it. She had spelled most of her words correctly, but the only punctuation she used was a period and her capitals were few. For a wonder, she had put it into paragraphs:

Mr. bill Dale.  
cartersville.  
tennessee.  
Kind friend.

i seat myself with pen in hand to drap you a few lines to let you know i am well hoping you the same. well bill i have some news to tell you about what happened when i got back hear and since i got back and hear it is.

the first person i seen when i got to the railrode stashun was jimmy fayne and he was dressed up like a millionaire and i reckon he is one. he took me in his moter car up to pats home. patrishia you know. pat she hugged me and jimmy left rite away but said he would be back. i asked pat had she heard about yore trubble bill and she answered no what. then i told hem bout you and the lowdown black adam ball bill and she said pore old bill he had such a high temper

nobody could ever understand it but it cant be are you serious elizabeth.

well i said yes i mean it. pat shook her head sorrowful and said tell me all about it elizabeth deer. when i had told her the hole story about it we went up stares. pat and her husband lives in a big house now and it has got up stares. pat went to a closet and got a butife dress my size. i ordered this the day before you left us pat said but it mite half to be altered wile you are dressing pat said i will speak to Mrs. Dale over the telephone. pat said yore mother has softened tord her son and i promised to tell her any news i had conserning him. i said all rite.

pat was gone down stares talking

ime glad said pat but ime sorry to lose you but it is the best way and we can see each other often cant we deer.

well bill it wassent long until a big moter car called around at pats for me and setting in the hind seat was yore father hisself john k Dale. he helped me into the car with him and he seemed glad to see me. After we had said good morning and so forth he said anxious like now elizabeth please tell me about bills trouble for patrishia mite have omitted something you know. at first i was awful afraid of him bill but i soon got to likeing him fine and i told him about you and that lowdown black adam ball from beginning to end and when i told him about the fite in the river he grinned and grinned and

trial for that is the woy of the Morelands. pore cale is a good boy. i am doing fine hear bill but i often wish i could have old Doe River hear to sing me to sleep like it used to. yore mother is teaching me how to read and rite and spell like pat did and i am learning fast. you can see by this letter i can rite and spell fine can it.

well bill kind friend jimmy fayne has jest sent yore mothers made up hear to ask if he can see me and i will half to go down stares and see what he wants.

yores respectively.

BABE.

Bill Dale folded the bulky letter and put it slowly back into the envelope. Then his gaze wandered through a window and to where a golden-winged highholer was hammering industriously at the top branch of a dead tree. He smiled to himself, By Heck and nearly all of the rest of the world for a moment forgotten, and muttered aloud:

"Yores respectively, Babe."

"Haw, haw, haw!" laughed the keen-eared and watchful hillman in the straight-back chair behind him. "Yores respectively, Babe!" Haw, haw, haw! Well, Bill, dadsling it, it shorely to goodness ain't nothin to turn all that red about! When the night's gone the day comes, don't it? Bill, old boy, it's the same thing!"

"You get out of here, By!" Dale stormed in mock severity. "Go and help the commissary clerk with the new goods; eh?"

Heck laughed another horselaugh, rose and went out.

When he had gone, Dale turned his gaze toward the industriously hammering golden-winged bird again. He began to think—of the ultra-spoiled, charming-after-a-fashion, wealthy, and young, high-night devotee, Jimmy Fayne. And he wondered, and wondered, what would come of Fayne's quick liking for Babe Littleford.

After he had viewed the matter from above and below and all sides around, he frowned like a berserker.

Here is what came of Jimmy Fayne's quick liking for Babe Littleford—

The days had passed swiftly, and autumn was far advanced. Save for a few chrysanthemums and asters that grew in places sheltered from the frosts, the flowers were all gone; the maples were shedding their leaves of brown, crimson and gold.

Ben Littleford's daughter had changed much in many ways. She had tried as hard as ever mortal tried to learn the correct use of words; and Mrs. Dale had been patient, painstaking and efficient in her teachings. Not that Elizabeth was educated, in any real sense of the word. Far from it. But her improvement was, in all truth, quite remarkable. Especially, perhaps, in her personal appearance; some in-

## A HELPING HAND

By Teresa G. Morris

Like the clouds so lazily adrift,  
Amid the azure tints of summer skies,  
Standing aside to let the sun shine through,  
To warm and brighten all the waiting world—  
So would I fain pass quietly through life,  
Trying to heal the wounds of human strife.  
Bearing a smile and words of cheer as rift  
Between the many sorrows which arise.  
Passing along with kindly deed and true—  
Lighting the paths where rue and thorns abide.  
Where nameless glooms are daily cast and hurled.

E'en as the clouds whose forms do fade and vanish,  
So with my song and laughter, cares I'd banish.  
Like unto azure skies which love the Sun,  
Fain would I sow good cheer ere Life is done.  
Then, come, Eternal Sleep, thou priceless gift.  
I fear thee not—I did look up and lift.

over the telephone for a long time and when she returned to me i was dressed and we went down stares together and the new dress diddent half to be altered. they call supper dinner hear bill. after dinner was over me and pat went to a swing at the end of a vranda which had a dim lite on it. pat spoke all of a sudden and said to me how would you like to go to live with Mrs. Dale bills mother. i remembered i haddent liked yore mother bill cause of what she said about me and i got about half mad. dont you want me to live hear with you pat i asked.

of corse pat said. ide be glad to have you but Mrs. Dale wants you too pat said. her treatment of her son which is you bill has most broke her hart pat said. pat said the only hold Mrs. Dale has on her son is through you elizabeth and she is a sad and remorseful woman. then i got to thinkin bill i mite be the cause of bringing peece between you and yore parents and so i told pat i would go and i did.

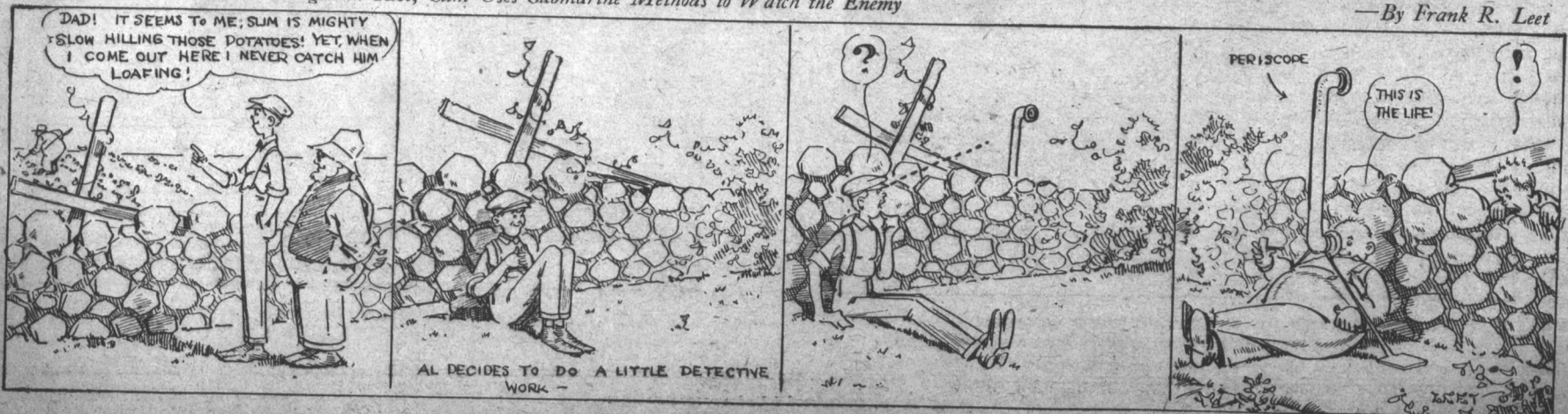
said you always was jam full of the fite stuff.

hell come out of it all rite the worst of it is his haveing to stay in jail until the trial comes off said your father at the next term of cote. weed better see if we cant get him out on a bond he said haddent we elizabeth and i said yes. bill i found yore mother indede a sad woman. there wassent much about her to remine me of the time when she called me a savaje person. she said i am delited you came elizabeth and i cride a little i coulident help it when i jest half to cry i jest half to cry and nothing else dont help a bit. Because she kissed me bill.

well bill yore father he wired the atherities in cartersville and found out that cale Moreland had confessed to the shooting of black adam and you was free and it set his mind at rest. but it diddent set my mind at rest for because i no the mountain hart. i know cale Moreland is jest takeing yore place in jail until the day of the

AL ACRES—While Submerged in Rest, Slim Uses Submarine Methods to Watch the Enemy

—By Frank R. Leet



AL DECIDES TO DO A LITTLE DETECTIVE WORK.



nate, feminine thing had helped her here. She wore more or less costly gowns now, and a few jewels, thanks to Mrs. Dale, and wherever she went she attracted admiring glances.

Jimmy Fayne had been coming to see her when Mrs. Dale would permit it, which was not very often. Jimmy Fayne, as Patricia McLaurin had once been moved to say, was a far-seeing young man for all his weaknesses; he had known in advance that the laurel bloom would change to a rose, and then to a white hyacinth. Perhaps he even considered the fact that she would make a better wife for him, and a better mother for his children, than some fragile and over-cultured woman of a patrician house that had about

run out. At any rate, Jimmy Fayne, the ultra-spoiled, had decided that he would marry her.

During those weeks that had been made happy by an occasional hour at the home of the Dales, Fayne had not once mentioned marriage. He figured, and wisely enough, that to be too quick with his proposal would be to lose everything.

But now he meant to propose, for he knew that Miss Littleford intended going home for a visit—and he knew that when she went home she would see Carlyle Dale. The truth was, of course, that Miss Littleford was going to Tennessee to attend the October term of court at Cartersville.

(Continued next week).

## Phosphorus for Heavy Soils

(Continued from first page).

soil as well as to develop more numerous rootlets in the surface soil. This has been reported to be of value during periods of drouth enabling plants to draw from larger areas of soil the elements of plant food. It also results in a greater leaf and stem development and aids materially in grain or seed formation and those who have used it report that it speeds up the majority of various crops or shortens the time of the growing season six or more days.

It is maintained by agricultural writers that the most nutritious pastures in England and the best pastures in France are those richest in phosphorus. It was formerly believed that the phosphorus was beneficial primarily in grain formation resulting in a better quality of material and more plump grain. We know that it does these things as well as those mentioned. Our field investigations have brought out that its use results in less winter injury to wheat and also less harm by late spring freezing and resistance to insect pests.

### Will Not Run Land Out.

The carriers of phosphorus do not injure the soil when they are properly manufactured. There is a rather common opinion among farmers that these carriers of phosphorus may prove profitable for a time and later lose their efficiency, leaving the soil in a less productive state than formerly, markedly increasing the need of lime and decreasing or burning out the organic matter and injuring the tilth of the soil. In fact, some farmers are reluctant to use these because of these impressions. Long and carefully handled tests at the Rothamsted Experiment Station, England, and the Pennsylvania, Massachusetts, Ohio and Illinois stations, where phosphates have been applied to the same land, have shown conclusively that the continued use of phosphorus on the land results beneficially and it is a safe and business-like operation as measured by the increase of crops grown and the effect upon the soil and the returns on the investment. The lime content of the soils is not markedly changed by the use of the acidulated phosphate or the bone meal as is sometimes considered to be the case.

Soluble phosphates may be applied to the soil to a decided advantage previous to or at the time of seeding fall grains. It is now considered to be advisable to fertilize the entire rotation rather than one particular crop when one uses phosphates inasmuch as only about two-thirds of the material that is applied to the soil is removed by the first crop that follows it. Thus, by making rather liberal applications the operation need not be repeated only every other year. This, of course, decreases the amount of energy required to apply it to the soil. If one were following the four-year rotation or one in which a small grain followed by clover and by a cultivated crop, and again by a small grain, the soluble phosphate

can be applied to the first grain crop and again to the cultivated crop.

### Mistakes Are Sometimes Made in Applying Phosphates to the Land.

The method of application is an important consideration in results to be obtained from the use of various carriers of phosphorus. It should be recalled that the most of the root feeding system of crops is confined in the upper few inches of soil. The immediate surface of the soil does not contain fibrous roots of crops; thus it follows that the material should be thoroughly mixed with this zone or section of the soil, rather than to leave it on the surface or plow it under before seeding the fall grains. A thorough incorporation of the material with the soil is very desirable. It is usually best to apply the material to the land by means of an attachment on a small grain drill. This places the material at a proper depth and uniformly in the soil.

