

MICHIGAN FARMER

AND LIVE STOCK JOURNAL.
PUBLISHED WEEKLY. ESTABLISHED 1843.

The Only Weekly Agricultural, Horticultural, and Live Stock Journal in the State.

VOL. CXLV. No. 4
Whole Number 3846

DETROIT, MICH., SATURDAY, JULY 24, 1915.

50 CENTS A YEAR.
\$2 FOR 5 YEARS.

Hairy or Winter Vetch a Soil Builder

WINTER vetch is one of the newer members of the clover family to come into prominence. It has long been recognized as a most persistent weed. It has a most unsavory association with the wheat fields of the state. Vetch not only grows rapidly in the wheat fields and interferes seriously with cutting the crop, but its presence in the grain renders wheat unfit for milling purposes.

Once a Weed.

Vetch can be separated from wheat, rye and other grains by centrifugal separators but not by the screening method. Where these special separators are installed in mills the presence of vetch in the grains does not do so much harm, since it can be quickly removed. Nor are the vetch separators expensive—the price running from \$30 to \$40 each.

Vetch has not come into Michigan agriculture without a protest. From what is already said it is evident that everyone should weigh carefully the evidence both for and against this plant before deciding to bring it to his farm and neighborhood. In spite of all this the crop under consideration looms up in greater proportion as we become acquainted with it. "By their fruits ye shall know them," has been the supreme test that this crop has been measured by and it has won the day.

Some of its Merits.

Hairy vetch is a native of Russia and naturally adapted to the cold, backward weather that is so characteristic of Michigan. Here, then, we find one feature of its success—complete adaptability to our conditions. It is also a splendid grower, giving a large quantity of the finest quality of roughage in the season of the year when the land is ordinarily more or less idle. The third point that gives this great legume such a tremendous hold on our Michigan conditions is the fact that it is quite largely an acid tolerant crop. Unlike alfalfa and the clovers, vetch will grow readily on soils that have become so acid that clovers, wheat and timothy refuse to

Some Hints on the Culture and Use of a Plant that Not Long Ago was Counted as a Noxious Weed.



The Corn on the Right Side of the Illustration was on Ground where a Cover Crop of Vetch and Rye had been Plowed Under. The Soil to Left was the same with the Exception of Cover Crop.

grow. The season is never so bad or the soil so poor that the chances are not good for a crop of vetch if we do our part. During the drouth of 1913 when hay was largely a failure in the dry belts, vetch and rye gave a normal yield of hay.

How to Sow.

Vetch is usually sowed with rye, about three or four parts of rye to one of vetch, sowing from one bushel to a bushel and a peck of the mixture per acre. Since vetch is a legume that has great building powers for the land where it grows it is well to inoculate the seed as carefully as possible with vetch bacteria secured either from a vetch growing soil or a pure culture.

How Harvested.

Vetch has four general uses, all proving popular on the Michigan farm. It is used as a soil builder to grow and plow back to the soil. It is cut early for hay when the land can be used for such crops as corn, beans or potatoes. It can be used as an

early spring pasture or left to mature as a seed crop. When cut for hay or grain it is not an easy crop to handle. Machines used for harvesting other crops do not operate in this crop without some difficulty. When sowed in just such proportions that the vetch and rye all stand up together it is cut by a binder without any great trouble. When the mixture all tumbles down into a tangled mass as is often the case, the problem is quite different. A mower with a windrower attachment often proves the best tool. A grass scythe can be fastened upright at the outer end of the cutter bar of the mower and slanted back at such an angle that the swath is cut free from the standing crop as the mower passes along. This gives good clearance to the swath cut and allows it to be readily rolled out into a windrow behind the mower.

In cutting vetch and rye for seed it is well to cut the crop when the first lot of large pods are mature but not

too ripe to hold well. If left later the pods that mature afterwards furnish inferior seed that often does not germinate well nor make strong plants.

A Valuable Feed.

In curing for hay vetch and rye are handled in bunches much as are alfalfa or peas and oats. Vetch is a favorite feed with all stock, since it is more appetizing to cattle than is even alfalfa. It has an analysis and nutritive ratio that is in its favor when compared with alfalfa.

Vetch and rye can be sowed in the corn at the last cultivation in the summer and allowed to grow until the last of May the spring following. A crop sowed after the weather warms up is the kind with which to follow vetch. Oats go in so early in the spring that they fail to give vetch sufficient time to develop. Corn can be grown after corn to better advantage to the corn crop every year if vetch is used as a cover crop and plowed into the ground each spring just before planting time. In this rotation vetch generally does well for from five to seven years, after which time some other crop should be used to give the soil a change. Thus plowed into the soil frequently, vetch improves the physical condition of the soil rapidly and often completely transforms many very light poor acres in a few years.

A Reputation as a Cover Crop.

As a cover crop in the orchard vetch has made an enviable record. Nor has any crop ever proved itself so generally adapted to conditions of all kinds. On the hardest clay and lightest sand, as an orchard crop, it usually takes hold with vigor.

Like other legumes it does not always start well the first time. Usually, however, it comes readily the second year on the same soil. Where it starts hard a little soil from a good vetch field for inoculating the land will be found of great help. It goes without saying that the more depleted the soil the less readily will vetch come to profitable fruition.

Shiawassee Co. C. B. Cook.



Vetch and Rye Growing on a Light Soil. They Produced More Roughage per Acre than does Clover on Many of Michigan's Best Soils.



One Peck of Vetch Seed was Used per Acre on this Light Sand; the Plant Held up gives some idea of the Size Attained by the First of June.

The Michigan Farmer

Established 1843. Copyright 1915.

The Lawrence Publishing Co.

Editors and Proprietors.

39 to 45 Congress St. West, Detroit, Michigan
TELEPHONE MAIN 4525.

NEW YORK OFFICE—41 Park Row.
CHICAGO OFFICE—604 Advertising Building.
CLEVELAND OFFICE—1011-1015 Oregon Ave., N. E.
PHILADELPHIA OFFICE—214-218 Twelfth St.

M. J. LAWRENCE..... President
M. L. LAWRENCE..... Vice-President
E. H. HOUGHTON..... Sec. Treas.

I. R. WATERBURY..... } Associate
BURT WERMUTH..... } Editors
FRANK A. WILKEN..... }
ALTA LAWSON LITTELL..... }

E. H. HOUGHTON..... Business Manage.

TERMS OF SUBSCRIPTION:

One year, 52 issues..... 50 cents
Two years 104 issues..... 1.00
Three years 156 issues..... \$1.25
Five years 260 issues..... 2.00
All sent postpaid.
Canadian subscriptions 50c a year extra for postage.

RATES OF ADVERTISING:

40 cents per line agate type measurement, or \$5.60 per inch (14 agate lines per inch) per insertion. No adv't in serial for less than \$1.20 each insertion. No objectionable advertisements inserted at any price.

Mem. Standard Farm Papers Association and Audit Bureau of Circulation.

Entered as second class matter at the Detroit, Michigan, postoffice.

DETROIT JULY 24, 1915.

CURRENT COMMENT.

The Season's Lessons. Every season, with its variations from the seasons which have gone before, holds new lessons for the up-to-date farmer if he but interests himself in the matter of their interpretation. Ofttimes these lessons may be allowed to pass without notice or without sufficient thought to insure their future usefulness in the solution of problems which will be confronted in future seasons. It does not pay to wait until the close of the season to review the lessons which the season has taught, since quite probably even in that short lapse of time they will be forgotten or their application will be less apparent than would be the case at the time they are brought to notice by experience or observation.

Let us illustrate this point by referring to several articles relating to personal experiences in farming which appear in this issue. One well known writer gives the result of his observation and experience in the matter of the use of vetch as a soil improver. This is a general rather than a seasonal lesson, since it is the result of experience and observation covering a number of years, but several experience articles which partake of the character of a seasonal lesson will be noted in the same department of this paper. One writer, for instance, compares the advantages of clover and alfalfa, in the light of present year's experience and observation, placing special emphasis on the fact that the present is an exceptionally favorable year for clover. His conclusions are parallel with those of many other close students of agricultural conditions and should have more than ordinary weight with every reader because of their seasonal importance. Another well known farmer and writer describes his method of making clover and alfalfa hay which has succeeded, even during unfavorable hay weather which has prevailed during the past month, much better than the more conservative method of haying which has previously been practiced and which is the quite general practice throughout the state. Here also is a lesson of seasonal importance and one upon which every progressive reader of the Michigan Farmer may well ponder, because it is likewise the experience of others who have found it a successful method under the unusual seasonal conditions. Other cases might be cited which would illustrate the point, namely, the importance of seasonal lessons to every farmer.

Good farm management means doing the right thing under vexing and unusual conditions, as well as taking the right course under ordinary condi-

tions which have been thoroughly worked out by previous general experience. Many valuable farm management lessons can be derived from the season's experiences and observations which are more or less out of the ordinary routine of farm experience, if we are but alert to grasp them.

The Public School. With the passing of the annual school meeting many school patrons who did not take the trouble to attend the meeting are likely to awaken to the fact that the affairs of the school district are not being conducted wholly in accord with their ideas, yet if no attempt has been made to influence the conduct of school affairs by attending the school meeting and voicing those views, there is no legitimate cause for complaint. If every school patron would but take the trouble to familiarize himself with the work which is being done in the public school, to advise with the teacher and the board regarding it, offering suggestions for its improvement where occasion arises, much could be done toward bringing about the betterment of conditions during the school year, and interest would be awakened which would take the school patron to the annual school meeting next year very much to the advantage of all concerned. There is no public institution so important in character or so far reaching in the effects of its administration as the public school, yet there is no institution in which the ordinary citizen as a matter of habit exhibits less direct interest or to which he gives less time and attention.

But another class of citizens are to be found in very many school districts who have still greater need for reformation, namely those who are not direct patrons of the school, who have no children or whose children have passed the school age, and yet who are blessed with sufficient of this world's good so that they are obliged to pay considerable sums to the support of the public school. Quite generally this class of citizens will be found at the school meeting. Very naturally they are interested in seeing the expenses of conducting the school kept at the minimum point. They would not be active in opposition to a generally expressed public sentiment for the improvement of the school, but when everybody's business becomes nobody's business, as is often the case in the conduct of school affairs, their influence is generally quietly exerted on the side of economy to an extent which sometimes impairs the efficiency of the school. Yet these same people could do no more philanthropic work than to interest themselves in increasing the efficiency of the school under efficient yet economic administration. This in a majority of cases they would be found quite willing to do, even to the extent of contributing their services as school officers where their business experience would count for efficiency as well as economy, if their aid were but solicited by interested school patrons.

The thing that is needed to bring about more ideal conditions in a school district is someone to take the initiative in the matter of interesting the community at large in the welfare of the school. This will in practically every case insure the co-operation of a sufficient number of progressive citizens to make the school a more efficient educational medium and increase its value as a social center for the community.