### Many Farmers Do Not Apply Enough to the Land.

The amounts of sixteen per cent acid phosphate most profitable to apply range from two hundred to four hundred pounds per acre twice in a four-year rotation. The bone meal, if used, should be applied in somewhat larger quantities. The use of raw rock phosphate is generally considered to be not less than 1,000 pounds, and preferably 1,500 or more pounds should be applied per acre. This application, however, should endure in the soil throughout the rotation or longer.

### Phosphate Works Well with Stable Manure.

Reinforcement of manure with phosphorus is sound practice. There are several good reasons for the splendid results that have been obtained by this mixture. Stable manure in comparison with mixed fertilizer is unbalanced, containing much less phosphorus in proportion than do the fertilizers. It is true that stable manure is the best all-round material that one can apply to the soil, yet when we consider that a farmer, as a rule, does not have a sufficient amount to cover all of his cultivated land regularly and thoroughly we are forced to admit that if one can supplement this material with phosphorus and thereby use smaller quantities per acre, that it is advisable to do so. This may be accomplished by applying the acid phosphate to the soil with the fertilizer attachment on the grain drill, and this, by the way, is the most practical method to follow, or by mixing the carrier of phosphorus with the manure in the stable and perform the application of the two materials at the same time. Some farmers scatter the phosphorus over the manure just before it is taken to the field, while others scatter it over the manure before it is removed from the stable. Usually, however, this does not result in a thorough or uniform mixing and consequently an uneven distribution on the land follows.

M. M. McCool.

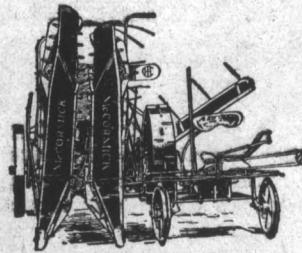
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McCORMICK and Deering corn binders cut and bind 5 to 7 acres per day. Wide-range gathering points save short, crooked, tangled, and fallen stalks. Bundle carrier, elevator to load bundles on wagon, or special conveyor bundle carrier provided on special order.

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INTERNATIONAL ensilage cutters are made in five sizes. Cut 3 to 25 tons per hour; 6 to 25 h. p. required. All working parts carefully housed. Force feed, large throat. Heavy fly-wheels built of riveted boiler-plate steel plates. Cutting and elevating done in one operation, saving power.

## International Corn Machines



IN THE coming autumn it will be necessary to take from the fields some three billion bushels of American corn. Corn harvesting machines must be got in order. This year in particular, profit will be determined largely by the efficiency of your equipment for handling this crop.

Veteran corn growers for years have made corn yields greater with the expert help of McCormick and Deering Corn Binders, International Ensilage Cutters and other International equipment. At the start of the corn harvest they are fortified by these machines and by dependence on the alert co-operation and service of this Company, its many branch houses and its dealers close at every hand.

Thirty years ago began the pioneer work in the making of corn machines. Today, most efficient equipment is available for every operation. The careful corn grower will realize that the steady accumulation of Harvester experience is important for him. Whatever the need—for corn binder, picker, ensilage cutter, husker and shredder, sheller—International dealers the nation over may be depended on for machines whose practical utility is everywhere acknowledged. Price reductions as announced for the International Line apply also on all corn machines.

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CHICAGO OF AMERICA USA

92 Branch Houses and 15,000 Dealers in the United States

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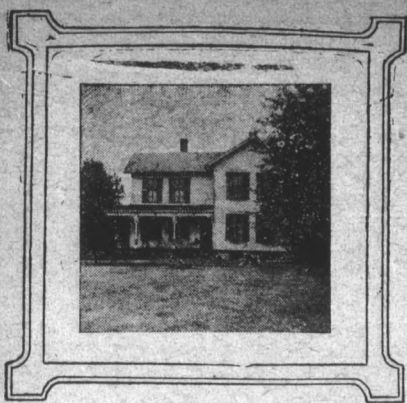
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Inner Armor for automobile tires. Used over and over again. Will not heat or pinch. Positively prevent punctures and blowouts.  
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The chief want in life is somebody who shall make us do the best we can.  
—Ralph Waldo Emerson

## Woman's Interests



# Necessary Nuisances in the Household

By Deborah

IN "Just David," Eleanor Porter's interesting story of a child, there is an enlightening chapter on the importance of housework as viewed from two standpoints, that of the proud housewife, and that of a child. David has been brought up alone in a mountain cabin by his father, a famous violinist, who takes the boy away from civilization in his infancy and keeps him until he is ten, so that he can have him alone in those impressionable first years. The father dies suddenly and David falls into the hands of a man and wife in middle life, who have no idea who the child is.

Shortly after David's arrival at the farm home the woman starts her weekly cleaning. David wants her to go for a walk with him. She can't go because she has so many things to dust, and after that will be meals. David innocently asks her why she doesn't give the stuff away or sell it so she won't have to take care of it; then she could go to walk. The woman is horrified at the idea of parting with her treasures. She has worked hard to get them, and works harder still to take care of them. David thinks if all they are for is to be put in a room she never has time to sit down in, she might better get rid of them, and take that time to walk or play or read or visit the neighbors. He further scandalizes her by saying father always said cooking and washing dishes and cleaning were just necessary nuisances, to be made as simple as possible so they could have time for real things. Real things with them, of course, meant music, books, and long tramps over the mountains. The woman concludes that she ought not to expect anything better of a tramp, as she thinks David's father to be, and continues her cleaning.

Probably the majority of housekeepers will join hands with the woman. But I must confess I hold to David's view. After all, cooking and dishwashing are just necessary nuisances, we have to eat, of course, but why make a ceremonial of it? Why spend so much time getting up a meal, when simple dishes and only a few, would take so much less time and be so much better for one's health?

Why, for instance, have cereal, and meat and potatoes and eggs, perhaps, and bread and butter and coffee and doughnuts or cookies, or maybe and cookies for breakfast? Why not cut that down to cereal with loads of milk, bread and butter, eggs or bacon, and fruit. Instead of cereal and potatoes, eat more cereal, if you need the extra food. And substitute milk and cream for the extra energy furnished by the meat. Or if you must have the meat and potatoes, cut out the cereal and milk. It would mean less work, and less tax on the digestive organs.

Dinner could be simplified, too, considerably. Now mind, I am not saying eat less, simply eat fewer sorts of food at one meal. Meat, potatoes, one vegetable, bread and butter and a dessert, with tea, coffee or milk, is enough for anyone. Why multiply it by cooking two vegetables and making a

fancy salad and having pie and another sweet? It means more work, and goodness knows the farm woman has plenty to do without increasing "necessary nuisances."

Aside from the saving in work, the simple fare is better for your health. You remember Daniel and his young friends would not eat the king's meat, and were allowed to try out

their simple fare of pulse and water. At the end of the trial they were found to be in better health than the fouths who had eaten from the king's table. To bring it right down to the twentieth century, consider how the boys in the army training camps were built up with simple fare and regular hours and proper exercise. Physicians will tell you that the poor are freer

## Save Dollars and Prevent Waste by Canning

HOME canners, whether in towns or country, are advised to do all the canning possible this year. Because of our late frosts this spring it is predicted that canned fruits and vegetables will be comparatively scarce and consequently high in price. Losses in Michigan by frost has made a great deal of blemished fruit that cannot be sold for No. 1 produce. Here then, is a fine opportunity to save money by canning these home-grown products rather than being obliged to buy other canned articles at prices swollen by high cost of production.

The home-canning program by the one-period, cold-pack method has gained such a tremendous foothold throughout the country that there will be people in every community who have had successful experience in home-canning

each time than it would have taken her to make a good substantial false bottom. So it is with many things used in canning.

Before starting the work all equipment should be brought together and a list made of whatever is needed. Here is a full list:

One processing kettle with a false bottom (wash boiler, lard can, steamer or pressure cooker). No false bottom needed for tin cans.

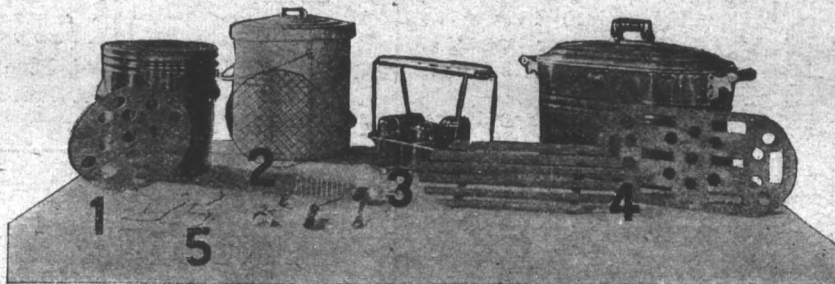
Two large kettles or pans, one for blanching should have a good cover, the other for cold dipping.

One small kettle for making syrup.

One wire basket or several squares of cheesecloth.

Two pie pans to set dripping baskets in.

Two measuring cups.



Some Good Home-Canning Equipment.

We would recommend therefore, that you acquaint yourself with the successful canners of your community and consult them about their experience.

### Need Good Equipment for Work.

Good business men demand efficiency—they do not allow themselves or their employes to be run down physically or mentally by performing burdensome tasks that can more easily or more efficiently be done by mechanical appliances. The up-to-date farmer has machinery and equipment that will save him time and energy.

How about you home-canners? One cannot afford the most expensive canning equipment always, but many can afford better. Each of us can get together a good workable canning equipment.

I once saw a woman who, each time she canned, placed a few boards in the bottom of her boiler. She wasted much more time hunting up the boards

Two sharp knives.

One teaspoon.

One tablespoon.

Two wooden spoons.

One pair tongs.

Good supply tin cans, or

Glass jars with good new rubbers.

Have you begun canning yet? Most folks have. There was that rhubarb—that early pink rhubarb will taste good next winter. And the early greens, spinach and beet greens. We now know that the mineral salts and vitamine content of greens are very essential in our dietary. Then the early berries are here—and we all like "the home-canned goods" best.

So let's get our canning equipment out and clean it and go to work. Think how much we will add to our food supply. Think canning—and you will do more canning and hence live better on your present income. If you keep canning—your canning will keep you.

G. O. S.

from dietary ills than the rich, because they are forced to live simply. And the recent weighing and measuring tests in the schools have revealed that there is more mal-nutrition in the homes of the well-to-do, than in the homes of the poor.

From every standpoint, health, time and pocketbook, simple meals are desirable. From Davids, and from the viewpoint of anyone who would like to get time for something besides catering to the mere animal wants of the human race, simplified living is a thing to be desired. But when we go in for it, we run straight up against tradition and convention and "what'll folks say?" Well do I remember the colored girl who left me to go to another mistress. I had put away all the bric-a-brac, junk, an unfeeling husband calls it, in order to cut out a lot of dusting, thinking thereby to gain favor with my hand-maiden. But she left for a woman who was "awful rich because she had so many things on the piano and mantel to dust." If you must do housework, there's nothing like feeling your folks are quality!

Nevertheless I shall continue to follow David's manner of living. Eating and dishes and cleaning are necessary, but they are not all important. Life was meant to be something more than a round of caring for the bodies. Otherwise we would not have been given minds and souls that crave food. If God didn't mean us to get out and view his world, he would not have made it so beautiful. If He had not meant us to meet our fellows, He would not have made us social creatures with a craving for friendship. If He had not meant us to enjoy music and art and poetry, He would not have filled the universe with music and beauty. We were meant to have some time for play, and with most housekeepers the only way to get that time is to make it. And if the only way to make it is by giving the folks bread and milk for supper, bread and milk let it be. They may growl a good deal, but they won't starve to death.

### COOK IN A COOL KITCHEN.

THESE hot days let the kerosene stove and the fireless cooker take the place of the hot kitchen range. The hot dishes for dinner may be started in fifteen minutes on the oil stove, then put away in the fireless cooker until ready to serve. Cereals, vegetables, tough cuts of meat and casserole dishes are more palatable and wholesome if cooked for a long time.

The fireless cooker offers the advantages of enabling the housewife to serve a hot supper in a cool kitchen, serve a hot lunch to the men in the field, or on a long country trip, economy of her time, as well as economy of fuel. Besides this the cooker may be used as a bread sponge box to keep the sponge at the proper temperature, and as a refrigerator with a very small amount of ice.



## Modern Saints

Our Weekly Sermon—By N. A. McCune

WHEN Saint Paul wrote his letter to the Philippians, he was probably in Rome, and probably in prison. He had a particular reason for writing to the church in Philippi. It was in Philippi that he had had some exciting adventures. A mob was stirred up by opposition to his teaching, he and his fellow traveler were thrown into prison and flogged after the Roman manner of flogging. It was a fearful ordeal, and it was in spite of the fact that Paul was a Roman citizen, and as such was supposed to be free from such treatment.