Rural Life Conferences. During recent years so-called Rural Life conferences have been held more or less frequently, generally at the agricultural colleges in the states where they are held, to which country ministers, rural teachers, agricultural agents and in fact public spirited citi-

zens of every rank have been invited for the general discussion of rural life problems.

It has been the privilege of the writer of this comment to attend several of these conferences and participate in the discussions included in the program. While for obvious reasons the general rural public has not taken a prominent part in these so-called rural life conferences, yet the interest in them among classes of rural leaders above noted has increased somewhat from year to year, and gives promise of further increase until the results attained through the frequent and general discussion of rural problems by a cosmopolitan body of rural leaders will bear fruit in many rural communities within the state. When country ministers and rural teachers come to have a better understanding of the problems with which the people in their several rural communities are interested, they will be far better equipped for the discharge of their professional duties in an acceptable and efficient manner. Such conferences cannot help but be broadening to all who participate in them and make for a larger application of appreciative human interest on the part of rural educators and leaders who attend them.

Still better results will be secured when the time shall come that the public spirited residents of rural communities interest themselves in this line of educational work and voluntarily participate in these conferences, to the end that there may be a better mutual understanding between the rank and file of country people and those whose duty it is to minister to them in more or less public capacities.

Tuberculosis Day. Governor Ferris has issued a proclamation setting apart a day to be known as Tuberculosis Day, in which he has asked the doctors of Michigan to give free examination to applicants who suspect that they may be afflicted with this malady, as a means of preventing the spread of this disease. The text of the Governor's proclamation follows:

The people of the State of Michigan always have been subject to the ravages of tuberculosis, a wholly preventable disease. This disease is the common enemy of mankind, and is rightly called the White Plague. The first manifestations of tuberculosis are frequently overlooked. The patient discovers his danger when it is too late. The Medical Fraternity of Michigan have it in their power to render the state an invaluable service. Their functions are to relieve suffering, cure disease and prevent disease, and the greatest of these three is to prevent disease. Michigan physicians are ready to encourage and practice this form of patriotism—the patriotism of saving their fellowmen from this awful scourge. I suggest that on Friday, August 20, any person in Michigan desiring a medical examination whereby he may ascertain whether he has any of the symptoms of tuberculosis, may have such examination and advice by asking a physician for it.

Therefore, I, Woodbridge N. Ferris, Governor of the State of Michigan, do hereby designate Friday, August 20, A. D. 1915, as Tuberculosis Day, at which time all physicians engaged in the practice of medicine are requested to render this service without charge.

If there are any among the great Michigan Farmer family upon whom the hand of misfortune has rested so heavily that they have felt unable to consult a physician with the special view of determining whether or not they were suffering from this disease which is too common in our state, they should take the paper containing this appeal to the nearest reputable physician and ask for the examination. Since this is a disease in the cure of which medicine is less efficient than the patient's own efforts, the physician's instructions should be carefully followed in every case where the diagnosis indicates the disease to be present, not alone because of the greater chances for recovery where this course is taken, but as well because of the lessened danger of infection to others.

The time will come when this so-

called white plague will be stamped out in all enlightened communities. The Governor's appeal is one which may hasten the day when that end will be brought about through the arousal of public opinion if not because of the actual results secured through adopting the suggestions made on the day set apart for that purpose.

HAPPENINGS OF THE WEEK.

Foreign.

The European War.—There is nothing of consequence reported in the western theatre of war during the past week. At several points attacks have been made by both the Germans and Allies, but no gains of moment to either side have been published. In the east, however, the German drive on Warsaw continues. The 1,000 mile battle front is active throughout practically its entire course. The Teutonic allies are pushing their forces eastward to the north as well as to the south of Warsaw. Military critics, declare, however, that the present position of the Russians is the strongest they have occupied since leaving Galicia, and that they will probably be able to successfully oppose the capture of the Polish capital. The Italians are slowly advancing with their campaign against Austria. Movements in the Alps are greatly handicapped by difficult passes, but thus far the invaders have met with no serious repulses. The Allied forces operating along the Dardanelles are completing plans for the capture of the Gallipoli Peninsula following recent successes of the land forces in driving the Turks back to new positions. Reports have it that the French are prepared to use gas shells to oppose the Germans in retaliation against the use of asphyxiating gases, liquid fire and other methods of destruction regarded as barbarous and illegal.

The British government has placed further restrictions upon the sale of liquors, especially in towns where the government has taken charge of the sale of liquid refreshments.

Gen. Villa's troops are said to have been defeated after a six-hour battle west of Agua Prieta, Mexico, by Gen. Carranza's forces Sunday.

Although the floods in China are receding, distress among the people of the inundated districts is increasing. Loss of life from fire, water and lack of food has been considerable.

National.

President Wilson is returning to Washington to consider an answer to the recent communication from Germany relative to the rights of neutrals in the submarine war zone. At no time during the history of this controversy has the situation been so delicate as now, since it seems necessary to declare what the nation will do if Germany persists in her policy of refusing to meet the demands made by President Wilson in his former notes.

A big strike was voted at Bridgeport, Conn., last week by workers in large plants that are filling orders for war munitions. Every effort is being made to obviate the tie-up and a day of truce has been granted in which it is hoped the differences between the employers and the men may be adjusted.

Many lives are known to have been lost and property damage to the extent of \$2,000,000 caused by floods from heavy rains throughout central Ohio last Friday. In several places the amount of water falling exceeded that during the disastrous flood of March, 1913. At Lima, Ohio, 300 homes were under water when the flood was at its height. Floods are also reported along the Missouri river which stream on the above date had reached the 27.3 foot stage at Kansas City, a point which has been exceeded but twice in the history of the local weather bureau.

Five persons were drowned while bathing in Lake Michigan at Chicago Sunday.

Judge Person, of Lansing, has been named by Governor Ferris as justice of the supreme court to fill the vacancy caused by the recent death of Justice Aaron V. McAlvay.

Harry Thaw has been granted his freedom after being declared sane by a New York jury last week.

Mr. E. A. Webb, head of the Webb Publishing Co., of St. Paul, Minn., publishers of "The Farmer," died at his home in St. Paul on July 5 after an illness of six weeks. Mr. Webb had been interested in agriculture and agricultural publications in the Northwest for many years, and was well known among the farmers and stock breeders of many states as well as among agricultural publishers throughout the country. He leaves behind him an enviable monument in the work which he has done for the betterment of agriculture, as well as a host of friends and admirers.

Farm Notes

Sowing Alfalfa After Rye.

Would it be advisable to sow alfalfa after rye this summer and if so what month?

Hillsdale Co.

O. F. M.

There would perhaps be as good a prospect of getting a seeding of alfalfa sown after rye was harvested as there would if clover were sown under the same conditions. For uniformly satisfactory results it is quite generally agreed among successful growers that alfalfa should not be sown in Michigan later than the first of August. Under exceptional conditions later seeding would no doubt be successful, but where rye stubble must be plowed and firmed down to make a good seed bed for alfalfa, it would, in the writer's opinion, pay to delay the seeding a few days if necessary to provide a first-class seed bed. If moisture conditions are such that a good seed bed can be prepared which will insure the early germination and quick growth of the young plants, alfalfa might be successfully seeded after a crop of rye was harvested, provided other soil conditions were favorable. It should be borne in mind that alfalfa will not thrive on acid soil, and in case this condition prevails, lime should be applied liberally before the alfalfa is sown.

Size of Ventilating Flues.

I am building a lean-to cow barn 16x66 feet which is to be modern throughout. I wish to install an up-to-date ventilating system. This barn to accommodate 12 to 14 head of full size animals and some young stock. I expect to get the fresh air between the walls to be regulated with damper. The foul air flues I wish to be galvanized iron or steel and I should like your advice as to how many flues I should have, just where they should be located, and just how large in diameter they should be.

Gladwin Co.

M. W. H.

The size of ventilating flues for the King system of ventilation should depend upon the number of animals to be housed in the stable. Prof. King lays down the rule that the aggregate capacity of intake flues should equal that of out-take flues, and that the capacity of each should provide not less than 30 square inches per head when the out-take has a height of 30 feet. If the out-take is shorter, then the area should be greater, and if higher, it may be less without detriment to the value of the system.

An out-take flue with a height of 20 feet would require about 36 square inches capacity per head, while one 40 feet in height would give an equal amount of service in ventilation with a capacity of 24 square inches per head, due to the fact that the higher flue would conduct the air from the stable with greater velocity, which would correspondingly increase the velocity of the air passing through the intake flues.

Buckwheat as a Forage Crop and Soil Improver.

Will buckwheat sweeten and build up soil? Is it hard on the soil? What is the feeding value of the straw, and if cut when in blossom is it as good as timothy hay? Does sorrel sour the soil?

Livingston Co.

SUBSCRIBER.

Buckwheat is not a leguminous plant and will not add anything to the soil which it does not take from it, even when plowed under as a green manure crop. It does not draw as heavily on the surface soil as many grain crops, however, for the reason that it is a deeper rooting plant and on some soils has a good mechanical effect on the soil by loosening it up. The straw is not a valuable forage although when cut during the blossoming period the buckwheat plant will make a substitute forage crop of some value. One Saginaw county farmer experimented with it for two seasons and reported excellent results from feeding same. He submitted a sample which was analyzed in the Michigan Farmer laboratory and found to compare favorably with the best timothy hay in the matter of its content of

nutrients. There are, however, so many better forage crops available for use in Michigan that the place of buckwheat on the average farm is that of a catch crop rather than a crop to be used in the regular rotation, except where it is desired to produce the grain.

The presence of sorrel on the soil indicates a condition of acidity, but may be more properly called an effect rather than a cause of such acidity. A soil which is what we call acid in reaction not only favors the growth of a sour plant like sorrel, but further encourages it, for the reason that it is not in a good condition to grow other forage plants, particularly clovers. When the soil is sweetened by lime it is not only rendered less congenial to the sorrel plant, but the growth of clovers and other economic forage plants is encouraged to a point which makes the sorrel and similar weeds unable to compete.

Seeding Vetch and Rye.

I have been a subscriber for some time and would like to ask for a little advice. I have five acres of sandy soil, some of it quite light. I am going to have it sowed to rye this fall and seeded to sand vetch. How many pounds or quarts should be sowed per acre and what month will be the best time to seed it?

Wayne Co.

H. A. H.

The most successful growers of vetch as a green manure crop advocate the using of about one peck of rye to 30 pounds of vetch seed to the acre where same is sown in corn, or one peck of rye to 50 pounds of vetch seed if sown in the open. Various combinations are used, however, and we know of successful growers who use but 20 pounds of vetch seed with from a half-bushel to three pecks of rye per acre. Of course, the greater the proportion of vetch seed used, the greater will be the benefit from the addition of nitrogen to the soil, provided good inoculation is secured so that nodules are plentifully developed on the roots by the bacteria peculiar to this plant. Generally, where vetch is sown on land for the first time, the inoculation is not as perfect as it will be at succeeding sowings.

Owing to the fact that the supply from Europe will be at least partially cut off by the war, vetch seed will doubtless be more expensive this year than in the past. This is an incentive for the farmers of Michigan and the United States to produce their own vetch seed, which it has been demonstrated can be quite easily and successfully done.

The seed should preferably be sown in August so that a fair growth will be secured before winter.

Cut the Stubble High.

I would like to know which is the better way to do in regard to cutting grain where there is a new seeding of clover, whether the stubble should be left long or short. I have heard that long stubble would draw the sun's rays so as to burn the clover out.

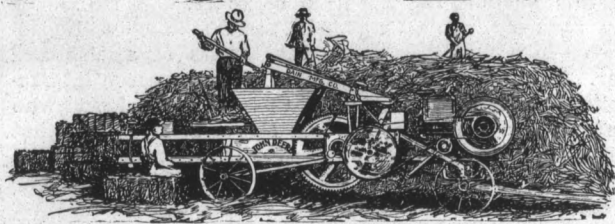
Calhoun Co.

J. C. W.

High stubble would tend to shade the young clover and protect it from the sun after the wheat is cut. The shorter the stubble is cut, the more the clover would be exposed to the sun. There is nothing in the idea that the long stubble would draw the rays of the sun. The tall stubble can do no harm whatever, and it may do some good just at that season of the year. The wheat plant, of course, while growing is an injury to the clover because it is using moisture that the clover plant at that season of the year could use with good results, but when the wheat plant is cut then it can no longer injure the clover. If the wheat is good and tall, set the binder high enough so you will not cut off the top of the clover plant and as much higher as you can and do good work with the binder.

Later on in August when the clover plant gets a good growth, and especially if there is danger of its heading and producing seed, it is an excellent plan to clip stubble and clover with a mowing machine.

John Deere Implements



John Deere Motor Press

The Press with the powerful eccentric gears. Gears are mounted off center, giving more power on the working stroke, a quicker return of plunger and very desirable action of the self-feed—the three points of prime importance.

Easily bales 2 to 4 tons per hour without any jar or shock.

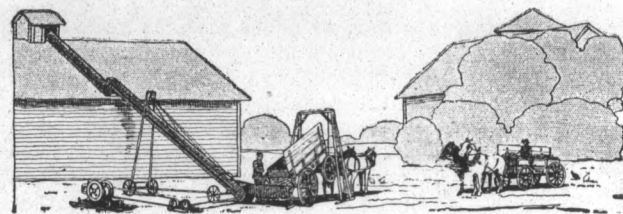
Powerful self-feed arm and plunger, improved form of drop blocker and automatic tucker insure well shaped, firmly packed, smooth end bales,—the kind that bring the highest price.

Entire outfit is always ready for work. No lining up of engine required.

Wide track front axles with a fifth wheel is why this press stands up so well and is so easily moved.

Made in three sizes for 14x18, 16x18 and 18x22" bales.

Write if interested in Hay Press, Loader, Stack, Side Delivery Rake or other hay tools—and ask for free book, "Better Hay—How to Make and Market It".



John Deere—The Sagless Elevator

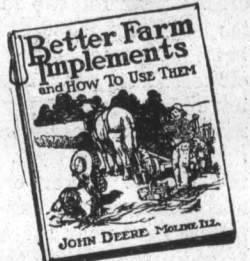
Unload your corn in four or five minutes to the load and do no hard work yourself. Crib your corn in good condition. Use a John Deere—The Sagless Elevator. Separates shelled corn from ear corn when elevating ear corn. Elevates shelled corn and small grains when desired.

Readily set up by one man. Has large capacity and is light draft. A boy can easily operate it.

Runs on roller bearings, is made entirely of steel. Truss rods with turn buckles on the sides absolutely prevent sagging.

How to Build Corn Crib Plans. Book of blue print plans shows in figures how more than the cost of an elevator outfit can be saved by the way the crib is built. Also tells about all John Deere Elevators, both portable and stationary, wood and steel. Get it free by simply stating what style of an elevator you are interested in.

A New Book Free



Just Off the Press

Illustrates and describes the most complete line of farm implements. Tells how to adjust and use farm tools under varying conditions. It is a practical encyclopedia of farm implements worth dollars to you—a 168 page text book.

It tells about John Deere Implements: Steel plows, cultivators and harrows; corn planters, disc harrows and beet tools; farm and mountain wagons; manure spreaders; portable and stationary grain elevators and corn shellers; hay loaders, stackers, sweep rakes, mowers and side delivery rakes; motor hay presses; grain drills and seeders; full line of chilled plows; grain binders and corn binders; hit-and-miss and volume-governing gasoline engines.

To get this book free, state what special implements you are interested in and ask for the book as Package No. X-5.



John Deere Publicity Department, Moline, Illinois

MORE and BETTER WHEAT from the acre at less cost to grow.

—Two hundred to four hundred pounds of

Armour's Fertilizers

drilled in at seeding time will promote rapid root-growth, insure early maturity, heavy grain and more of it; reduced bushel cost; a good clover catch and a more profitable grain crop—

IT'S THE YEAR the world needs the grain.

See our local dealer or write us for "More Money From Wheat."

ARMOUR FERTILIZER WORKS

Chicago, Ill.

Baltimore, Md.

Nashville, Tenn.

Dept. 116

Greensboro, N. C.

Please mention the Michigan Farmer when you are writing to advertisers and you will do us a favor.

Clover Versus Alfalfa

FOR the first time in the history of alfalfa growing in this section, the crop has come squarely in competition with red clover in a favorable year for the latter. For a series of years weather conditions have been at some stage, unfavorable for clover. This year, however, conditions have been extremely favorable, and more clover meadows may be seen than for a long time. It was the failure of the clover crop which drove many farmers to experiment with alfalfa. Last year there was more alfalfa sown than in all the previous years together, and as a result there is plenty of opportunity to compare the two crops, clover and alfalfa.

In considering the matter of the fitness of one of these crops as against the other, the factor of certainty as regards a stand, is an important one. It has been proved this year, conclusively, that weather conditions alone are not to blame for the failure of the clover crop in recent years. With plenty of rain and a favorable winter and spring, the fact remains that many a poor clover meadow may be found in this section. Sour soil will not produce clover any more than it will produce alfalfa, and this element must from now on, enter into the business of growing clover. From the standpoint of certainty of a good catch, therefore, the advantage would not seem to be to any large extent, on the side of clover.

Relative Cost.

Another important factor to be considered, is the cost of starting the two crops. Heretofore, fitting ground for successful alfalfa growing has been held to be an expensive operation. It has been found that in almost every instance, an application of lime is essential to success. But this added expense is also becoming necessary in the case of clover, and will grow more and more necessary as time advances. Moreover, in recent years farmers have paid record-breaking prices for clover seed without realizing a dollar from their investment. Measured from the standpoint of actual cost, then, the advantage of clover over alfalfa would not seem to be marked enough to be of consequence.

In the gradual increase of the alfalfa industry in this locality, failure of the clover crop, as already mentioned, has been the main element. Many farmers have contended that a good season for clover would do away with the alfalfa epidemic. But strange to say, a good clover season promises to have just the opposite effect. It has brought out the facts already mentioned in regard to the unfitness of the soil for clover. The boom in the alfalfa business which reached high tide a year ago, will not die out as a result of the good clover year. Alfalfa has come to stay.

Much Remains to be Learned.

But while this much in regard to the crop seems certain, much remains yet to be found out. The crop is still in its experimental stage. Time of sowing the seed, manner of preparing the ground, length of time the crop can be cut from a given field with profit, these are some of the questions upon which there is wide divergence of opinion. Nearly all the alfalfa sown in this section last year was sown in August, and yet an alfalfa grower of nation-wide reputation advises Michigan farmers to sow alfalfa in the spring. The August sown alfalfa has stood the test, in the main, under the most favorable conditions as regards rainfall. But would it stand the test, with dry weather prevailing throughout the late summer and early autumn. Would not alfalfa sown in April survive such a drought much better? This is one of the many questions which local alfalfa growers will

have to answer from experience during a period of years.

In consideration of the general question as to the merits of alfalfa and clover, time is also an essential factor. Many farmers may be found who maintain that clover is king, and that alfalfa can never take its place in this section. Whether the old days of clover meadows will return or whether of necessity the alfalfa field will take its place, remains for the future to answer. It is certain that good stands of alfalfa may be found in this locality, where red clover would probably have failed. An astonishing number of farmers now have an alfalfa patch, and are realizing a profit from the experiment.

Hillsdale Co.

J. A. KAISER.

LILLIE FARMSTEAD NOTES.

Making Clover and Alfalfa Hay.

My experience in making clover and alfalfa hay the past few years has completely changed my method in harvesting these crops. When I first began farming I followed my father's practice, which will work fairly well for a small acreage. His practice was to mow in the morning of a promising hay day, as much grass as he thought he could get into the barn before dark. If the grass was fairly well matured and the weather good it was not difficult to judge just about the right amount to cut, and it could be properly cured and drawn to the barn in the afternoon. If, however, the weather changed and the hay did not make, then it was left in windrow over night, spread out to dry in the morning and then placed in the barn just one day late. If the hay did not cure quickly or we did not get enough cut to last all day, then there was cultivating or hoeing close at hand to do and no time was lost.

This system worked fairly well with a small business, but when I began to grow larger amounts of hay I could not make this system work well.

It was impossible to find work for the men when the hay was not ready to haul. We could not gauge the amount to cut, and a number of other things did not fit in and make the system work smoothly. I got my idea about handling hay from handling the wheat and oat crops. No trouble about managing men with these crops. You can systematize the work so that there is little time lost. I studied to apply this system to the hay.

Now we begin cutting in the morning with two or three mowers and work until noon, no matter if the weather is not the best hay weather. We made good alfalfa hay this year when the weather was cold and cloudy. After dinner two or three rakes are put to work, even if the hay has not made very well. In fact we don't want it dry; we simply want it well wilted. Then the men begin cocking at once, and we try and have all in the cock by six o'clock, but if not, then it can be cocked the next forenoon. The next morning we mow again, and repeat this until the hay is all in the cock. By that time we can usually begin to haul that which was cut first and we can work a full gang of men and teams from morning till night with no lost time. Of course, if it rains we must wait for it to dry off, but a heavy rain will not penetrate very far in a cock of hay that was cocked up when nicely wilted and before it gets dry. If the hay gets dry then the place for it is in the barn, for if it is dry and cocks up loose the rain will soak it through and through.

By this system we can handle a large area and handle it on time and with little loss from rain, even in a bad season. This year we have cut 70 acres of alfalfa and clover right in the midst of pea harvest and while there

is yet 20 acres to haul the balance of it went into the barn in fairly good shape. The old system would have been an absolute failure.

COLON C. LILLIE.

HARVESTING CLOVER SEED WITH A GRAIN BINDER.

I noticed in the Michigan Farmer of July 10, a communication from A. A. Lambertson, of Kent county, in regards to harvesting rye and vetch, and that he did not think a binder would handle it.