Now, as the great apostle lies in his place of confinement in the Roman capitol, he writes to the church he had organized under these difficulties. He addresses the church folks as saints, which means, people who desire to live godly lives. And he begins by remarking that they have undoubtedly grown, since he saw them last. In fact, there would be something sadly awry, if they had not grown. Everybody grows. It is true that ministers and public school teachers often experience immense difficulty, because the people they must work with seem not to have advanced mentally for years. They are in a groove. (It was an Englishman who said that the only difference between a groove and a grave is one of depth). But nevertheless, these people have grown. They may have only grown more set, more opinionated, more opposed to all progress. In that case, they have grown in the wrong direction. And this fact ought to make all men think. We grow. What we are today, we will be fifty-fold more in twenty-five years. And to grow in the right direction is a mark of a saint. To be more kindly disposed toward people, to be more benevolent in our judgments, to believe in the good side of men, is growth in the right direction.

BUT this is only a beginning. This is but a promising start. The folks who live in Philippi are supposed to be willing to share with others. Sometimes this means sharing the good things of life. But often it means sharing with others their woes and burdens. That is the mark of all New Testament teaching. Christians are supposed to be burden-bearers. They are supposed to be bearers of other people's troubles. That was almost a new idea, in Paul's day. Christ brought it. There is a scene in the Old Testament which brings this out with vividness.

The Israelite immigrants are entering Canaan. Cities and tribes are yielding to their irresistible advance. One day certain queer-looking travelers appear in the Hebrew camp. Their horses are old and spavined, their clothes are tattered, their bread is mouldy, and, in short, they are a hard-looking crew. They tell the Israelites that they live far away, and would like to make an agreement with them, that they might always be on friendly terms. To this proposal the gullible Israelites readily assent. In three days, it is evident what has happened. These Gibeonites have tricked the Israelites into making an agreement they were not supposed to make. They lived in the center of the territory that the Hebrews were conquering, and they had resorted to this camouflage to save their cities from destruction. The Israelites were game and kept their word. But as a punishment for the deception of the Gibeonites, they were sentenced to hard labor forever, they and their children. They were to do the kind of work that the Italian immigrant does in America. They were to be "hewers of wood and drawers of water." That was the most se-

vere punishment, short of death and pillage, that could be meted out. To be a menial, to work for other people, was to be a perpetual drudge.

Change the scene now, to the New Testament. It is the same country, pretty nearly the same neighborhood. A few centuries have passed. Twelve men are seated on the floor, oriental fashion, at supper. Their leader, the greatest Figure that has ever appeared beneath the stars, arises, takes a towel, and washes the feet of his guests. No one but a slave or a household servant was supposed to do that. When He had finished He tells them that this is to be the badge of the religion He has come into the world to found. People are to help one another. They are to serve one another. No man is to lord it over his fellow.

THE other day it was very dry, in our part of the state. Dry and hot. Clouds appeared, and floated rapidly by. They were cirrus clouds, and did not share their life with us. The next day, came the most beautiful clouds that the sky boasts—cumulus clouds. They sauntered lazily overhead looking like mountains in the sky, capped with snow. Peak on peak, snow field on snow field. But neither did these clouds share their life with us. We might admire them for their beauty, but one cannot live on beauty. The next day, there came a plain cloud with every-day working clothes on. He seemed in no hurry, but snuggled down close to the thirsty, pleading earth, and shared with us all his life. And what a rain that was! The plain, hard-working cloud was a Christian cloud. He helped the earth to bear his burdens.

Some people never do that. They never share anything of theirs with the community where they live, except in taxes, and they would not pay those if the law did not wring them out. If there is a meeting for community improvement, they do not come. If the church is to be rebuilt, they do not contribute. If an assessment is to be levied for a consolidated school, they vote against it. These folk never carry anyone. They are carried by the community, and they expect eventually to be carried to the better land in the skies. Disappointment probably awaits there.


BUT there is yet another mark of a saint. A saint is a man who thinks. He thinks about the vital issues of life. He makes up his mind, and can give reasons for his decisions. Think! Decide! Weigh and compare! Moral questions face us, on which there is much muddled thinking. Practices are about us that are not wholly wrong and not wholly right. Distinctions must be made. Some one, some group of people, must make up their minds as to what is right and wrong. I used to wonder why Achan received such fearful treatment. He took a little money and some clothes, and for that he was stoned to death. Achan was not a bad man. That is apparent. He confessed what he had done. But he was thoughtless. He was not guilty of thinking. What was fair for him was fair for the whole multitude. And if all the thousands of men were to take whatever attracted them, the followers of Moses and Joshua would have degenerated into a horde of plunderers, gangs of bandits. Think! The church is supposed to be an institution that thinks. Its members are expected to consist of keen persons, who act unselfishly, think clearly, and carry big loads.

To learn, then to do, means success to you.

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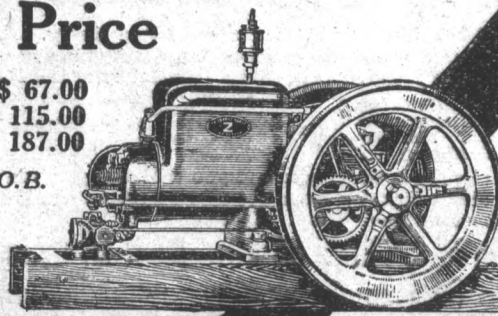
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# Our Boys' and Girls' Page

## The Best Kind of a Club

Boys and Girls Banded Together for Good

By E. L. Vincent

IN one of our states a few boys and girls started a pig club. I believe it was a girl who first thought of it: anyway, she did not have the fun all to herself very long for, let me tell you, boys are up to snuff, as well as girls, and they were soon "right on the job," "adopting" pigs and working for blue ribbons and other favors.

I wish I might give you a picture of one girl as she stood by her pig, after he got to be a pretty big fellow, with her scrubbing brush and water, fixing him up for the day. The pig was holding just as still as a mouse and enjoying himself just as you would if you were getting a bath on a hot day. In

ple, young and old, was the finest part about the movement.

Why do we say that? As a rule most people put the money end of a thing like that ahead. It is fine to sell pigs and things for a good price; to win blue ribbons and more valuable prizes is excellent; but there is something far better about such a movement than the dollars and the prizes.

Now, it may not be possible for the boys and girls of all little country places to do exactly what was and is being done in the village mentioned. Not all places need just such a resurrection; but many do; and it is possible that you may be just the one to start a work that will arouse people that have settled down into a state of carelessness to an absolutely different way of thinking and acting. It is a far greater thing to help a man or woman to do better things than it is to grow the finest pig ever seen. How can you do it?

Not by saying or even thinking, "I'll show you folks a thing or two! You just watch me!" That may defeat your purpose at the very start. But just get a pig or a calf or a sheep or something of your own and begin to do the very best you can with it. Invite your chums to come and see your pet. Urge them to get something going, too. Take a picture of the animal, whatever it is, and send it to the paper, with a little story. Make it as interesting as you can. Editors will be glad to print the story. By and by folks will begin to say, "That's a live boy! I'm going to let no such boy outdo me!" And before you know it, all the pigs and all the calves and all the lambs in the neighborhood will be putting on new life. So will the homes and you have done a thing that will count as long as time lasts.

### THE GNAT.

BY MARK MEREDITH.

other ways than washing the boys and girls did their best for the porkers.

After a while the news spread to the older people of the place, which was a country village with farms lying all round it; and they took enough interest in the matter to set a day when the young folks might bring their pigs together, exhibit them, have a good time and win some prizes they offered. Then the boys and girls did work. That day came to be great in the history of the village. Everybody looked forward to it and not much work was done anywhere in that region when Pig Club Day came round.

But the best of this story is yet to come. The example set by the boys and girls was the means of inspiring the people of that town and vicinity to do big things for their homes, their places of business and the general good of the community. Even the churches were led to new life. Not a great deal of interest had been taken in such things before the boys and girls showed folks what could be done by all working hand-in-hand harmoniously. It was really the beginning of a finer, more prosperous and happy life for all who lived within hearing distance of the little village where the pig club was started. Other animals than pigs felt the impulse, and cows, hens, sheep and horses came in for their share of the community uplift.

But the change in the lives of the peo-

THE early life of the gnat, which worries us so in the summer, is very wonderful. When Mother Gnat is ready to lay her eggs she flies away to the nearest quiet water. She lays her eggs, collects them together with her long legs, and glues them into a tiny mass, which floats away like a tiny boat.

In a short time the eggs are hatched and the grubs swim about waving the tufts of hair that grow on their mouths so as to catch and force them down their throats, minute animals and plants. And these funny little animals swim with their heads downwards and tails upwards. This is because they have a small tube in their tails which they push above water to take air.

This goes on for two weeks, after which they begin to cast their skins. After the fourth time they come out shorter, bent and wrapped up. They are still able to swim, but not eat. All this time a great change has been taking place. The tail has gone and the pupa, as it is now called, breathes through two tubes that have grown on the top of the back.

When the gnat is ready to come out the pupa stretches itself on the top of the water, the skin bursts, and the head appears, and the body is slowly drawn out. The boat-skin sometimes tips over when this is taking place, and then the gnat is drowned. If the legs are drawn out in safety the danger is over.



# Feed Your Hens Now

*Good Care Now Means Egg Profits Later On*

A RECENT trip with one of our county agents in poultry culling work revealed the fact that most of the farm hens are not being fed enough for efficient egg production. In fact, the thinness of the hens indicated that they were not getting enough to eat to maintain normal bodily conditions.

The hens are not purposely brought to this condition. Most farmers undoubtedly think that during the growing season the hens will scout around and pick up enough to maintain themselves in good condition. The hens is not like other farm animals, in that it does not show its conditions upon casual observation. Her feathers cover her body so that it is impossible to tell its condition without examination. Therefore a farmer's hens often get in poor shape before he is aware of it. The only thing that may be noted is that egg production has dropped off.

Under natural conditions the hen lays her quota of eggs in spring, gets broody, hatches out a brood of chickens and spends the summer in taking care of them. She becomes thin and in poor condition, ranging around endeavoring to get enough for herself and her flock. In the fall when the grains ripen she gets enough to put herself in fairly good condition to help her through the winter.

### Hens Stop Laying.

The hens that are now getting thin are either at the end of their laying for the summer or have stopped laying some time ago. Before they start again they will go through a moult, probably early in the season. And it is a known fact that early moulters are not winter layers. For instance, a hen that moults early in August will very likely be a drone until next spring, whereas the one that has been busy laying all summer and delays her moult until late fall will soon recover from the moult and start producing eggs again.

The chief trouble with the natural way of raising hens is that most of the eggs are laid during the time that prices are lowest and the rest of the year the hens is a star boarder. We have undoubtedly reached the low mark in egg prices this year and from now on the prices will raise until we reach the peak in December. The best months for profit in egg production are September, October, November and December. In January egg prices often start on the decline because of the shipments from the south. In order to take advantage the four profit-making months a farmer should prepare his hens now for production at that time.

### How to Feed Up.

The advisable thing to do is to have the flock culled so as to eliminate all hens that are naturally poor layers and would not pay a good profit even if well fed, and then gradually feed up the remainder of the flock. A good method is to allow the hens free range as before and then have available to them in a feed hopper the following mash: Equal parts by weight of corn meal, bran, middlings, ground oats. If sour milk is available give them plenty of it. If it is not, add to the mash three-quarters of a pound of commercial meat scraps to every four pounds of the mash. Sour milk is very valuable as a poultry feed and can be put to as good use for feeding poultry as any other way on the farm. It will replace meat scraps, which is the most expensive ingredient of the poultry ration, and also one of the most valuable. Besides the mash, the hens should be fed in addition, scratch feed composed of equal parts of cracked corn and wheat. This scratch feed is especially desirable if the hens do not have a good range. If the range is

good it may be dispensed with in some cases and the mash entirely relied upon to make up the deficiency in the amount of feed the hens get.

It is advisable to make all changes in feeding gradually, as any sudden changes may bring the hen into a moult. The short summer feeding through ranging has come about gradually with the drying up of the range due to the hot weather. In many cases the farmers have also recently cut out feeding grain to their hens because of shortage of supply. If this change would have been sudden it might have produced a moult at this time of the year. In getting the hens back to condition start the feeding gradually, otherwise it will produce a very much undesired moult at this time.

It is granted that many farmers are short of grain and are not in a position to buy food. However, on the other hand, there has never been a time in recent years since poultry feed has been so cheap. It is therefore a matter of good judgment to make the added expenditures to buy extra feed at this time to get the hens in shape for the profit-making months. If this is impossible it would be wise to dispose of the flock entirely as it will likely be unproductive until spring and therefore be the cause of future loss instead of profit.

### Feed Chickens Well.

The good care and feeding of chicks is also urged as the care the chicks get in early life is often the determining factor as to the profitableness of the bird in later life. A stunted chick will never make a profitable hen. It would be far more profitable to sell the chicks when they get to the broiler stage, than to expect them to produce a profit by egg production later on after they have gone through a semi-starvation period.

A good mash is also a valuable adjunct to free range for chicks. The following is a good mash: Two parts each of corn meal, middlings, bran, one part each of oat meal and beef scrap and one-fourth part charcoal. This mash should be placed in a hopper available to the chicks at all times. Sour milk is also one of the most valuable things that could be given growing chicks. If it is available it should be kept before them at all times. When sour milk is used the amount of beef scraps may be reduced one-half.

A liberal feeding of either hens or chicks at this time of the year is "A stitch in time" which assures poultry profits later on.

### HATCHING QUAIL EGGS.

Please tell me if quail eggs can be hatched in an incubator and how long does it take to hatch quail eggs, either under a quail or in an incubator? If they can be hatched with an incubator what degree of heat should I have for them? The quail hen was frightened from her nest before she started to set when twelve eggs were laid, and I am told they never will go back again. M. B. C.

Prof. W. B. Barrows, of the Michigan Agricultural College states that quail can be hatched in an incubator. It takes twenty-three to twenty-four days and authorities differ as to the exact time. The temperature should be one hundred and three degrees, the same as for hen's eggs.

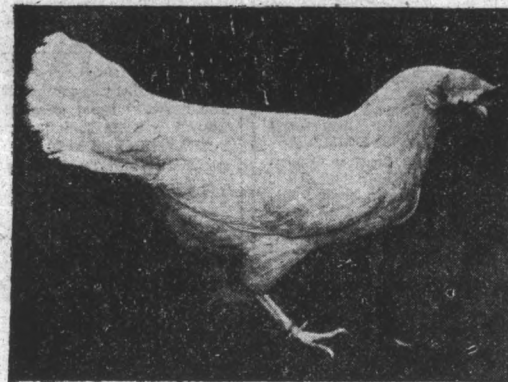
However, the quail is a very fine mother and in all cases for practical purposes it is best to leave the eggs with the mother quail. In cases where the bird has left the eggs there is the chance that they may have been incubated several days. This would, of course, reduce the time required to hatch in the incubator and often the eggs would contain dead germs after being left by the mother quail.—R. K.

# SUPERIOR BABY CHICKS

July Chicks Make Best Winter Layers

We now offer Baby Chicks from our purebred farm raised, free range flocks at the following low prices. We ship by Parcels Post Prepaid to your door and Guarantee live arrival and complete satisfaction. Order direct from this Ad. and save time. We do not ship C. O. D.

English White Leghorns, Anconas at 9c each Broiler Chicks seven cents



American White and Brown Leghorns at 8c each

Ship any amount 25 to 5000

Trap-nest record of 278 Eggs in one year.

**SUPERIOR POULTRY FARMS & HATCHERY,**  
Box 205, Zeeland, Michigan,

### POULTRY

## Pullets Pullets

Good April hatched pullets. Will lay next winter when eggs are high and your hens are taking a rest. It surely does not pay to keep poor quality old hens when they can be replaced at practically the same price, with our American English strain of bred to lay Single Comb White Leghorn pullets. These pullets are produced from our own stock and are fully guaranteed. Choice breeding cockerels and yearling hens. Price on application.

**Macatawa White Leghorn Co.**  
R. 1, Holland, Mich.

### DAY-OLD CHICKS

\$16.00 per 100 and up. Hatching eggs, \$2.00 to \$15.00 per setting and \$9.00 to \$15.00 per 100, from 25 varieties of pure bred, farm raised fowls: Chickens, Geese, Ducks, Turkeys and Guinea. Price list and circular free. Plenty of nice breeding stock. Book now for early spring delivery. WILMINGTON HATCHERY & POULTRY CO. Wilmington, Ohio.

**Barred Rocks** egg contest winners, eggs from strain with records to 290 a year. \$2.00 per setting prepaid by P. P. Circular free. FRED ASTLING, Constantine, Mich

## Chicks Chicks

Great price cut for July deliveries to lower than pre-war prices. Better chicks at a real bargain price. LOOK

Pure S. C. W. Leghorns	\$8.00 a 100,	\$4.00 for 50
Pure Barron Eng. Leg.	10.00 a 100,	5.00 for 50
Pure S. C. Anconas	10.00 a 100,	5.00 for 50
Pure B. P. Rocks	12.00 a 100,	6.00 for 50
Assorted chicks	7.50 a 100	3.75 for 50

Hatch every Tuesday in July, order direct. Prompt shipment on all varieties by Parcel Post mail. Full count strong lively chicks on arrival. For quick service and an entirely satisfactory deal send us your order. 13 years reliable dealings. Fine instructive catalog and price list free.

**W. Van Appledorn**  
R. 7, Holland, Mich.

**Barred Rocks** 8 to 12 week pullets, cockerels, hens A. C. for December averaging 22 eggs each. 1 pullet laid 27 eggs in both Dec. and January. 1 pullet laid 89 eggs in 91 days, winners at largest shows in state. Write for price list. G. Caball, R. 4, Hudsonville, Mich.

## PULLETS

If you want some good Eight Weeks Old Pullets, write us for description of White and Brown Leghorns and also yearling hens. Also we have a limited number of three months old pullets—White and Silver Laced Wyandottes, White and Barred Rocks, S. C. Reds and Buff Leghorns. Also Cockerels. Let us make you a price on what you want.

STATE FARMS ASSOCIATION,  
Desk 1, Kalamazoo, Mich.

### LOOK. BABY CHICKS

at 8 cents and up. Announcing our summer prices for 1921.

W. Leg.	10 cents	Buff Leg.	11 cents
Br. Leg.	11 cents	Anconas	12 cents
Barred Rocks	13 1/2 cents	Reds	13 1/2 cents
Buff Rocks	13 1/2 cents	W. Wyandottes	15 cents
		Broilers	8 cents

Deduct 5% for orders of 500 or more, 10% for orders of 1000 or more. We prepay parcel post charges and guarantee live delivery. Send for free catalogue and earliest delivery date. Ohio Poultry Yards & Hatchery, Marion, Ohio

### APRIL COCKERELS Winter Laying Pullets

now eight weeks old. Anconas and White Leghorns, Brown Leghorns, Buff Leghorns, Rocks, R. I. Reds, Wyandottes, Black Minorcas. Dollar and up as they grow older. Crescent Egg Company, Allegan, Mich.

### LOOK [75,000 Best Graded] CHICKS

Our Hi-Grade profit paying Bred-to-Lay, M. A. O. tested and exhibition chicks, at reasonable prices. Hatching eggs, 8 varieties, Circular FREE. LAWRENCE POULTRY FARM, R. 7, Grand Rapids, Mich.

**Chicks, Pullets and cockerels.** Thorough-bred Barron Leghorns \$9.00; Rocks \$11.00; S. C. R. I. Reds \$13.00 per hundred. Eight week old pullets and cockerels White Leghorns, Rocks and Reds at bargain prices. Write me your wants. Catalogue. Brummer's Poultry Farm, Holland, Mich.

**Barron S. C. W. Leghorn** 8 and 10 week old low prices. A pleased customer or no sale. Hudsonville S. C. W. Leghorn Ranch, Hudsonville, Mich.

**Baby Chicks \$10 a 100 and up.**

Postage PAID, 95% live arrival guaranteed. FREE feed with each order. 40 breeds chicks, 4 breeds ducklings. Select and Exhibition grades. A hatch every week all year. Catalogue free. Stamps appreciated. NABOB HATCHERIES, Gambier, Ohio

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Best selected utility trapnested exhibition stock ever produced. Always 2,000 chix on hand 5 to 15 days old. 18 varieties. Hatching eggs Hens, ducks, Early bookings, avoids disappointment. Catalog. Beckman Hatchery, 26 E. Lyon, Grand Rapids, Mich.

**USEFUL ANCONAS** June and July chicks lay before cold weather. Eggs half price \$6.50 per 100, \$3.50 per fifty, Hogan tested, beauty and utility combined. Specialty breeder S. C. Mottled Anconas. Send for booklet. (Useful facts about Useful Anconas). It is free. College View Farm, R. 3, Hillsdale, Mich.

### Whittaker's R. I. Reds

Michigan's Greatest Color and Egg Strain. Chicks all sold. 50 good cock birds, either comb, at bargain prices for quick sale. Catalog free. INTERLAKES FARM, Box 39, Lawrence, Mich.

**Baby Chix**—12,000 Standard Quality every Tues. at greatly reduced prices; Mottled Anconas, English and American White Leghorns, Brown Leghorns and Barred Rocks; all single comb, Parcel Post paid, safe arrival guar. Knoll's Hatchery, R. 3, Holland, Mich.

**HEASLEY S. C. Buff Leghorns.** eight-week-old pullets and cockerels and breeding hens at bargain prices. Bred from officially certified egg bred winners, original Dr. Heasley flock. Chicks at special prices. Henry DeFree, R. 8, Box 137, Holland, Michigan

**ENG. and American W. Leg.** \$8 per 100; Brown Leg. \$8 per 100; Mottled Anconas \$10 per 100; Barred Rocks \$12 per 100; Broilers \$7 per 100. All Single Comb. Safe arrival guar. Order direct from road or send for catalog. Knoll's Hatchery, R. 3, Holland, Mich.

### RHODE ISLAND WHITES

win over all breeds at the egg laying contest. 30 eggs \$5; 50 \$8; 100 \$15 order from this ad. Some chicks. H. H. JUMP, R. 5, Jackson, Mich.

**R. C. Br. Leghorn C'ks.** \$1.50 each. Pekin Mrs. OLAUDIA BETTS, Hillsdale, Mich.

**S. C. Black Minorcas** Eggs from No. 1 pen will be \$1.50 per setting of 15, for the bal. of the season. R. W. Mills, Saline, Mich.

### Single Comb Buff Leghorn

hens and early hatched pullets and cockerels. Good laying strain. Willard Webster, Bath, Mich.

### Pullets and Breeding Stock

8 varieties, also ducks and geese. Send for prices BECKMAN, 26 E. Lyon, Grand Rapids, Mich.

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207 egg average; cockerels \$5 each, 3 for \$14, 6 for \$25. FRANK DeLONG, R. 3, Three Rivers, Mich.

**White Wyandotte** and Barred Rock eggs, half price balance of season. HOWARD GRANT, Marshall, Mich.

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**Trained American** Fox Hounds Rabbit and Skunk dogs all ages. Send stamp. W. E. LEOKY, Holmesville, Ohio

**FOR SALE**—Paircoon dogs. Open trialer and silent. None better \$100.00 each on trial. C. W. FRYE, Henderson, Mich.



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Blue Bell, Supreme Champion at the Smithfield Show 1919, and the Birmingham Show 1920, is a daughter of Edgar of Dalmeny. The Junior Champion Bull, Junior Champion Female, Champion Calf Herd and First Prize Junior Heifer Calf, Michigan State Fair, 1920, were also the get of Edgar of Dalmeny. A very choice lot of young bulls—sired by Edgar of Dalmeny are, at this time, offered for sale.

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Cows and Heifers Bred to Blackcap Brandon of Woodcote 2nd For Sale GEO. HATHAWAY & SON, Ovid, Mich.

REGISTERED Aberdeen-Angus. Ten heifers, six bulls from eight to fourteen months. Best of breeding, the growthy kind that make good Reasonable. Inquire F. J. WILBER, Ohio, Mich.

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bulls and heifers of the very best of breeding, from 12 to 15 months of age. For next 30 days will price bulls at \$100.00. Real bargains. Inspection invited. RUSSELL BROS., Merrill, Mich.

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Bull calves for sale. Sired by Anton's May King that sold for \$7,000. Farmers' prices and guaranteed to please. GILMORE BROTHERS, Camden, Mich.

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Guernsey Bulls of May Rose Breeding Their dams have records 420 to 650 lbs. fat also a few cows and heifers are offered. H. W. Wigman, Lansing, Mich.

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Registered

Holstein-Friesian Cattle

We breed them to sell. If you are looking for seed stock, we have it.

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MY! OH, MY! WHAT AN OPPORTUNITY

We are now offering a beautiful calf born Aug. 2nd, 1920. His sire a 35.68 lb. bull. Dam's sire has three sisters each with yearly records of over 1200 lbs. two of them former World's champions. Write for pedigrees HILLOREST FARM, Kalamazoo, Mich.