Now, I have had no experience with rye and vetch, but I will tell of a little trick I did last year with mammoth clover and June clover seed. I thought of it for years but had never tried it, and as far as I know, nobody else had. When the mammoth got nearly ready to cut, I wondered how I was going to cut it, as I knew the mower would get too much bulk, also would leave the cut portion for the horses to trample on and waste. So I took my binder, took out the trip and twine, moved the check wire out of the way, and the machine was ready. Then I took my mower and cut around the outside. Then I hitched my team—two horses—on the binder and started. The first time around bothered some, as the swath I cut with the mower would gather on the inner end of the bar and clog the machine. But after awhile I got so I drove better and the bother ceased, and after that I never saw anything work better, the cut portion sliding off the deck and dropping on the ground in a swath a foot and a half or two feet wide entirely out of the way of the team. The machine was handled easily by the two horses.

In cutting thin light stuff the reel should be low and well back so as to keep the guards swept clean. If Mr. Lambertson tries this, will he let me know if it works or not.

Shiawassee Co.

G. SMITH.

BOYS AS FARM PARTNERS.

There is a growing sentiment along the line of partnership farming which shall include the boys "John Jones & Sons," painted in white letters on a big red barn tells at a glance that one father is making a commendable endeavor to interest the rising generation in the farm and the chances are ten to one that he will succeed.

We have long been told of the satisfaction of owning a calf or a colt and how the pride in something which he could call his very own holds a boy's affection and gives him a responsibility for its care. How much more is this apt to be the case when, as he grows older, his father trusts him sufficiently to make him actually a profit-sharing partner in the farm, placing his name beside his own upon the new barn and also upon the stationery which advertises the pure-bred stock which is grown upon the farm. It should not require a very keen insight on the part of a hard-headed farmer to understand that his success depends largely upon the co-operation of his sons. Compare the prosperity of the man whose boys are his helpers in so far as their necessary absence at school will permit, with that of him who has no such help depending on what he can hire. It is vastly to any farmer's financial advantage, to say nothing of anything more, to have his sons follow after him and the surest way to insure this is to give them an interest in the business.

Too many men make the mistake of ignoring the boy in business matters. Gray hairs may stand for experience but is it not true that they also stand sometimes for a stubbornness that refuses to admit that any person of lesser years can possess ideas really worth accepting?

Any bright young man who has been brought up with a proper appreciation of the agricultural life and its attractions, including its very promising pe-

cuniary possibilities as demonstrated in recent years will be very likely to have good ideas gained in some of the many ways now presented for obtaining them. Young men are naturally more progressive than older ones, and advanced methods secure best results in all farming operations today. The man who does not follow them is sure to be a back number and fall short of the highest success. It may be a trifle hard to give up a well grounded plan of procedure for what we may term a new-fangled way of doing the same thing, but the new may prove best after all.

Fathers who talk business methods over with their sons, and sometimes let them do things their own way, will hardly make a mistake. In passing judgment should mistakes follow, it might be well to remember that in all probability we made worse ones ourselves when we were young, if not more recently, and when it comes to that nobody is exempt.

It looks good to see "John Jones & Sons" on the big red barn. It shows John Jones to be very much alive to his own interests, as well as to the interests of his sons. And since there is so much profit as well as pleasure in live stock at the present time, if some particular branch of this is not already represented on the farm by several fine specimens of pure-bred animals, it would be an excellent thing to start right now. Get some and put them in charge of the junior partner. But don't fail to consult with the said juniors before deciding on the purchase. If they have a preference it will pay to get that kind.

Genesee Co.

E. R. WOOD.

GREEN MANURE CATCH CROPS.

Have a 10-acre field of heavy red clay loam in corn, which has previously grown good crops but lately does not produce well, on which I am inclined to sow either rye, winter vetch or white sweet clover. As I am not acquainted with vetch or sweet clover, please advise me if I can sow either at the last cultivation of the corn and grow a good crop to plow down for green manure next year, and which would be best on this soil. Also, could I sow sweet clover in the spring with Alaska peas with an application of 300 pounds of fertilizer and get good pasture in the fall after the peas are harvested and would the sweet clover then make hay the following spring and still produce a crop to plow down for green manure in the fall?

Leelanau Co.

C. H. E.

Of the crops mentioned rye and winter vetch should be sown together, at the last cultivation of corn. The vetch is a leguminous crop and soil improver like clover, and the rye will keep it from lodging and also furnish added vegetable matter.

Sowing sweet clover in spring with Alaska peas is an experiment which has not been tried out in this state so far as we know. It would be an interesting experiment and in case a stand of sweet clover was secured, it would undoubtedly furnish a considerable amount of pasture in the fall after the peas were harvested. If it were cut for hay early enough the following spring, it might make a second growth to plow down, but if the plants were allowed to approach too near to maturity before cutting, not much of a second growth would be secured. Sweet clover is a biennial and lives but two years unless allowed to reseed.

Most of our older soils need humus so badly that it is a mistake to lose an opportunity to add vegetable matter to the soil, such as is offered by sowing rye and vetch in corn at the last cultivation. The value of catch crops and cover crops is underestimated by most farmers.

"Try-a-bag" of fertilizer. Our brands are soluble and active, and not only increase yield, but improve quality and hasten maturity. Agents wanted. Address American Agricultural Chemical Co., Cleveland, Cincinnati, Detroit or Baltimore.—Adv.

The Apple-Tree Borer

WORMING and painting trunks of trees are recommended as the best way of controlling apple-tree borers. A heavy application of some paint that will not injure the trees but will remain in an unbroken coat on the bark for two or three months, is effective in preventing the female from laying her eggs in the tree, and greatly reduces the amount of worming, or the removal of the insects with a knife and wire, that must be done.

The roundheaded apple-tree borer, the most destructive of a number of similar pests, lays its eggs in or under the bark of apple trees. After hatching the larvae feed upon the inner bark and wood to such an extent that the tree is seriously weakened or killed. The pest is found over the whole of the eastern portion of the United States and as far west as Nebraska, Kansas and New Mexico. In addition to fruit trees, it feeds on service, wild crab and mountain ash trees, which makes it advisable for orchardists to remove these varieties for a distance of at least a hundred yards from their orchard.

The Life History.

The female lays her eggs, one at a time, in an incision she has made in the bark, usually just above the surface of the ground. About 15 or 20 days later the eggs hatch and the larvae appear. When full grown these are nearly an inch and a half in length. They first attack the inner bark, eating out broad, more or less circular galleries and thrusting out through small holes in the bark castings which form little heaps of reddish wood fragments around the base of the tree. During the winter the borers are quiescent but early in the following spring they attack the solid wood, while some of them work their way up the trunk. These last spend one more winter in the tree and then, having passed through the pupal stage dig their way out and emerge as adult beetles. Three years are required for the insect to complete its development from egg to adult.

Ordinarily, the beetle lives about 40 or 50 days. It is about three-fourths of an inch in length, light brown in color above, with two broad white bands, joined in front, extending the full length of the back; the underparts and front of the head are white. The females rarely fly any considerable distance, so that if the immediate vicinity of an orchard can be kept free from them, there is little danger of a serious infestation.

The Method of Control.

The most common method of ridding an orchard of these pests is to cut away the bark sufficiently to trace the burrows made by the borer. A hooked wire is then inserted into the burrow and the insect pulled out. If made with care the wound in the tree caused by this process will heal readily. The castings at the base of the tree serve as an indication of the presence of the borers. Where the burrows are curved or obstructed in some way so that the wire can not be inserted, cotton batting dipped in carbon bisulphid should be inserted and the hole then plugged with moist earth. The gas from the carbon bisulphid will penetrate all parts of the burrow and kill the borer.

In addition to worming, as this process is called, paint is often used to prevent the beetles laying their eggs. Pure white lead and raw linseed oil, mixed rather thick, will not injure the trees, and when applied to young, smooth bark, will form a protective coat during the egg-laying season. It is probable that this is a more effective method than wrapping the trees with building paper, cotton batting, cloth or other materials sometimes used for this purpose. Before painting, however, the earth should be removed

from the base of the tree for a depth of from three to four inches. The surface of the trunk thus exposed should be first scraped and painted and the earth then replaced. This is necessary, for the beetle occasionally lays her eggs under instead of above the ground.

TROUBLE DEPARTMENT.

Concentrated Lye for Scale.

I have been told that if I spray my apple trees with one box of concentrated lye and 10 gallons of water this winter when the trees are dormant, if there is any scale it will be removed and that it will also prevent their becoming affected. Is this so?

Ingham Co.

M. E. P.

When the San Jose scale first appeared, concentrated lye was among the various materials used for scale control. It was used at various strengths and in combination with other materials and was found to have very little effect on the scale. The writer recalls using it in these early tests, and remembers that it was most effective on the team and the man doing the spraying. It is very disagreeable to use because it causes a constant coughing, and is also quite caustic when it touches the skin. I would advise you not to experiment with it, as past experience shows that it is worthless as a scale remedy.

Mildew on Peas.

What sort of spray shall I use on garden peas for mildew? Also when should I use it? Have been troubled with this pest attacking vines and peas just as the peas were ready to harvest.

Cheboygan Co.

J. S. W.

A very efficient means of controlling the mildew on peas is the dusting of powdered sulphur on the vines in the morning before the dew is off. If a person has a large field of peas, spraying with Bordeaux mixture would be an effective method of controlling this disease.

In the control of any fungus disease, the method is one of prevention rather than cure, so one must apply the sulphur or Bordeaux before the mildew is in evidence to get perfect results.

SAVING SEED.

It surprises me that more seed is not saved on the farms. Most garden seeds are high priced. If you intend to save pea seed, do not use all you want, then save the rest for seed, as sometimes you fool yourself on enough seed, it is also apt to be inferior in quality. Stake off part of a row, save all this for seed, same with lima beans, string beans, and sweet corn. If you raise carrots, onions, cabbage or beets every year, take some of the best ones, plant this spring for seed for next year.

Early potato seed should also be saved. So many farmers have difficulty in finding early potato seed in the spring. Save your seed from your own patch, it is far more convenient to have your seed ready to plant, than to hunt all over the neighborhood for a few bushels of potatoes to plant, when you are so busy putting in the crops. Melon, pumpkin, squash, and cucumber seeds are easily cleaned and saved, also pepper seed. Let us all try to save more seed this year, as it is a saving in time and money.

Berrien Co.

Mrs. C. W. D.

PRUNE THE RASPBERRY PATCH.

Soon after harvesting the raspberry crop, the old, or fruiting, canes should be cut out. This is especially advisable with the black raspberries on account of their susceptibility to the anthracnose or raspberry scab. In fact, this is one of the chief means of keeping this incurable trouble somewhat in check. All of the new canes except five or six of the strongest should also be cut out at this time.

Steel King Motor Plow and Farm Tractor

Eats only while working.

Easily handled—farming a pleasure.

Takes the place of two or three men and four to six horses.

Meets all power demands on the farm for hauling and stationary work.