Holstein Friesian heifer and bull calves, purebred registered and high-grade. Price \$20 up. Splendid individuals and breeding. Write us your requirements. Browncroft Farms, McGraw, N. Y.

Reg. Holsteins for sale at all times either sex. Bulls or heifers, prices reasonable. Write or come and see them. HENRY S. ROHLFS, R. 1, Akron, Mich.

"Top Notch" Holsteins

Buy a "milk" Bull of Quality from the Breeders of the world's only cow to produce 800 lbs. milk in 7 days, having an 800 lb. daughter. Our herd is rich in the blood of Colantha 4th Johanna, the only cow that ever held all world's records in every division from one day to one year at the same time. She produced 631.70 lbs. milk in 7 days. We are offering for sale a bull, whose dam exceeds this record by over 7 1/2 lbs. in 7 days. His dam's records are:

Table with 2 columns: Item, Value. Milk 1 Day 100.1 lbs., Milk 7 Days 659.3 lbs., Butter 7 Days 26.31 lbs.

His name is KING VALE CORNUCOPIA WAYNE, No. 312599 Born February 6, 1920 His dam and sire's two nearest dams average Butter 7 Days 33.02 lbs., Milk 7 Days 607.3 lbs. Handsomely marked about one third white. \$250.00 f. o. b. Howell. McPHERSON FARMS CO., Howell, Mich. All herds under U. S. Supervision.

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KING SEGIS transmitted to his sons the power to transmit to their daughters the greatest of production over long periods. It is his offspring that has recently made the greatest yearly production ever dreamed of, 37,881.4 pounds of milk in a year. We have for sale at moderate prices. Beautiful individuals of show type KING SEGIS BULLS.

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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.

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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.

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Only 3 Sons Of "Maplecrest" For Sale

Old price list cut 1/3 to 1/2 for prompt sale. No. 1. 18 mos. old—Dam 19 lbs. 3 yr. old. \$100.00

No. 2. 15 mos. old—Dam 22 lbs. 4 yr. old. \$150.00

No. 3. 14 mos. old—Dam 29.67 lbs. in 7 days \$400.00

Dam of No. 3 has 1031 lbs. butter 23543 lbs. milk in a year—One of our best foundation cows. Don't delay but buy one of these ready for service bulls NOW. Pedigrees on application.

R. B. McPherson, Howell, Mich.

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Sired by Segis Kornlyke De Nijlander a 32 lb. son of a twice Michigan ribbon winner, her dam, 2 1/2 lbs. Dams are daughters of King Segis Pontiac, a 37 lb. son of King Segis, Records 16 lbs. to 20 lbs. Priced at half value. \$100 up. Federally tested June 10. Write for list. ALBERT G. WADE, White Pigeon, Mich.

Reg. Holsteins and Berkshires, most any age, either sex, priced according to other commodities. Write or come. B. B. REAVEY, Akron, Mich.

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20 Cows of extra quality and breeding, 12 of them bred to our \$2500.00 son of Old Repeater, also bulls not related.

Allen Bros. Paw Paw, Mich. or 618 So. Westnadge Ave., Kalamazoo, Michigan

Thumb Hereford Breeders Association

now offering some excellent young males and females of choice breeding. Can furnish one or a carload. Priced right. Your inspection solicited. Jas. K. Campbell, Secretary, Bad Axe, Mich.

Registered Jersey bulls, some ready for service, sired by Oxford's Champion Fox 168851, out of Oxford Daisy's Princess, Register of Merit record 831 lbs. milk; 468 lbs. butter with first calf, milked 50 lbs. per day with second calf. Sister to Sires Crown Princess 168 lbs. milk, 108 lbs. butter in one year. The dams of these bulls are high producers, many of them are prize winners. Prices very low, quality considered. C. S. BASSETT, Kalamazoo, Mich.

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The Wildwood Farm Jersey Cattle, Majesty strain, Herd on State accredited list, B. of M. testing constantly done. Bulls for sale. ALVIN BALDEN, Phone 143-5, Capac, Mich.

Thorobred Jersey Bull Calves Hood Farm breeding. State and Federal accredited list, \$25.00 each. Also one yearling bull ready for service. Pedigrees on request. I. W. JAYNE & BEN BRAWT, Fenton, Mich.

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Registered Jersey Bulls ready for service from high producing dams. R. B. FOWLER, Hartford, Mich.

Jersey Bulls For Sale ready for service from R. of M. dams. T. B. tested. Will give time. SMITH & PARKER, R. 4, Howell, Mich.

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Having sold 2 of our farms on account of poor health, we have for sale 40 head of pure bred Shorthorn Cattle of various ages, and you can have your pick from over 100 head. 30 Pure Bred Duroc-Jersey sows and gilts to farrow in September and 70 head to pick from. 20 Head of pure bred Percheron and some grade horses and colts. A span of mules over 16 hands high 4 and 5 years old brothers and a perfect match. Our herd bulls are Imported Sir Haymaker Chaslen and Ideal Fortune, son of Cumberland Fortune. Herd Boars are Hi Pathfinder, son of Pathfinder, Long Wonder, son of Colonel High Model and Giant, son of Giant Invincible. All our hogs are Cholera Immune. CHASLEN FARMS, NORTHVILLE, MICH. Our farms are located 3 miles south west of town, if you can make better connections by way of Salem we are 3 miles east of there on the Salem Road. If you need anything in these lines, it would pay you to come and see us.

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that will put weight on your dairy calves—the difference will soon pay for the bull. Now selling good Scotch and Scotch-topped yearlings, reasonably priced. We guarantee every animal to be a breeder. Federal Test. One hour from Toledo, Ohio, N. Y. C. E. B.

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Shorthorns. Bull calves for sale from the best milking blood obtainable. ROSEMARY FARMS, Williamston, Mich.

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We offer a few choice Scotch heifers with calves at foot. This is good foundation stock and the calves are all from top sires. Prices reasonable. Write your wants and see the cattle. C. H. PRESCOTT & SONS, Office at Tawas City, Mich., Herd at Prescott, Mich.

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BUY SHORTHORNS of Central Michigan Breeders' Association at farmers' prices. Write for sale list to M. E. Miller, Sec'y, Greenville, Mich.

Shorthorn Bull For sale. Fames Pride 724792. Two yrs. old nice roan with star in forehead. Very gentle and a fine specimen of the breed. Price \$225.00. W. E. BARTLEY, Alma, Mich.

We now have FIVE BRED HEIFERS that we will sell cheap if taken at once. Inquire about them or better come and see them. CARR BROS. & CO., Bad Axe, Mich.

Francisco Farm Shorthorns

and BIG TYPE POLAND CHINAS. Now offering 3 heifers, 2 bulls, all Scotch. Sows to farrow in Aug. and Sept. Spring pigs. 60 head to choose from. POPE BROS. CO., Mt. Pleasant, Mich.

Reg. Red Polled cattle, herd headed by Famous R. Charmer 75% same blood as Charmer 1919 Int. Gd. Champion. Herd State and Fed. tested. No cattle for sale at present. Westbrook Bros., Ionia, Mich.

Shorthorn cow 3 yrs. old white due in Nov. to IMP. ROYAL PIONEER. J. A. BARNUM, Union City, Mich.

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Place Orders NOW

for BERKSHIRE boars or sows 6 to 8 weeks old Reg. and Trans. and delivered any where in Mich. for \$15, or a fine large bred sow at \$40.00. I also have an exceptionally fine 400 lb. boar for sale at \$40.00. He is a dandy and anybody in the market for him should never pass this up. He is a good one. C. H. WHITNEY, Merrill, Mich.

Berkshire spring pigs, either sex, \$10, \$12 and \$15 according to age. Also fall gilts and yearling sows. CHASE STOCK FARM, Marlette, Mich.

Brookwater Duroc Jerseys FALL BOARS OPEN GILTS

All of the right type and the best of breeding. Prices reasonable. Mail orders a Specialty. Satisfaction guaranteed.

BROOKWATER FARM, Ann Arbor, Mich. H. W. Mumford, Owner J. B. Andrews, Mgr.

DUROC JERSEYS: A few choice bred gilts for sale. CAREY U. EDMONDS, Hastings, Mich.

Duroc Jerseys

Gilts bred for fall farrow at reasonable prices. RUSH BROS., Oakwood Farm, Romeo, Mich.

Write Me at once I have just what you want heavy bone registered Duroc Jersey boars ready for service. W. H. MAYES, L. B. 505, Darand, Mich.



Spring pigs by Walt's Orion, First Sr. Yearling Detroit, Jackson, Gd. Rapids and Saginaw 1919

Phillips Bros, Riga, Mich.

Collinsdale Duroc Jerseys Lyons, Mich. R. 1, L. A. Burhans, Owner

Herd Boars Wolverine Pathfinder by Pathfinder Wolverine Sensation by Great Orion Sensation. Wolverine Known Wonder by Great Wonder IAM Fall boar and gilts by the Sensation boar. 100 spring pigs from these boars. Herd Sows breeding O. C. K., Pathfinder and Big Bone Giant.

DUROCS A few choice, ready for service, boars for sale. HARRY FOWLER, Sturgis, Mich.

Maplewood Duroc Jersey Pigs 10 weeks, \$10.00. Sired by PROMOTION MAPLE FARM, Ypsilanti, Michigan. Howard Moore, Owner Willis E. Moore, Mgr.

Woodlawn Farm Duroc hogs are from select breeding stock, well mated for size, type and color. Herd boars, sows and pigs, will ship C.O.D. and furnish Reg. certificate. W. E. Bartley, Alma, Mich.

Duroc Jersey Boars of all ages, big, heavy boned smooth kind, real herd boars and priced to sell. First check for \$50 gets a 400 lb. April yearling, a grandson of Panama Special. Write for pedigree or come and see. Visitors always welcome. Satisfaction guaranteed. Thos. Underhill & Son, Salem, Mich.

Duroc Jerseys Am booking orders for spring pigs. For fall gilts. E. D. HEYDENBERG, Wayland, Mich.

Veterinary.

CONDUCTED BY DR. W. C. FAIR.

Advice through this column is given free to our subscribers. Letters should state fully the history and symptoms of each case and give name and address of the writer. Initials only are published. When a reply by mail is requested the service becomes private practice and \$1 must be enclosed.

Rattlesnake Bite.—Our Collie dog had a battle with a rattlesnake; his jaw was wounded, it swelled but the dog is now seemingly all right; however, we are told to destroy the dog for fear of him going mad. What do you think? C. H. W., Parma, Mich.—Don't destroy your dog. In order for him to go mad he must be infected by an animal which is suffering from hydrophobia. Snakes do not have hydrophobia. Paint sore jaw occasionally, with tincture of iodine.

Suppurating Ears.—What can I do for our six-year-old Collie dog, who seems to have gatherings deep down in his ears. At times they discharge. We have been troubled with this for about five years, but now he is much worse. Recently there is some discharge from his eyes mornings. It there any cure for him? E. L., Hanover, Mich.—A chronic ailment of this kind in dogs is generally incurable. Benefit will be derived from dropping peroxide of hydrogen into the inner ear twice a day. Ten minutes after each application, dust into ear some boric acid. It is perhaps needless for me to say his ears should be kept clean.

Atrophy of Shoulder Muscles.—We have a three-year-old colt which we commenced to work last spring. About a month ago her left shoulder began to sink in, the affected part is the width of my hand, and about a foot in length. It seems to be sweeny. We applied liniment but it fails to help her. F. S., Chesaning, Mich.—Clip off hair and apply one part powdered cantharides and six parts fresh lard once every ten days. The writer has obtained satisfactory results by injecting (hypodermically) five or six drops of rectified oil of turpentine underneath the skin, to the atrophied parts and the drops planted two or three inches apart, five or six drops in each. If the animal is of a nervous temperament you may expect this treatment to create considerable excitement for ten or fifteen hours. The shoulder will swell. Give the animal three days' rest, then put it to work. No other treatment is necessary. If you give this treatment a trial, kindly report results and oblige the writer.

Distemper—Irritation of Skin Infected Wound.—About four weeks ago four of our horses began to cough. We gave them commercial cough remedy but it failed to benefit them; next gave them treatment prescribed by our veterinarian; this also failed; next gave the commercial distemper remedy; this seemed to help some, but they are not well. They have good appetite and are in good condition. We have found your prescriptions O. K. and would like to have remedy for these horses. About two weeks ago one of our sheep began to gnaw at the wool on hip, making the skin raw. The flies got to her and we were forced to kill her. Later two lambs commenced gnawing at hip, one of them died but the other recovered. Now another lamb has begun to gnaw at the hip. Our sheep seem to be healthy and are free from ticks. Have frequent changes of pasture, are fed oats night and morning. A. J. C. Perry, Mich.—Mix one part of fluid extract of nuxvomica, three parts of fluid extract of cinchona, and four parts of Fowler's solution together, shake, and give each horse a table-spoonful (half ounce) at a dose in feed or in drinking water three times a day, until they fully recover. Wool eating is more of a habit among sheep than a disease; besides, it is more likely to occur when sheep are fed dry food and not allowed to exercise. The peculiar part of your cases is that they all commence gnawing at wool on hip, indicating an itchy condition of the skin in that region of the body. Doubtless the wound the animal makes, becomes infected, the death resulting from septic poison. If the animal swallows much wool it may clog bowel and cause death. Giving each sheep a hypodermic injection of one-tenth of a grain apomorphine once a day for three or four days is the best remedy to correct the wool eating habit. If the skin of hip is only itchy, dust on some flowers of sulphur, or apply a saturated solution of baking soda four or five times daily.



Drink Coca-Cola

DEPOT SODA PARLOR

DELICIOUS AND REFRESHING

MISSED his train—but not refreshment. Coca-Cola is sold everywhere.

THE COCA-COLA COMPANY  
Atlanta, Ga.

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and there's no strain on the buttons

Let your Next Pair Be—

**Nu-Way or EXCELLO**

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**HOGS**

**Berkshire Swine** good ones. Breeding stock and pigs for sale. Prices reasonable. HEATHWOOD FARM, Lewiston, Mich.

**DUROC SOWS** and gilts bred to Jacks Cherry Orion King No. 19229 Son of the \$10,000 boar owned by Longview Farm, Le Summit, Mich. Also young boars ready for service out of good sows. Apply THE JENNINGS FARM, Bailey, Mich.

**Duroc Bred Gilts**

for Sept. farrow from prize winning stock, at \$25 and \$35. Spring boar and sow pigs of Orion Cherry King, Col., and Pathfinder breeding.

W. C. Taylor, Milan, Mich.

Buy good hogs now, from one of the largest herds of registered Durocs in the state. Open fall gilts at \$25. Sows and gilts bred for summer and fall farrow. Booking orders for spring pigs. Will accept a few sows to be bred to good sons of Great Orion Sensation and Duration. Michigana Farm, Pavilion, Mich.

**Duroc** Jerseys A few extra good fall boars, and a choice lot of spring boars of the heavy boned type popular blood lines at reasonable prices. DROTT & BERNIS, Monroe, Mich.

**Raise Chester Whites**

Like This the original big producers

I HAVE started thousands of breeders on the road to success. I can help you. I want to place one hog from my great herd in every community where I am not already represented by these fine early developers—ready for market at six months old. Write for my plan—More Money from Hogs.

G. S. BENJAMIN, R. F. D. 10, Portland, Michigan.

**Chester Whites.** Bred gilts 250 lbs. \$40. Sept. farrow. Spring pigs \$12 to \$25. ALBERT DORR, Clinton, Mich.

**Chester Whites** Big stretchy, spring pigs for sale. These are good ones. George D. Springer, R. 6, Grand Rapids, Mich.

**Chester Whites** Choice March boars, new blood for old customers; cholera immuned; price right. F. W. Alexander, Vassar, Mich.

**O. I. C.'s.** Last fall gilts bred to farrow in Aug. boars for service, also spring pigs for sale. MILO H. PETERSON, Ionia, R. 2, Mich., Elmhurst Farm.

**O. I. C.'s** Choice gilts for April and May farrow, also fall pigs. Booking orders for spring pigs. A. J. BARKER & SON, Belmont, Mich.

**O. I. C. Swine** Strictly Big Type with quality. A few gilts bred for April farrow. A few Sept. and Oct. fall pigs either sex. Extra good ones. Of our State Fair prize winning blood lines. Will ship C. O. D. and record them free. NEWMAN'S STOCK FARM, R. 1, Marlette, Mich.

**Write for Prices** on O. I. C. pigs of March and April farrow. Both sexes, Sire O. C. Callway Boy. Good long ones the kind that fills the Albertas Jubilee kind. All stock reg. in buyer's name. VILLAGE STOCK FARM, Jeddo, Mich.

**O. I. C.'s.** one yearling boar, last fall gilts bred for next fall farrow; this spring pigs not akin, big growthy stock, reg. free. Gita's phone, 3/4 mile west of Depot. OTTO B. SCHULZE, Nashville, Mich.

IMPROVING THE MICHIGAN WOOL CROP.

MORE money for better wool, the object lesson taught in scores of Michigan towns this year by the State Farm Bureau wool pool, is the death knell of the scrub ram, according to Don Williams, sheep extension specialist of the Michigan Agricultural College, who is in charge of the sheep extension work that is part of the 1921 wool pooling campaign. Every wool pooling day the cost of keeping a scrub ram is being driven home, says Mr. Williams, who predicts a quick exit for that type of sire.

Five times more pure-bred rams will go onto Michigan farms during the coming year than in any five years past, in the opinion of Mr. Williams. He believes that the culling of light shearing sheep and short-fleeced animals will be pushed as never before. Farmers are discovering every day that it doesn't cost any more to produce the combing grades of wool than it does to produce the clothing grades, providing the right kind of a ram is used, and the flock is handled carefully. Scores of farmers are now ready to head their flocks with pure-bred rams, according to Mr. Williams.

The difference in price paid today for combing and clothing wools in the medium grades is six cents a pound, and climbs to ten cents a pound in the fine wools, says Mr. Williams, adding that pure-bred rams and culling of the flock would soon enable the farmer to get a better grade of wool and also a better price.

Thousands of Michigan farmers are being reached this summer by the practical extension work which is part of the wool pooling program. Farmers see the grading of the wool they bring in and of that brought in by their neighbors. Reasons for low grades are explained by graders and suggestions for improving the flock are to be had by the owner if he desires it. Farmers who want to know the kind of a ram to get for their particular flock of sheep can find out. Old sheepmen are declared to have picked up pointers at the gradings that have sent them home with new ideas for handling their flock.

All parts of the state will be touched by the extension work and there are one hundred and thirty grading warehouses scattered over the state, exclusive of the upper peninsula, where there is said to be 100,000 pounds of wool awaiting farm bureau graders.

The second year of wool pooling has shown great improvement in the general management of farm flocks, according to Mr. Williams. Nowadays fewer fleeces come to the grader with the tags wrapped inside. They are sacked separately and the whole fleece is better for it. Few fleeces are being docked this year as discount wool because of being fouled by tags.

Burly and chaffy fleeces are far less numerous this year than they were in 1920. Knowing the value of a clean fleece, the farmer has fenced his straw-stacks and is taking care not to get chaff and other foreign matter into the sheep's wool at feeding time. He finds that cleaner fleeces are paying.

Prospects are for brighter days in the sheep industry, in the opinion of Mr. Williams, who has travelled the state almost constantly for the past two months and has spoken to hundreds of sheepmen at scores of meetings. He finds them optimistic and proud of their success in marketing their own product.

Mr. Wiseacres stood looking out of the window, in deep thought, one May morning, when he said: "The trees must be tired standing in one place so long."

"Why?" asked the one spoken to. "Because they are leaving."

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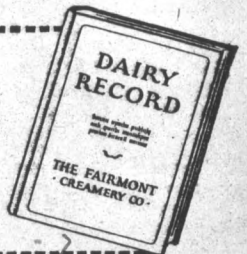
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all ages sired by Callaway Edd 1918 world's grand champ. boar and C. C. Schoolmaster 1919 world's grand champion also Wonder Big Type and Giant Buster. Write your wants, all stock shipped on approval. CRANDELL'S PRIZE HOGS, Cass City, Mich.

**O. I. C.'s.** Special prices on spring pigs from prize winning stock. Must be sold to make room. WEBER BROS. Phone R. O. 408, 10 mile Rd. W., Royal Oak, Mich.

**Central Mich. O. I. C. Swine Breeders Ass'n.** Hogs of all ages of popular blood lines. Every sale guaranteed by association. DR. H. W. NOBLES, Sales Mgr. Coral, Mich.

**O. I. C.'s.** Special prices on choice pigs of March and May farrow by C. C. Big Callaway. C. J. Thompson, Rockford, Mich.

**O. I. C.** Big type serviceable boars, weigh from 150 to 250 lbs. Gilts bred for May and June farrow. Write for prices. G. P. Andrews, Mason, Mich.

**O. I. C.'s** choice boars and spring pigs at farmers prices. CLOVER LEAF STOCK FARM, Monroe, Mich.

**O. I. C. GILTS** Bred for June and July farrow. H. W. MANN, Dansville, Mich.

**L.T.P.C. \$15, \$20 & \$25** Our top notch stretchy boar pigs are weaned and ready to ship. They are sired by such boars as Harts Block Price Chins Big Bob, Right Kind Glen and Leonard's Big Bob. HART, FULCHER AND CLINE, Address F. T. Hart, St. Louis, Mich.

**Spotted Poland Chinas** The hog with more outcrosses than any other breed. Which insures vitality and prolificacy. Why breed and feed grade hogs when you can buy registered hogs at special low prices. Write me your wants in bred gilts, boars or spring pigs. Cholera immuned. Satisfaction guaranteed. SAMUEL GEPBER, Bluffton, Ind.

**Big Type Poland Chinas,** Choice spring boar pigs \$15 each when 8 weeks, sired by Clansmen Buster and their dam being a prize winner at the State Fair. Also gilts bred for Sept. farrow for \$10 and up. Guarantee Satisfaction. DORUS JOYER, Akron, Mich.

**L. S. P. C.** a few choice boars, bred gilts all sold. Also a grandson of the Clansman and Harrison Big Bob. H. O. SWARTZ, Schoolcraft, Mich.

**Big Type P. C.** some very choice boars double immune, out 1100 lb. sire and mammoth sows from Iowa's greatest herds. E. J. Mathewson, Burr Oak, Mich.

**Big Type Poland Chinas.** A great litter by Checkers; dam a grand-daughter of Giant Buster, are for sale now. They were farrowed Mar. 11, and were purchased of Jim Bloemendaal, Alton, In. in dam. Do you want the best the breed produces? Come over and see them. Wesley Hile, Ionia, Mich.

**Leonard Farm** BIG TYPE P. C. boar pigs at weaning time, \$25 from Mich. Champion herd. Satisfaction guaranteed. Call or write. E. R. LEONARD, R. 3, St. Louis, Mich.

**Big Type Poland Chinas** at lowest prices. Both sows and gilts. G. A. BAUMGARDNER, R. 2, Middleville, Mich.

**Cows bred for spring litters all sold.** Have some choice gilts bred for Aug. litters, also some Sept. boars for sale. Clyde Fisher, R. 3, St. Louis, Mich.

**L. T. P. C.** few choice bred gilts sired by T's Clansman Mich's 1920 Gd. Cham. bred to Smooth Buster 1st Jr. yearling 1920. A. A. Feldkamp, Manchester, Mich.

**L. T. P. C.** Nothing for sale at present. Thanks to my customers. W. J. HAGELSHAW, Augusta, Mich.

**Hampshire** bred gilts now ready for Aug and Sept. farrow; spring and fall boar pigs at a bargain. JOHN W. SNYDER, R. 4, St. Johns, Mich.

**Hampshires** 1914 1921 A few choice boars of this spring farrow that sure will improve your herd if used for herd boars. They are bred right and are right, and will produce right. Write for description and prices. We are glad to answer inquiries. Steuben's Hampshire Farm, Angola, R. 3, Ind.

**Pine Grove Hampshires** Bred sows all sold. We are offering 100 spring pigs of excellent breeding and quality. Either sex, order early. GEO. COUPAR & SONS, Marlette, Mich.

**Hampshires** of superior quality, all ages, priced right. Guaranteed. Hampshire Square Deal Farm, R. 1, Three Rivers, Mich.

**SHEEP**

**INGLESIDE SHROPSHIRE** During the past 30 years Ingleside Farm has produced over a 1000 Shropshires of sustained excellence, but never before have we been able to present to our over-riding circle of satisfied customers such an attractive offering of Shropshires of all ages.

In rams we have a strong assortment of lambs, yearlings and aged rams—splendid individuals of the choicest breeding obtainable. We have young ewes of quality for exhibition or foundation stock. We can supply 2 or 3 fitted flocks for show at county fairs.

Write your wants—or better yet, come and inspect this stock personally. H. E. POWELL & SON, IONIA, MICH.



# LATEST MARKET REPORTS

## GRAIN QUOTATIONS

Tuesday, July 12.