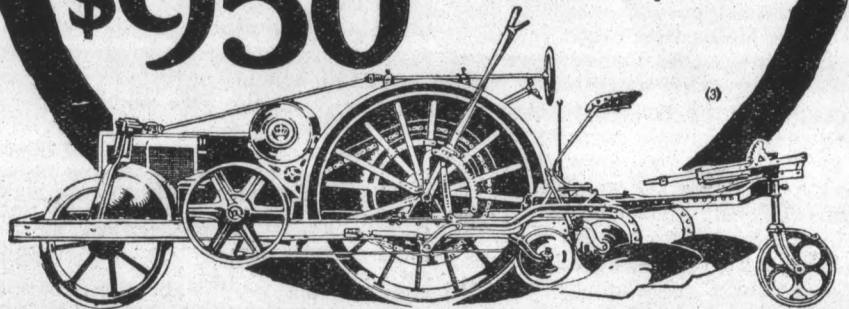
Positively guaranteed.

Send for descriptive catalog.

The Steel King Motor Plow Company
192 Leib St. Detroit, Mich.

\$950

Complete with two mold board plows.



THIS PRESS MAKES GREATER APPLE PROFITS

The Monarch Hydraulic Cider Press

is suitable for both individual and merchant service. With it you can work up all the culls into profitable cider. Our celebrated high pressure design, combined with minute accuracy in construction, produces maximum quantity of juice from the apples with low operating expense. Monarch Presses are built in sizes having capacities from 15 to 400 barrels a day. 60-page Press Catalogue explaining the numerous exclusive Monarch features sent free on request. Write for this instructive book to-day.

A. B. FARQUHAR CO., Ltd., Box 112, York, Penna.
We also manufacture Engines, Saw Mills, Thrashers, Potato Diggers, Grain Drills, Cultivators.

ALFALFA

AMERICAN NORTHERN GROWN

Guaranteed to be 98% pure and free from dodder. Write for sample on which we invite you to get Government tests. We do not handle Turkish "Dwarf Alfalfa" or cheap inferior European seed. We offer only the very best. Our seed should produce hay at \$60 per acre annually. Can usually furnish Kansas, Nebraska, Montana or Dakota and Grimm Seed at very moderate prices.

CLOVER and GRASSES

Northern grown and of strongest vitality. We can furnish grass mixture suitable for any soils.

WING SEED CO., Box 242 Mechanicsburg, O.

Good CIDER

Will make you big profits.

Mount Gilead Cider and Grape Juice Presses produce 10 to 400 barrels daily. All sizes, hand or power. All power presses have steel beams and sills.

Fully Guaranteed

We make cider evaporators,

apple-butter cookers, vinegar

generators, cider and vinegar

filters. Write for catalog.

HYDRAULIC PRESS MFG. CO.

131 Lincoln Ave.,

Mount Gilead, Ohio.

Celery Blanching Paper

Heavy gray stock resembling paste board. The best for blanching. In rolls 36 inches wide, 500 sq. ft., weigh 40 lbs., \$1 per roll. Send for free samples and quantity prices.

Sylvester S. Garrett, 259 S. 3rd St., Phila., Pa.

WANTED—RYE and VETCH MIXTURE
SEND SAMPLES FOR BID TO
YOUNG-RANDOLPH SEED CO., Owosso, Mich.

LILLIE'S SPECIAL BRANDS BUFFALO FERTILIZER

Made from best material. Always reliable. Lime, Potash, Acid Phosphate, Nitrate of Soda. Agents wanted in unoccupied territory. Ship direct to farmers in carlots. Fertilizer questions answered and farm soil surveys made on request. Colon C. Lillie, Sales Agt., Coopersville, Mich.

ALFALFA \$8.00 PER BU.

Hardy Non-Irrigated Seed Very Pure
Germination high. Government tested. Absolutely guaranteed Northern grown, extremely hardy. Have Turkestan Alfalfa; Sweet Clover; Timothy; grass seed of all kinds. Ask for our latest 60-page book on growing Alfalfa, 92-page catalog and samples. All sent free. We can save you money. Write today.
A. A. BERRY SEED CO., Box 431 CLARINDA, IOWA

MICHIGAN GROWN WHITE SWEET CLOVER

Ask for samples and prices.
YOUNG-RANDOLPH SEED CO., Owosso, Michigan.

SWEET CLOVER SEED. High quality. Specially germinated. Prices and information on request.
EVERETT BARTON, Box 129, Falmouth, Ky.

LIME

Pulverized lime rock for "sour" soils. Write for LOW PRICES DIRECT TO YOU and we will send sample and full particulars. Write to office nearest you.

LAKE SHORE STONE COMPANY,
Muskegon, Mich., and Benton Harbor, Mich.

LIME

You should get the highest grade of limestone manufactured. Buy it upon the basis of analysis. We manufacture the highest grade pulverized limestone sold in Michigan. Let us prove it. Ask for sample and analysis.

CAMPBELL STONE CO., Indian River, Mich.

LIMESTONE

For general farm use. Finely pulverized, made from highest high calcium stone. Quick shipments in closed cars. Let us send sample and price. Northern Lime Co., Petoskey, Mich.

CORN HARVESTER

That beats them all. One horse cuts 2 rows. Carries to the shock. Worked by 1, 2 or 3 men. No danger. No twine. Free Trial. We also make Stump Pullers and Tile Ditchers. Catalog Free. Agents Wanted.

H. G. BENNETT & CO., Westerville, Ohio.

AGENTS WANTED

to represent a reliable concern canvassing among farmers in your own neighborhood or elsewhere. No experience necessary. Liberal pay, and supplies furnished free to right parties. Reference required. Address,

ADVERTISER, CARE THE MICHIGAN FARMER,
Detroit, Michigan

The Pigs in Summer

WE have been told that "all flesh is grass," and yet we somehow seem to fail to comprehend the real value of grass as a flesh making food for all kinds of live stock. The practice of our forefathers, who looked upon the hog as a distinctly grain eating animal, has misled us. The hog is by nature a forager and he delights in cropping the fresh, green grasses and clovers as well as many other of the forage plants. There is a great variety of plants, both cultivated and so-styled weeds, which the hog, if allowed his freedom, will eat and from which he will derive a great benefit.

At no other time of the year are the possibilities so great for producing an increase in weight on the hogs as during the summer time. The present season has been an exceptionally favorable one for the luxuriant growth of the grasses, clovers and many other plants which the hogs relish. Rape is making a remarkable growth. Hogs eat greedily of these plants and yet their stomachs are not large enough to enable them to hold enough of them to sustain life and make rapid and cheap gains.

Mixed Diet Best.

Some with whom I have conversed on the subject have expressed themselves as halting between the advisability of selling their corn or feeding it to the hogs and crowding them along to early market weights. It has been repeatedly shown by experiment and practice that double the gains can be made with the hogs while running on grass, for a given amount of grain feed, if properly handled, than can be secured if depending on grain alone. We will state an example:

Hogs are selling around \$7.50 per hundred at the shipping stations. It is generally estimated that when grain is fed to hogs alone it takes around ten bushels of corn to make an increase of 100 pounds in weight. Corn is selling on the farm at 75 cents per bushel. If corn is fed at that price and it takes ten bushels to make a gain of 100 pounds, then the gains are costing just what they bring.

If we wish to get a better income and greater gains for the grain expended, let us compound a ration which will give much better results. As the corn is hard in the summer, and is not easily masticated, and then imperfectly, I will suggest that it be ground, and if it can be ground cob and all, then it is much better as the ground cob bulks up the meal and the gastric juices of the stomach can permeate it better, and digestion will be much better accomplished. If the meal is soaked 12 hours and the hogs fed a moderate quantity of it twice per day, good results will follow.

If we wish to make the grain feed a little more palatable, and secure still better results, buy wheat middlings and mix it well with equal quantities of each, corn meal and middlings, soak 12 hours and feed twice per day. If one has skim-milk, buttermilk or even whey to add to the mixture, it will be more palatable and more completely digested than without them.

Some things should be kept in mind. Give the hogs free access to the pasture and green feeds. Do not feed all the grain feeds that the hogs will eat, for if you do they will depend on the grain and not eat of the grass. Half the amount of grain that they will eat will give better results for the grain consumed. If one can train their hogs so that they will eat their fill of pasture in the morning while the dew is on, and again just as the evening shadows hover around, and at the same time eat a good half ration of the sloppy feed mentioned, they will be making about all the gains that it is possible to get from the feed consumed. Instead of getting but the 10

pounds gain for a bushel of meal or the feed mixture, it is safe to calculate on at least a 20-pound gain, if the hogs are of the thrifty, growing sort.

Make the Hogs Comfortable.

The hogs should have shelter from storms and the burning rays of the midday sun. Keep the flies away by applying a spray of some good fly mixture while they are taking their morning meal.

Wayne Co.

N. A. CLAPP.

FEEDERS' PROBLEMS.

Pasturing Pigs on Rape.

Will someone tell me how big rape ought to be before you turn the pigs in, and would it do to let them stay right there all the time? Will it hurt the pigs when the dew is on?

Montcalm Co.

C. W. S.

If pastures are not overstocked, pigs can profitably be turned on rape when same is not over six or eight inches high. Small pigs should be turned into rape before it is too large, as it has, particularly during the wet weather, an irritating effect on their skins causing a sore and scurfy condition. If the pigs are accustomed to green feed, it will be all right to turn them into rape during the heat of the day and leave them on it continuously. They should, of course, be fed some grain on the rape pasture.

Preventing Scurvy in Pigs.

I have 34 April pigs that I am feeding a slop made from corn and oats, middlings and buttermilk. These pigs have done fine but a week ago I put them in a rape pasture and this morning I noticed they were all scurvy and sore on the back of their necks and ears. When they walk their backs cave in as though they were weak, or it may be the sores on their backs. It has been rainy and wet ever since I turned them into the rape and it may be that that caused the sores, but I don't know what to do for them.

Kent Co.

S. V.

Young pigs, particularly if white in color, are easily affected by running in rape, and sometimes in other pasture, particularly during wet weather. It is essential to remove this trouble and prevent further serious attacks of it to insure a profitable growth of the pigs. Apply a standard coal tar disinfectant in accordance with directions. A recurrence of this condition can be prevented by the use of the modern so-called hog lubricator, or by wrapping an old sack around a post in the yard and keeping same saturated with crude oil.

SILAGE FOR HORSES AND MULES.

Ten yearling mules, weighing approximately 650 pounds each, were fed by the Missouri Experiment Station, for 90 days on an average daily ration of 6.5 pounds of ear corn, 8.6 pounds of mixed hay, and four pounds of corn silage. The mules made a gain of only 4.8 pounds, during the period. No ill results were seen from the use of the silage but the mules did not consume large quantities of it. This it is thought may have been due to the fact that the silage was made from rather immature corn.

Successful experiments in feeding silage to horses and mules, conducted by the North Carolina and Pennsylvania stations have been reported to the Department of Agriculture. It is advised that corn silage should always be fed in combination with other feeds and that under no circumstances should spoiled silage, either moldy or rotten, be fed to horses and mules.

RYE HAY.

I would like some information about rye hay, if any of the Michigan Farmer readers ever used it for hay. One man told me breeding stock would abort by feeding it. I have about 2½ acres just up in good shape and my horses eat it good.

Saginaw Co.

F. W. L.

Rye hay is quite extensively used in some sections, and if cut at the prop-

er time is fairly well relished by live stock. I think, however, it makes the poorest hay of any of the cereals. The stalk is quite apt to be tough and woody. Sometimes rye has a fungus growth known as ergot which, if consumed in any considerable quantities will produce abortion. There is, however, comparatively little danger from this, as thousands of animals eat rye hay every year and it produces a very few cases of abortion.

If rye is cut too early it is tough and unpalatable. I used rye as a nurse crop for alfalfa. Some of the rye lived over winter and we cut it with the alfalfa. The heads were nicely formed. None of our stock liked this; they would not eat if they could get anything else. The plant should be far enough matured so the berry is in the milk. It is the same with oats or barley.

COLON C. LILLIE.

LIVE STOCK NEWS.

The large purchase of cattle in this country that the French government began making several weeks ago for feeding its army are continued, and this outlet is expected to show a great expansion, as it has become known that efforts are being made to make contracts for 80,000 head of fat weighty cattle. The different large packing firms have been asked to make bids, but the job is so enormous that it is likely to be divided between several of these concerns. Such a large demand points to further good advances in cattle prices, and holders of such heavy steers are in a number of instances considering holding their cattle a little longer. The quality of the cattle offered recently in the Chicago market has deteriorated materially, and prime beefs are going to sell at record prices without much doubt.

A leading Chicago live stock commission firm, with branch houses at all important markets, is advising its country patrons that it is advisable to keep back all cattle that are not fat, as there is great encouragement for holding and maturing them. Particularly should yearlings in half to two-third flesh be retained at home, as the prospect is especially good for these fat little cattle. The prospect looks favorable for the summer-fed cattle, more particularly as western rangers will not be much of a factor in the market for several weeks, and in any event are not expected to come in sufficiently large numbers this season to materially affect native cattle, outside of the less desirable and grassy kinds of cattle. At the same time the firm believes it will not be well to hold back the fat, heavy cattle, as flies will be annoying from now on, while buyers' preferences will be for the nice fat, handy weights.

The Live Stock Report says that the Babbitt Sheep Company, of Arizona, has 18,000 sheep of all kinds and raised this spring 12,000 lambs. Lambing takes place at different dates, depending on the location, whether in the desert country or in higher altitudes, beginning in December and continuing until March and April. A member of the company says: "It costs us seven cents per head for summer range on the government reserves. But those ranges are never overstocked, so we are well protected in that way. We had a fine winter and plenty of feed, which resulted in a lamb crop of 85 per cent and two pounds more wool per head than in the year previous. Ranges are now as good as I ever saw them and our sheep are fat and doing well."

William P. Anderson, traveling live stock agent of the Santa Fe, has returned to Chicago from the Mexican border. He reports a generous movement of stock cattle from Arizona and New Mexico to Montana and Wyoming during the month of June, but the Mexican run is light, owing to the fact that banditti are over-running the entire northern section of that country and gathering the cattle is risky.

M. C. Campbell, banker and ranchman of Kansas, recently bought for October delivery on his ranch in Clark county, Kansas, 600 head of yearling steers and 800 calves. The total cost of this string of young cattle was \$48,000, the calves costing \$30 each and the yearlings \$40 per head. The cattle were purchased in the upper Panhandle territory in Texas. Mr. Campbell reports grass the best he ever saw and cattle are doing well. He expects these calves and yearlings to be the best he ever handled under these favorable conditions. He has bought this summer in Greenwood county, Kansas, and is now grazing 1,250 steers, which he reports, are making rapid gains in weight.



NO MIXING NO BOTHER

Will positively produce more milk than any other ration either home mixed or purchased, and do it without giving your cows constipation or udder trouble. Ready to use right out of the sack without any mixing or bother.

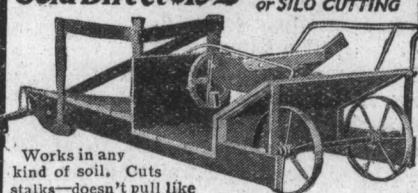
Larro-feed

Absolutely free from adulterants and fillers, just like the feed you would mix for yourself, is a special combination of choice cottonseed meal, dried beet pulp, gluten feed, corn distillers' grains, wheat bran, wheat middlings and a little salt, that's all; each ingredient weighed by automatic scales and all thoroughly mixed in huge power-driven mixers, so that it is always absolutely uniform, and always good. An extra quart or two of milk daily from each cow may turn a loss into a profit. Try LARRO-FEED for more profits. Send for a plan of "money back if you are not satisfied." LARRO dealers almost everywhere; write us if none near you.

The Larro-Milling Co., 1046 Gillespie Bldg., Detroit, Mich.

The PERFECT CORN HARVESTER

Sold Direct \$19.50 JUST the THING for SHOCK or SILO CUTTING



Works in any kind of soil. Cuts stalks—doesn't pull like other cutters. Absolutely no danger.

Cuts Four to Seven Acres a Day

with one man and one horse. Here is what one farmer says: Amsterdam, N. Y., Nov. 16, 1915. The Love Mfg. Co.: Gentlemen: I have filled a 100 ton silo, cut all the corn with it in a most satisfactory manner. You can refer any prospective customer to me for a favorable recommendation. Thos. Morphy

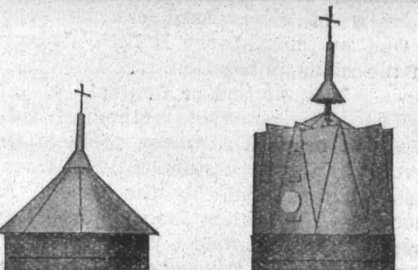
SOLD DIRECT TO THE FARMER

Send for booklet and circulars telling all about this labor-saving machine; also containing testimonials of many users. Send for this circular matter today. LOVE MANUFACTURING COMPANY Dept. 6 Lincoln, Illinois

Hy-Rib Concrete Silos

Are low in cost, easily built, and give satisfaction everywhere. Built with out forms, with only the usual scaffolding and ordinary farm labor. Walls not injured by silage juices. Water-proof, fire-proof, storm-proof, rat-proof. Nothing to rot or wear out. Need no painting or repairs. For farm buildings of every kind, use Hy-Rib construction. Hy-Rib combines within itself reinforcement, forms, lath and studs. Silo Catalog Free. Containing useful information, and examples of farm buildings. Write today. Agents Wanted.

TRUSSED CONCRETE STEEL CO. 688 Trussed Concrete Building, Detroit, Mich.



Let the STAHLY EXTENSION ROOF increase the capacity of your silo 15 to 40 tons. STAHLY ROOF opened and closed from base of silo supplying silo space to pay for itself, thus furnishing your ROOF FREE. Write for information and prices.

STAHLY EXTENSION ROOF CO., Goshen, Indiana

Write, Phone or Wire!

WE have the stock and can make immediate shipment, enabling you to preserve 100 per cent of your corn crop in the

INDIANA SILO

Easy to erect. No special tools or skilled labor needed. Every stove guaranteed. You pay for the Indiana Silo out of what it saves on feed bill. Address nearest office.

THE INDIANA SILO CO. Anderson, Ind. Des Moines, Iowa Ft. Worth, Texas Kansas City, Mo.



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

Some Phases of Dairying

By W. MILTON KELLY

ANY dairy farmer with ordinary intelligence can use the Babcock tester and scales to determine whether his cows are a source of profit or loss, but it is a large question whether the cow or her owner is at fault. Many cows are unprofitable because they never had proper care and feed to develop their ability and capacity. In fully one-half of the cases it is the owner more than the cow who is at fault. The average annual production of a dairy herd depends as much upon the ability of the man who has charge of the care and feeding of the cows as it does upon the capacity of the cows to produce milk and its derivatives.

Study the Individual Cow.

Good care and judicious feeding are of equal importance. If one is neglected, no matter how efficiently the other is supplied, the results are sure to be discouraging. The successful feeder makes a close study of the individuality of each cow in the herd and makes up their rations so that each member has all she can consume profitably without injury to her future usefulness. He makes a careful study of the cow's preferences for certain kinds of feed, consults the breeding record of the herd in order that he may know her period of lactation, watches her milk record, that he may determine and supply the amount and proportion of the different feeding materials necessary to make a large amount of milk and butter-fat from a minimum amount of feed. To secure good results from a large herd the feeder must be capable of studying and learning the peculiarities of each animal under his care. Such a man can easily increase the milk yields sufficiently to pay a handsome profit after deducting his salary.

To accomplish these results the feeder must have a knowledge of the function, composition and cost of the various feeding materials and plan his feeding so that the cows can make the best possible use of the home-grown feeds with just enough of the purchased concentrates to balance up what is lacking. In other words, he should know the character of the ration demanded by each member in the herd and be able to make it up as cheaply as possible. If this is done properly each cow will be producing to the limit of her capacity and returning a maximum profit.

Regular Milking Essential.

One of the most important factors in the management of a herd of dairy cows is that of securing good milkers. Nothing is more helpful in maintaining a steady, even flow of milk from day to day than clean regular and gentle milking. Milk giving is a habit that needs to be stimulated if we increase the persistency of the cow's work. Training is necessary to the highest yield of milk. The activities of the mammary glands which secrete milk are promoted by hand-manipulation by milking, until it becomes a habit to secrete milk long after the time nature would set for any period of freshening. Nature concerns herself only with the preservation of the young. She does not provide for man. But man has discovered that it is necessary for him to stimulate the activity and increase the duration of the milk-giving processes, in order that the supply for his use may be augmented and prolonged. Unless she is milked by man, the cow will only furnish enough milk for the sustenance and growth of the calf up to the time when the development of the teeth and the digestive organs fit it for the use of solid food. Then the cow begins to dry up her flow of milk and turns her feed to build up her own system, either by laying on flesh or preparing for another period of maternity. When calves are left with their

dams the cows quickly appreciate the decreased demand on their milk supply and dry up their flow to correspond with it. When the calves are removed at birth or a few days thereafter and hand milking is begun, this artificial process induces a longer period of lactation, in some cases lasting from one calf to the next. It is a habit that can be almost lost or materially strengthened by environment or conditions of treatment.

Training the Cow to Give Milk.

To induce the greatest possible flow in the young heifers, their calves should be removed from them within three or four days, and they should be carefully trained in the milk-giving habit by a skilled milker, one who understands how to manipulate the udder and stimulate the activity of the cells. With good care, plenty of nourishing food and a good, careful milker, the dairy cow is surrounded by environment conducive to making the most of the feed given her. She is then, and not till then, in a condition to return a profit from her food.