### Wheat.

Detroit.—Cash No. 2 red \$1.26; September \$1.23; No. 2 white \$1.21.  
Chicago.—No. 2 red \$1.20@1.21½; No. 2 hard \$1.20; September \$1.24½.

### Corn.

Detroit.—Cash No. 2 yellow 65c; No. 3 yellow 64c; No. 4, 61c.  
Chicago.—No. 2 mixed 62c; No. 2 yellow 62@63c.

### Oats.

Detroit.—Cash No. 2 white 40½c; No. 3 white 39c; No. 4 white 36c.  
Chicago.—No. 2 white 35½@37¼c; No. 3 white 33¼@34¼c.

### Beans.

Detroit.—Immediate and prompt shipment \$3.35 per cwt.

Chicago.—Market is lower and demand easy. Hand-picked Michigan beans choice to fancy \$3.80@4.15; red kidney beans \$9@9.15.

New York.—The market is steady without much change in prices. Choice pea \$4.50; do medium \$4.75; red kidney \$11.75.

### Rye.

Detroit.—Cash No. 2 rye is higher at \$1.25.

Chicago.—No 2 \$1.19.

### Seeds.

Detroit.—Prime red clover \$13.50; October \$11.50; alsike \$11; timothy at \$3.10.

### Hay.

No. 1 timothy \$20@21; standard and light mixed \$19@20; No. 2 timothy \$17@19; No. 1 clover mixed \$14@15; No. 1 clover \$13@14; rye straw \$13.50@14; wheat and oat straw \$12.50@13; per ton in carlots at Detroit.

## WHEAT

Drouth in the spring wheat territory in the United States as well as in Canada has been relieved but much wheat has been damaged beyond recovery and the crop is not yet near enough to maturity to be immune to further dry weather. Black rust has been discovered in Canada but in the American northwest it is being disregarded as a factor in the size of the crop. Threshing returns on winter wheat are disappointing in Ohio, Illinois, Indiana, Iowa and Missouri. Much light weight grain is being found as a result of intense heat at the critical period. New wheat has not been coming forward as rapidly as expected, due to wet weather in the southwest, but primary receipts are averaging around 1,000,000 bushels per day or higher, which is about one-third more than at the same time last year. The demand has not been satisfactory as exporters are buying sparingly and milling demand is disappointing in view of the long period during which mills have been carrying light stocks. The hoarded flour supplies undoubtedly are smaller than a year ago and exporters are not expected to have the wheat market so exclusively to themselves as they did last year. Foreign crop reports have been rather mixed and a private report states that the European crop will be 120,000,000 to 160,000,000 bushels more than last year. This statement can hardly be reconciled with other reports which have come from abroad.

## CORN

Corn needs rain in Ohio, Indiana, Illinois, Michigan, Missouri and Iowa. The critical period is at hand with the crop beginning to tassel much earlier than a year ago, and a great deal of damage can be done in a short time unless rain is received. Thus far little or no actual damage has occurred and if rains should come, the situation would be immediately relieved. Drouth in Europe seems to be stimulating export demand for corn and prices are below a parity with Argentine which also has a large surplus for export. Stocks remain abnormally large for this season but receipts are gradually declining although they are still about 25 per cent higher than at this time last year.

## OATS

Hot weather has cut down the oats crop and the few threshing returns from Illinois and Indiana show test weights running from 20 to 28 pounds. Stocks at terminal markets are the largest known at this season and the movement of old oats is ample for all

requirements. Prices are likely to remain low as the movement of new oats will start during July.

## FEEDS

Feedstuffs, especially wheat by-products, are decidedly weak with new low price levels reached. Wholesale prices on bran and middlings at some of the leading mid-western centers are down to three-fifths of a cent a pound or less, which is below the price for corn or oats. Demand recently has been limited and confined largely to speculative purchases by dealers who have considered prices low enough but such buying has been insufficient to support the market.

## HAY

The government estimated the yield of tame hay on July 1 at 82,000,000 tons compared with 91,000,000 tons harvested last year. Prospects are less satisfactory than a month ago, average condition declining about seven per cent. New hay is not coming forward rapidly as a result of hot weather in the southwest. Prices also are too low to stimulate shipment of old hay. Large areas of wild hay are for sale at very low figures and much will remain uncut unless prices advance. The hay market appears to be working into a stronger position but it will be several months before prices can be materially affected.

## WOOL.

Attention of the wool trade during the past week has been centered on the wool schedule of the permanent tariff. Schedule 11, as it is known, is a complicated affair. Although the specific rate on wool in the grease is 25c per pound, and 26c on scoured wool, there is a proviso under which the duty is not to exceed 35 per cent ad valorem in any case. Present prices are so low that the 25 and 26 rates would apply in only a few cases. The duty virtually amounts to a 35 per cent rate on wools whose scoured value is under 71c. This is materially below the Payne-Aldrich tariff and in some cases is below the Simmons-Underwood tariff. It is much more satisfactory to manufacturers than to producers. Prices continue practically on a steady basis with buyers rather ac-

tive in the range states. Foreign auctions report steady to strong prices in nearly all cases, with buyers from continental countries taking the bulk of the offerings. Consumption of wool by mills in the United States during May amounted to 50,056,000 lbs., compared with 46,253,000 in April and 50,650,000 during May last year when the mills had not yet felt the effect of the buyer's strike. The five months' aggregate consumption is 194,885,000 lbs. compared with 285,201,000 lbs. in the same period last year when the industry was working at top speed. It is reported that 4,000,000 lbs. have already been consigned to the Ohio pool. Michigan also has pooled more wool than at this time last year while the wools pooled at Chicago are piling up rapidly.

Boston quoted prices as follows: Ohio and Pennsylvania fleeces, delaine unwashed 35c; fine unwashed 29@30c; half-blood combing 30c; three-eighths blood combing 26@27c. Michigan and New York fleeces, delaine unwashed 31@32c; fine unwashed 28@29c; half-blood unwashed 29c; three-eighths blood unwashed 26c; quarter-blood unwashed 25c. Wisconsin, Missouri and average New England, half-blood 25@26c; three-eighths blood 24@25c; quarter-blood 22@23c.

## BUTTER

The advance in butter markets continued rather steadily throughout the past week and the closing tone was firm. The advance from the low point of the season amounts to about ten cents per pound. Buyers seem to be anticipating their wants, indicating that they expect a still higher price level in the future. Receipts for the week were sharply reduced and the supply of high-grade butter was below current needs so that some supplies were withdrawn from storage although total storage stocks at the four leading markets gained for the week. In spite of hot weather, the supply of undergrades was absorbed without difficulty. If the advance continues the butter trade is wondering at what point foreign butter will begin to compete and to what extent consumers will turn to substitutes. It does not appear likely that the advance will go much further

in the immediate future. Prices for 92-score fresh butter were: Chicago 37c; New York 38½c. At Detroit the fresh creamery in tubs is quoted at 35c per pound.

## EGGS AND POULTRY

Egg markets advanced rather steadily during the past week. Receipts have not been sufficient to supply current consumptive demand and storage holdings are being drawn upon. Holdings at the four leading cities are now down to 3,434,000 cases compared with 3,163,000 cases on the same date last year. Poultry markets have been irregular during the past week but broilers especially seem to be trending downward. Egg, fresh current receipts are quoted in Detroit at 31½c a dozen. Spring chickens bring 35@38c per lb; large hens 26@27c; small hens 23@24c; old roosters 13c; ducks 20c; geese 15c.

## CHEESE

Following an advance in country cheese markets, prices in distributing centers ranged higher during the past week. Export orders from Canada presumably on the English account were filled in the middle west and additional export sales are expected at New York. The firmness of butter also was a factor in the advance. The prices for No. 1 American cheese as quoted by the bureau of markets on July 9 were as follows: Chicago.—Flats 17c; twins 15½@16¼c; single daisies 15½@16¼c; double daisies 15½@15¾c; Young Americas 16½@16¾c; Longhorns 16¾@17½c; square prints 17@17½c.

## HOG MARKET APPEARS TOP HEAVY.

REDUCTION of one-third in supply at ten markets kept the hog market advancing during most of the past week until a top of \$9.80 was reached at Chicago and \$10.75 in the east but toward the close the market appeared prime for a break during the present week as receipts are certain to enlarge again. This move has not exhausted the possibilities of the summer market when supply dwindles in August and September.

Packing grades are becoming more abundant and failed to maintain the pace of butcher hogs but are selling closer to the top of the market than they are likely to after another month. Packers report decided improvement in the export trade with purchases being made for distant delivery. Germany has been buying frozen carcasses which is a big reason for the maintenance of prices on the heavy weights.

Western lard stocks on July 1 reached a new high figure at 144,162,000 pounds, or an increase of nearly 25,000,000 pounds during June and 18,000,000 pounds above the previous record figure on July 1 last year. Meat stock, however, are already beginning to decline with the July 1 holdings slightly smaller than a month ago and about fifteen per cent less than on July 1 last year.

## STOCKER PRICES BOOSTED.

PRICES for stockers were boosted slightly last week, due mostly to a small supply. Stockers at Kansas City are on a \$4@5.75 basis which makes the investment relatively low while feeder prices range about \$1 higher. Stock cows can be bought as low as \$2 per 100 pounds, but better grades cost \$3.50@4.

## COMING LIVE STOCK SALES.

Guernseys.—October 19, Michigan State Sale, Lansing, Mich. F. E. Fox, Waukesha, Wis., Sales Manager.  
Aberdeen-Angus.—September 23, Eastern Aberdeen-Angus Breeders' Association Sale, Eastern States Exposition, Springfield, Mass. F. W. Burnham, Greenfield, Mass., Secretary.  
Aberdeen-Angus.—October 12, Indiana Aberdeen-Angus Breeders' Association Sale, Indianapolis, Ind. Prof. C. F. Gobble, Lafayette, Indiana.  
Holsteins.—October 21, Howell Sales Co., Eighth Annual Sale at Howell, Mich. Wm. Griffin, Secretary.

# Live Stock Market Service

Wednesday, July 13.

## DETROIT

### Cattle.

Receipts 423. Canners are dull; all others strong and 25c higher.  
Best heavy steers ..... \$ 7.25@ 7.75  
Best handy wt bu steers ..... 8.00@ 8.25  
Mixed steers and heifers ..... 6.50@ 7.25  
Handy light butchers..... 6.00@ 7.00  
Light butchers ..... 4.75@ 5.75  
Best cows ..... 5.00@ 5.25  
Butcher cows ..... 4.00@ 4.75  
Common cows ..... 2.00@ 2.75  
Canners ..... 1.50@ 2.00  
Best light weight bulls... 5.25@ 5.75  
Bologna bulls ..... 4.75@ 5.25  
Stock bulls ..... 3.75@ 4.25  
Feeders ..... 5.50@ 6.75  
Stockers ..... 4.25@ 5.25  
Milkers and springers.... \$ 45@ 75

### Veal Calves.

Receipts 676. Market opened steady but closed \$1@1.50 lower; early sales at \$13@13.50.  
Others ..... \$ 7.00@10.50

### Hogs.

Receipts 1,012. Market 10c lower.  
Mixed hogs ..... \$ 10.00  
Pigs ..... 10.25  
Heavies ..... 9.50  
Roughs ..... 7.75

### Sheep and Lambs.

Receipts 495. Market strong.  
Best lambs ..... \$11.00@11.50  
Fair to good sheep..... 3.50@ 4.50  
Light to common ..... 5.00@ 6.50  
Culls and common ..... 1.00@ 2.00  
Fair to good sheep ..... 3.50@ 4.50

## CHICAGO

### Hogs.

Estimated receipts today are 21,000; holdover 14,150. Market steady to 25c lower. Bulk of sales \$8.50@10; tops \$10.05; heavy 250 lbs up medium, good and choice \$9.10@9.70; medium 200 to 250 lbs medium, good and choice

\$9.60@10; light 150 to 200 lbs common, medium, good and choice \$9.80@10.05; light lights 130 to 150 lbs common, medium, good and choice \$9.75@10; heavy packing sows 250 lbs up smooth \$8.20@8.75; packing sows 200 lbs up rough \$7.75@8.20; pigs 130 lbs down medium, good and choice \$9.50@10.