The proper time to bring the cow up to her limit of profitable production is about six weeks after she freshens. I believe the calf should be allowed to suckle the cow the first three days after it is born and then tied in a place where she can see it and knows that it is safe for two or three weeks. The first thirty days is the time to watch the cow closely and bring her production up to where you want it. She is in a weakened condition and a man has to be very careful in feeding her. Increase her rations gradually during the first four weeks, then study her appetite, her milk yield and general condition, and if you find that by adding a half pound of feed every third day, that she will give a pound more milk a day it is safe to increase the feed gradually as she responds. When an additional half pound of the proper kind of grain a day does not increase her milk flow one pound a day, you may know that she is at about the limit of profitable milk production, and that if you increase her feed you are overtaxing her digestive system.

The Care of the Heifer.

The feeding of the heifer calf and developing it into a cow that is capable of producing a heavy yield of milk and butter requires the greatest skill and untiring effort from the day the calf is born till it is ready to take its place in the herd as a dairy cow. It should be kept in a thrifty and growing condition and never suffer from hunger. The fact that a dairy heifer should never be allowed to take on too much fat has led many dairymen to think that she should be fed starvation rations. Neither the poor, scrawny heifer nor the over-fed calf will ever become a high producing dairy cow. By feeding proper feeds the calves will readily clean up its rations, and there will be no danger of it becoming too fat to insure its future usefulness in the dairy. After they are a few months old they should be turned out and allowed plenty of exercise and fresh air so that they may build up strong muscles and good sound organs of respiration.

Feeding the Heifer.

Liberal rations of bulky, organic foods such as corn fodder and ensilage, supplemented by clover hay and wheat bran and oats are the kinds of food required to properly develop size and vitality in the dairy heifer. Such feeds also possess the largest amount of bone and muscle building materials. Plenty of exercise in outdoor air is also necessary to the health and vitality of the heifer and to develop her productive and reproductive powers.

She should be allowed to reach sufficient maturity along these lines before breeding. Otherwise the offspring

(Continued on page 78).



The Price of Progress

THE Panama Canal stands as one of the most marvelous achievements of the age. Into its construction went not only the highest engineering skill, but the best business brains of the nation, backed by hundreds of millions of dollars.

Suppose conditions not to be foreseen made it necessary to replace the present canal with a new and larger waterway of the sea-level type, to be built in the next ten years.

Also suppose that this new canal would be the means of a great saving in time and money to the canal-using public, because of the rapid progress in canal engineering.

This sounds improbable, yet it illustrates exactly what has happened in the development of the telephone, and what certainly will happen again.

Increasing demands upon the telephone system, calling for more extended and better service, forced removal of every part of the plant not equal to these demands. Switchboards, cables, wires and the telephone instrument itself were changed time and again, as fast as the advancing art of the telephone could improve them.

It was practical to do all this because it greatly increased the capacity of the plant, reduced service rates and added subscribers by the hundred thousand.

In ten years, the telephone plant of the Bell System has been rebuilt and renewed, piece by piece, at an expense exceeding the cost of the Canal.

Thus the Bell System is kept at the highest point of efficiency, always apace with the telephone requirements of the public. And the usefulness of the telephone has been extended to all the people.

AMERICAN TELEPHONE AND TELEGRAPH COMPANY
AND ASSOCIATED COMPANIES
One Policy One System Universal Service

A 6 H.P. Engine is filling this silo

The cutter is a No. 11 Blizzard. On thousands of farms, regular farm gasoline engines, from 3 H. P. up to 12 H. P., are running Blizzard Ensilage Cutters with entire satisfaction. The

BLIZZARD Ensilage Cutter

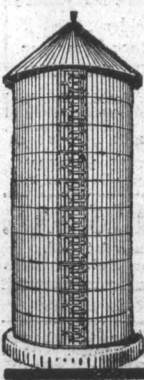
is light-running because so simple. Cutter knives and elevating fans all on fly-wheel. Elevates 100 feet as easy as 20. In extensive use for elevating grain. Enormous capacity. Self-feed table saves work of one man. Makes even-cut silage. Unusually safe. Repair expense little or nothing. Many Blizzards sold 10, 12, 15 years ago still in use.

Write today for booklets

You can have any or all of these three booklets—they're free. (1) Blizzard Catalog. (2) "What Users Say," written by nearly 300 Blizzard users. (3) "Making Silage Pay Better"—a valuable book on preparation of silage and filling of silos. When you write mention size of yoursilo—ask nearest dealer's name, if you don't know him.

The Joseph Dick Mfg. Company
Box 24, Canton, Ohio

"Jan. 31, 1915.
"I have run Nos. 11, 13, 15
Blizzard. They do the most
work with least power of any
machine I ever saw."
"ARTIE WOOD,
Leslie, Mich."



The Hinge-Door Silo

The most convenient and best equipped silo made. Doors always in place—swing open and shut easily. The hinges form a perfect ladder. Best material throughout. Makes perfect silage and that is what you want. We also make the Lansing silo with loose doors. The Chicken silo for the small farmer. WOODS BROS. SILO & MFG. CO. General Office: Lincoln, Neb. Dept. 15. Factories: Lansing, Mich.; E. St. Louis, Ill.

NOTICE!

Write to the Humane Stanchion Works for literature for the latest improved stanchion. HUMANE STANCHION WORKS, Baraboo, Wis.



Get All The Cream

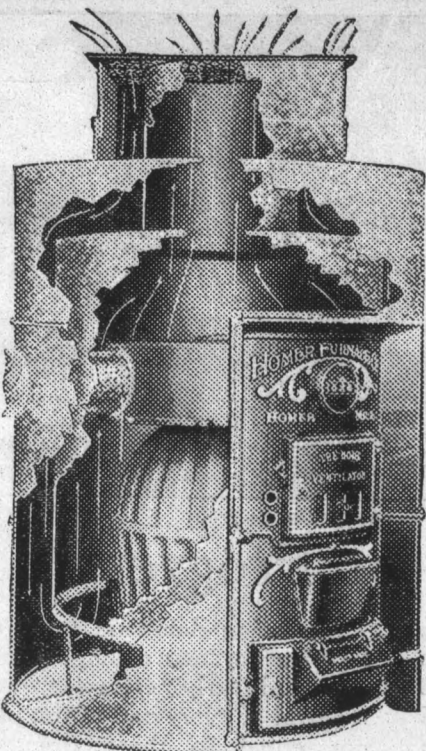
Cleveland Cream Separators get all the cream. They are guaranteed. They run easier. They last longer. Fewest parts to clean. They cost less because they get all the cream. Agents wanted. The Cleveland Cream Separator Co., 1017 Power Ave., Cleveland, Ohio.

Marshall Iron Corn Crib

Cost no more than ordinary wood cribs; look better; last a lifetime; cure corn better; keep it drier—free from mold—don't lose germination. (1) LIGHTNING-PROOF, FIRE-PROOF, mouse-proof, bird-proof. Easily put up. Have patent ventilating and curing shaft. 12 Styles and Sizes from \$47.50 and up. Freight Paid. A postal brings our Free Catalog. Write today. IRON CRIB & BIN CO., Box 100 WOOSTER, OHIO.

Mention Michigan Farmer when writing to advertisers.

COLD STORAGE LEFT INTACT



More Heat Less Fuel

30 DAYS TRIAL TO PROVE IT.

The Original Patented Pipeless Furnace

All others of this type are either imitations or infringements. We are now prosecuting infringers. Buy the Original and go safe.

Thousands in use from Florida to Canada. Its efficiency has been proven at 40 below zero.

One Combination Hot and Cold Air Register carrying the cold air to, and the hot air from the furnace. No pipes. No heat in cellar. No dirt. No danger from fire. No tearing of house to pieces to install. Can be installed in any house, old or new, and any cellar, large or small. Needs no separate cellar. Takes but a day's time for the work.

Send us a rough sketch of the floor plan of your house and we will gladly quote price and mail you our large illustrated 32-page catalog, together with hundreds of testimonials and cuts of homes we are heating. A postal card will do it. Don't delay. Write today.

Homer Furnace Co., Dept. C, Homer, Mich.

Inventors, makers and jobbers of the Original Pipeless Furnace of this type.

BEE HIVES, SECTIONS, BERRY BASKETS AND

Comb Foundations, Smokers, etc.

Send for catalog A. Thoroughbred Italian bees and queens. Ask for catalog B.

M. H. HUNT & SON, Box 525, LANSING, MICH.

POULTRY.

BARRED PLY. ROCKS

First prize winners at Chicago, Cincinnati, Indianapolis, etc.

Eggs from fine Utility Matings that are bred to lay. \$1.50 per 15, \$4 per 50, \$7 per 100. From best exhibition pens \$10 per 15, \$25 per 50. Prompt delivery and good hatch guaranteed. G. Earl Hoover, R. 7, Matthews, Ind.

BARRON STRAIN LEHORN COCKERELS. Great egg laying strain in the world. Just the thing to build up high egg production in your flock \$2 and \$3. E. L. HOSBACK, R. 5, Plymouth, Michigan.

Barred Rock Eggs. Start right with your Barred's with eggs from a pen direct from Bradley Bros. Yards. A. A. Pattullo, Deckerville, Mich.

BARRED ROCKS. Parks 200-Egg strain. A strain with egg records to 271 eggs a year. \$1.50 per 15. Delivered by Parcel Post. Fred Astling, Constantine, Mich.

Buff Rocks. 3 out of 4 firsts Chicago, 1914. Eggs b-l. of season \$1.50-15; \$6-100. S. C. Buff Leghorn eggs \$1-15; \$5-100. Pen of 12 Buff Leghorns \$10. 20 Buff Rock Hens, 75 cents to \$2.50. Including Chicago and Minneapolis first prize winners. Bird Lawn Farm, Lawrence, Mich.

LAT' SEASON PRICES ON R. C. and S. C. Rhode Island Red eggs from fine stock, \$1 per 15, delivered at your door by insured parcel post. JENNIE BUELL, Ann Arbor, Michigan.

NOW is your opportunity to get eggs from my No. 1 pens of Barred Rocks, S. S. Hamburgs, R. O. White Leghorns at \$1 per setting for the next three weeks. RIVERVIEW FARM, R. 8, Vassar, Mich.

Pine Crest White Orpingtons—bargains in stock—June. Belgian hares and Collie puppies. MRS. WILLIS BOUGH, Pine Crest Farm, Royal Oak, Mich.

RINGLET BARRED ROCKS—the winning and egg laying strain. Eggs \$1.50 per 15, from mated pens also M. B. Turkey eggs from choice birds, \$2.50 per 10. Charges prepaid by parcel post. PLAINVIEW STOCK FARM, Romo, Mich.

RHODE ISLAND REDS and PLYMOUTH ROCKS. Males 5 to 12 lbs. according to age \$2 to \$5; P. R. hens weight 5 to 9 1/2 lbs., eggs 15 for \$1.00; P. R. eggs \$5 per 100. Mammoth Bronze Tom Turkeys, 8 to 18 lbs. according to age \$5 to \$25, 10 eggs \$5. A. E. Cramp ton, Vassar, Mich.

ROSE COMB BROWN LEHORN EGGS from Mad. Rq. winners. \$1.00 per setting. \$5.00 per 100. M. Pekin ducks \$1.00 per setting. CLAUDIA BETTS, Hillsdale, Michigan.