### Cattle.

Estimated receipts today are 10,000. Better grades are steady; others dull. Beef steers medium and heavy weight 1100 lbs up choice and prime \$8.75@9.15; do medium and good \$7.60@8.75; do common \$6.75@7.65; light weight 1100 lbs down good and choice \$8.40@9.25; do common and medium \$6.25@8.40; butcher cattle heifers, common, medium, good and choice \$4.75@8.75; cows common, medium, good and choice \$6.25@7.50; bulls bologna and beef \$4.75@6.75; canners and cutters cows and heifers \$2@4.25; do canner steers \$2.50@3.50; veal calves light and handyweight medium, good and choice \$9@11.50; feeder steers common, medium, good and choice \$5.75@7.50; stocker steers common, medium, good and choice \$3.75@7.25; stocker cows and heifers common, medium, good and choice \$2.50@5.50.

### Sheep and Lambs.

Estimated receipts today are 19,000. Sheep steady; fat lambs 25c lower. Lambs 84 lbs down medium, good, choice and prime \$8.50@11.25; do culls and common \$5@8.75; spring lambs, medium, good and choice at \$6@8.50; ewes medium, good and choice at \$3@5.35; ewes culi and common \$1@2.50; breeding ewes full mouths to yearlings \$3@6; yearling wethers medium, good and choice \$6@7.

## BUFFALO

On this market hogs and lambs are steady; calves brought \$12.



**MICHIGAN CROP REPORT.**

**Wheat.**—Harvest is nearly completed and threshing commenced in the western and southern counties, and harvesting is well under way in the eastern districts. There is some Hessian fly and rust, but the outlook is for a yield slightly above the average. The total production is estimated at 14,949,000 bushels as compared with 13,795,000 produced last year.

**Corn.**—Much corn was from three to five feet in height on July 1, and it is growing very rapidly. Tasseling has commenced. Extreme drought in the northwest counties injured the stand and greatly retarded growth there. The condition is 93 per cent, as compared with 88 last year and 82 the ten-year average. The acreage is one per cent larger than last year, or a total of 1,641,000 acres. The present condition forecasts a production of 60,282,000 bushels.

**Oats.**—Dry weather during May and

the fore part of June materially injured oats. Showers have helped them in some sections, but the present prospect is for only 70 per cent of a crop, compared with a ten-year average of 86. This condition represents a crop of 39,014,000 in comparison with a production of 56,430,000 bushels in 1920.

**Rye.**—The condition is three points lower than on June 1, and now represents a total production of 9,160,000 bushels. Last year, 9,702,000 bushels were grown in the state.

**Barley.**—Barley suffered somewhat similarly to oats. The present condition of 74 per cent is eight per cent lower than that of last month, and 13 per cent below the ten-year average. The prospective production is 4,824,000 bushels.

**Hay.**—Frost, followed by drouth, greatly injured the hay prospects. While some good yields were obtained in various localities in southern and eastern counties, the average is only 62 per cent of a crop for the state, or 2,778,000 tons. Last year's production was 3,213,000 tons.

**Beans.**—An inquiry relative to the acreage of beans discloses a somewhat lower acreage than last year. In the main producing counties of the Saginaw valley and the "Thumb" district there is a good acreage, but in all other sections a marked reduction is noticeable, and some counties that formerly produced a considerable quantity have practically discontinued growing them. The estimated acreage is 236,000, and the present condition of 86 per cent represents a production of 2,496,000 bushels.

**Potatoes.**—The acreage of potatoes is as large as that of last year, 340,000. It has been increased in some of the main potato producing sections, and decreased in other portions of the state. Dry weather in the northwest counties has interfered with planting and growth. Many fields were still unplanted on July 1, and many that were planted had not come up yet. This situation is unfavorable for a good stand, and the outlook for the state is 83 per cent, ten per cent lower than last year and six per cent below the ten-year average. This condition, if maintained throughout the season, would produce a crop of 28,502,000 bushels.

**Sugar Beets.**—Sugar beets have a fairly good stand in most sections and the growth is generally satisfactory. Considerable damage has resulted in certain localities from leafhoppers and from black rot. The present condition is 83 per cent. One year ago it was 86 per cent, the same as the ten-year average.

**Fruits.**—Apples dropped badly during June as predicted, and the prospect one month ago of 52 per cent of a crop has declined to 40 per cent.

The condition of the other fruits is as follows: Cherries 24 per cent; pears 42; grapes 45; blackberries and raspberries 80; plums 25.

All fruits continue to show a much better prospect in the northern than in the southern half of the fruit belt.

**GOVERNMENT FORECASTS RECORD CORN PRODUCTION.**

**A** REDUCTION of 21,000,000 bushels in the nation's wheat crop during the last month, and prospect of a record production of corn with the condition of the crop on July 1 better than it has been in more than twenty years, featured the July crop report of the department of agriculture. Forecasts of production from condition of the crops July 1 show:

**Winter Wheat.**—Production forecast 574,000,000 bushels. Condition 77.2.

**Spring Wheat.**—Production 235,000,000 bushels. Condition 80.8.

**All Wheat.**—Production 809,000,000 bushels. Condition 78.2.

**Corn.**—Production 3,123,000,000 bushels; condition 91.1. A crop of 3,232,000,000 bushels was produced last year and the July 1 condition was 84.6. The previous five years' average production was 2,798,000,000 bushels, and the ten-year July 1 average condition is 83.7.

**Oats.**—Production 1,329,000,000 bushels; condition 77.6.

**Barley.**—Production 184,000,000 bu.; condition 81.4.

**Rye.**—Production 70,000,000 bushels; condition 86.9.

**White Potatoes.**—Production 377,000,000 bushels; condition 83.4; acreage 3,972,000.

**Hay.**—Production 81,700,000 tons; condition 78.7.

**Apples.**—Production 102,000,000 bushels; condition 34.9.

**Peaches.**—Production 30,800,000 bushels; condition 42.8.

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60 acres near macadam road, 8 room frame dwelling, outbuildings, conveniently located, only \$4,000. Catalogue. J. W. RUSSELL, Chestertown, Md.

92 acre dairy farm. Good buildings, level, good soil. Fine herd dairy cows. Stock, crops, tools \$11,000. F. J. PERRIN, Lawrence, Mich.

**WANTED** To hear from owner of land for sale. O. K. HAWLEY, Baldwin, Wis.

**Farm Wanted** 40 to 100 acres. Must have good buildings. Cash buyer. Prefer to hear from owner. F. G. Schmidt, 4242 Avery Ave., Detroit, Mich.



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THERE are now on the market more than a half-dozen special mower attachments which may be fastened directly to the driving parts of the tractors. The ordinary five or six foot tractor mower makes too small a load for the tractor, and two such machines are generally used.

One common hitch for two mowers is made by attaching a heavy cross-bar to the rear platform of the tractor, allowing it to stand out to the right of the machine. The first mower is attached with a short stub tongue so as to cut a swath of the hay which the tractor wheels are just clearing. The second mower is attached by means of a longer tongue to the outer end of the cross-bar, and this should be long enough so that the second tractor will cut a full swath. A stout brace bar is extended from the outer end of the cross-bar to some point in the forward part of the tractor frame.

Of course, some side-draft will result as is unavoidably the case with even a single mower, but the rapidity with which the work can be accomplished more than compensates for the loss due to side-draft.

ALCOHOL FOR FUEL.

A FEW simple rules essential in the adjustment of plows for tractor plowing are given by Donald McDonald, a well-known plow man: *oline*; it is only six-tenths as rich in heat units as gasoline by weight, though it is fifteen to twenty per cent heavier by volume, which characteristics make it quite different from the common petroleum fuels. It also requires a higher compression pressure, which results in increased mechanical friction.

These are some good reasons why alcohol is not practical for engine fuel. "As 'human' fuel—well, that's another question. It used to be easy to 'start on'—creates high temperatures—increases friction, and has a tendency to make the human machine run wild!

HINTS ON PLOW ADJUSTMENT.

A FEW simple rules which are essential in the adjustment of plows for tractor plowing are given by Donald McDonald, a well-known plow man:

1. Adjust the springs till the weight of the plow beams and bottoms is practically balanced.
2. Hitch plow at a point on tractor drawbar midway between horizontal center of tractor and horizontal center of plow.
3. Adjust vertical position of hitch so as to be substantially level in working position.
4. Set levers for first position and open first furrow.
5. Change levers to working position.
6. When plowing is finished, set the levers in transport position and take plow and tractor to nearest shelter.

THAT EXTRA CAN OF OIL.

ONE of the most expensive mistakes I ever made was in trying to finish up the day's work with my tractor without getting a new supply of oil. I was hardly done with the day's work and had less than a round to finish. I didn't want to stop to get a new supply of oil and I just kept on driving. From that time on I had trouble with my tractor and it cost me over \$100 to remedy the damage that I had caused by a few minutes' carelessness."

It is even more necessary to have an extra quart of oil in the fuel box of your tractor than to have an extra gallon of gasoline in your motor car—one is dollars and cents—the other is inconvenience.—F.



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THE proper application of power, be it man, horse or machine, means everything to successful agriculture.

Tracing back through history we find that horse power, replacing ox power, brought increased production and better quality crops. And, likewise, tractor power has given to agriculture still greater advantages—greater production, greater economy and greater farm profits.

A Department of Agriculture study of the horse power problem on the farm from which the chart reproduced above was taken, particularly emphasizes a few of these advantages. On an average 180-acre farm, operated with 9 horses, it was found that the total horse hours worked during a year was only 8,492. This left a wastage of 23,908 horse hours that cost the farmer approximately \$1,000.00.

This sum is based on a figure of \$150 for a years up-keep of a horse which is given in a very recent report of a government investigation.

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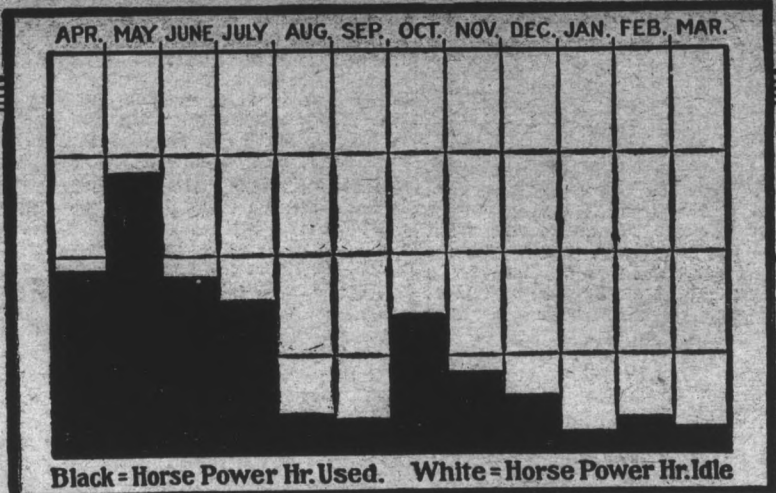
But in addition to this the tractor enables the farmer to overcome that greatest of handicaps to farming—the weather. With a tractor, the jobs can be done *on* time and *in* time which nearly always results in greater production per acre and greater insurance of successful crops.

While this example, given by the Department of Agriculture is of a single farm, the same facts hold true in a comparative degree on all farms in all sections of the country—on *your* farm.

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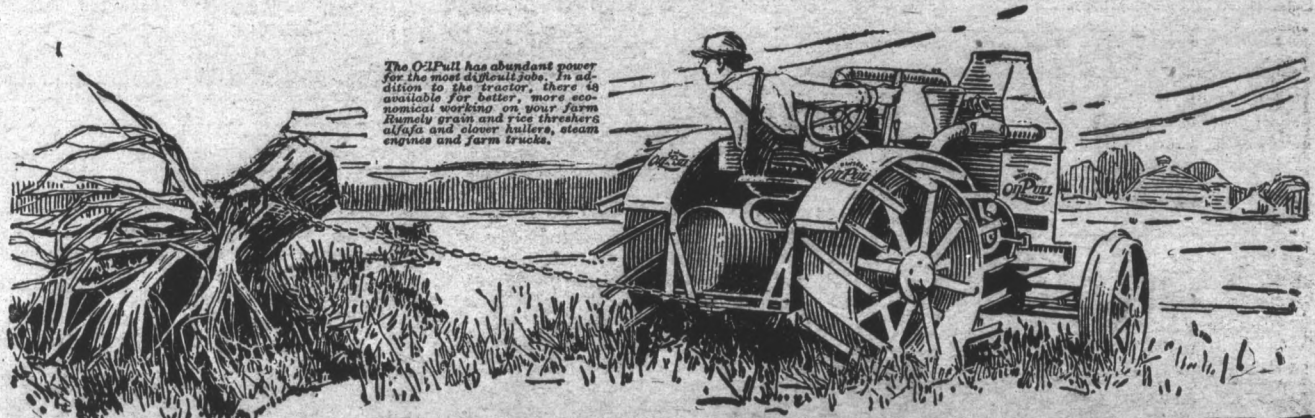
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