Single Comb White Leghorn Yearling Hens For Sale

To make room for young stock we offer 800 yearling S. C. White Leghorn hens for sale at bargain prices. These birds are the pick of our breeding flock, in vigor, size and egg production. Seventy-five cents in orders of 100 or more. Eighty cents in orders of fifty and \$1.00 for orders of twenty-five and less. Reference supplied on quality of stock. We guarantee satisfaction on every shipment. **KRENTEL BROS., East Lansing, Mich.**

Slaughter Sale of Barred & White Rocks Cocks \$3.00 to \$5.00. Hens \$1.00 to \$3.00. Young stock after September 1st. Riverview Poultry Farm, Box 793, Union, City, Mich.

S. C. White Leghorns, breeding cockerels and yearling hens for sale. Also young white Pekin breeding ducks and drakes. Write for prices. Sunnybrook Poultry Farm, R. 3, Hillsdale, Mich.

SILVER Laced Golden and White Wyandotte Eggs for hatch. Sing. Ten cents each or 30 for \$2.50. I pay parcel post charges. C. W. BROWNING, Portland, Michigan.

White Leghorns Day-Old-Chicks. Write for circular. We guarantee satisfaction to all our customers. **MAPLE CITY POULTRY PLANT, Box C, Charlotte, Michigan.**

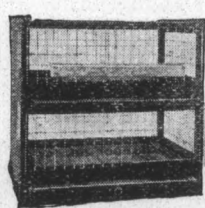
White Wyandotte Eggs—50c for 15, \$4.00 for 100. Mv two best pens \$2.00 for 15, \$3.75 for 30. DAVID RAY, 202 Forest Ave., Ypsilanti, Mich.

White P. Rocks, Pekin and white runner ducks, white guineas, eggs and day old ducks and chicks, H. V. HOSTETLER, St. Johns, Michigan.

WHITE Orpington Cockerels. S. C. Kellerstrass 8-wk. 4 or more 75c each, single \$1. 8-wks. pens cheap. Yearling hens and cks. Eggs 1/2 price. M. E. Thompson, Redford, Mich.

Farmers' Sanitary Two-Deck Feeding and Delivery Poultry Coop

For Delivering and Feeding; Two Coops in One; Will Last a Life Time; Strong and Durable.



(Patented)

The farmers are losing several millions annually in the United States alone, by not having their poultry properly fattened at selling time. By purchasing at a small cost and using the Sanitary Coop, you turn this loss into a big profit. Packing houses and feeders are taking advantage of your oversight, and with milk and grain feeding they are getting 20 or 25 per cent gain in 10 to 12 days' time. The United States experimenters give even a greater gain than the above. You have the advantage of raising your own feed; why not take it? Endorsed by the Michigan Agricultural College, Swift & Co., and feeders generally. Formula for milk and grain feeding and other valuable information on general feeding and care of poultry, furnished free to users of the Sanitary Coops. Write for circulars and prices. **THE DANLEY SANITARY MFG. CO., St. Johns, Mich.**

Sure Death

for chicken mites

and lice with 'FUMOTH' FUMIGATORS

is a new, easy and quick way. No more spraying and exposing oneself to the mites. Two required for a 10 or 12 foot house; one fumigation cleans them all out. Requires only a half hour to do the fumigation and it is play—not work.

The fumes go into all the cracks and crevices and permeate the straw, killing every insect, which is not possible with spraying. No after odor remains—can return fowls immediately afterward. Fumes kill instantly and not by suffocation like sulphur or formaldehyde and not dangerous to man. Used by prominent poultrymen, 2 for 25c, 5 for 50c, 12 for \$1.00, postpaid. Money refunded if not satisfactory. Also kill Mosquitoes and House Flies. Order today or send for circular.

F. A. Thompson & Co., 527 Trembley Ave., (2) Detroit, Michigan



Ditching Made Easy

with this common sense farm ditcher and road grader. No wheels or levers. Nothing to get out of fix. Simple—Practical.

Price only one-fourth of big machines. Does same work. Soon pays for itself. Write for full information and introductory proposition. Owensboro Ditcher & Grader Co. Inc. Box 830 Owensboro, Ky.

Michigan Livestock Insurance Co.

Capital Stock—\$100,000. Surplus—\$100,000

Home Office—Saginaw, Michigan.

Only Home Co. in Michigan.

COLON C. LILLIE President.

H. J. WELLS, Secretary-Treasurer.

LEARN AUCTIONEERING

at World's Original and Greatest School and become independent with no capital invested. Every branch of the business taught in 6 weeks. Write today for free catalog. **JONES' NAT'L SCHOOL OF AUCTIONEERING, 28 N. Sacramento Blvd., Chicago, Ill. Carey M. Jones, Pres.**

ALL COLORS High-Grade PAINT, \$1.25 GAL.

Guaranteed. Sells elsewhere now for \$2.25.

PAINT WAREHOUSE, 352 Beaubien, Detroit, Mich.

DOGS.

Trained Running Fox Hounds—30 Fox and Ocon hound pups, Poodles. Send stamp. W. E. LECKY, Holmesville, Ohio.

FOX, COON, SKUNK AND RABBIT HOUNDS

Broke to gun and field by experienced hunters. Fox, Coon and Rabbit hound pups, and extra fine ones, \$5. Stamp for photos. Order now and be acquainted with your dog by hunting season. H. C. Lytle, Fredericksburg, O.

Capons for Profit

CAPONIZING is the modern method of making the surplus roosters pay. Any of the good market breeds make good capons when thrifty and hatched reasonably early. One cannot expect to caponize scrubs and stunted birds and make profitable capons of them. It is the largest capons that bring the highest prices and the late hatches and unthrifty birds never get very large. Roosters of the smaller breeds make good capons to use at home but buyers don't want them as there is no demand for small capons.

When to Caponize.

Cockerels should be caponized when from two to three months of age before the comb and wattles begin to redden up and develop. We have caponized little one-pound roosters but had better results from larger birds. The operation seemed to check the growth of some of the little fellows.

The directions sent with caponizing tools are so plain anyone with steady nerves, and at all skillful can learn to do the work. The best time to experiment is some day when you want a fry for dinner, as it is best to practice on birds that have just been killed to eat. It is of advantage to watch an experienced hand do the work, as many suggestions on doing the work can be gotten.

In our neighborhood an expert charges five cents apiece for caponizing if we cannot do the work ourselves; he seldom loses a bird, there are few slips and everyone is satisfied.

It is very essential to shut the fowls in for at least 24 hours before the operation without feed or water, so that their intestines are empty at the time of the operation. Some advise keeping them in a pen to themselves for a few days after but this is not necessary. Our birds go from the operating table to the fields bug hunting, and we never bother about them except to look for air puffs that sometimes form under the wings. We clip these puffy places with sharp-pointed scissors just enough so the air will escape.

Brahmas Make Good Capons.

White Brahma capons present a very attractive appearance and they weigh a little more at selling time than the Plymouth Rocks but it takes less feed for the Rocks because the Rocks are better foragers than the Brahmas.

Along late in the summer when the price goes down it will pay to buy a bunch of roosters and have them caponized if you haven't enough good birds of your own. Do not sell them till the last of January or the first of February, however, as at this time one well-fattened capon will bring more than twice as much as two roosters sold in the fall.

Indiana. FRANCES WOOD.

LAYING BOXES FOR THE HENS.

In putting up laying boxes for the hens the main point to be considered is the question of keeping them clean and sanitary. The greatest danger is that they will soon become infested with mites and lice, hence the necessity of having the boxes so constructed as to be easily cleaned. Separate boxes are best. Section nests afford too many harboring-places for vermin, while single boxes may be taken outside and fumigated at frequent intervals.

Boxes should be of a size to fit the hens, thus the larger breeds should be provided with larger boxes than are necessary for the smaller. Nests should not be so large that two or three hens can crowd on at the same time. The number of nests should be about one for every three hens in the house. Some poultrymen use separate boxes placed under a shelf along one side of the building. It is a good plan to have the nests in semi-darkness, as hens prefer seclusion when on the

nest. Also, the birds are not so liable to form the habit of egg-eating if the nests are not fully open to the light. This pernicious habit is usually contracted by accident. The nesting boxes form a tempting place to scratch if they are located in a strong light; an egg is broken, it is eaten, the habit is formed. Dark nests will not overcome the habit, once it has been contracted, hence it is much better that the birds never learn the vice.

A Good Way to Make NNests.

An excellent method of making nests is to make them bottomless by just nailing the sides together and resting this frame upon a shelf a little wider than the box. The apartments should then be half filled with nesting material, which may be changed every few weeks by simply removing the frames and sweeping the shelf clean. This is the easiest sort of nest to keep free from vermin. Hay and straw is poor material for nests. It is too bulky and unyielding. Seed and chaff from the bottom of the hay bin are better, being of finer material. Best of all is cedar excelsior, as it helps to keep the vermin in check. Nesting material may be removed and placed out of doors for cleansing every week, but it is best to furnish new every month or so.

There are many varieties of the nest which might be mentioned. The more advanced breeders of fancy birds are using the trap nest almost exclusively. This hardly seems practical for the poultryman who keeps birds for the eggs particularly, and it is scarcely necessary unless one is building up an exclusive strain for breeding. One should have a building equipped with trap nests, from which eggs for hatching are obtained, a fact if one be engaged in the business on a large scale, it will pay him to build up his flock in this way.

Fumigating the Nests.

Solidly built nests may be fumigated readily by burning out the old material. We accomplish this without burning the box, in the following way: Choosing a rainy day, when the grass is wet, the nests are taken outside, a quantity of sulphur placed in each one, and the dry material set on fire. When it gets to burning in good shape the box is turned upside down, causing smoke to penetrate all cracks and joints until not a single louse, flea or mite can remain alive. If this is done once a month during warm weather and two or three times during the fall, winter and spring, vermin will not infest the laying boxes to any extent. This is also a good method to use in cleaning the boxes in which chicks have been hatched.

New Hamp. C. H. CHESLEY.

THE COLONY SYSTEM.

Under the colony system of keeping poultry the birds should be allowed free range, the houses, which hold about 100 hens each, should be placed from 200 to 250 feet apart, so that the stock will not kill the grass. This system may be adapted to severe winter conditions by drawing the colony houses together in a convenient place at the beginning of winter, thus reducing the labor during the cold months.

A GOOD VETERINARY BOOK.

Very often a veterinary book can save some money. We have been able to buy 1,000 of Gleason's Veterinary Books at 29 cents apiece. Our subscribers can have them at just what they cost us, but they must be subscribers to the Michigan Farmer, so we are offering them now for 79 cents with the Michigan Farmer a year, postage paid. By that, we mean that there will be no postal charges. Present subscribers can have the book for 29 cents. There is a very great bargain in this. It would cost at least 50 cents more in any other way.

Magazine Section

LITERATURE
POETRY
HISTORY and
INFORMATION

MICHIGAN FARMER
AND *LIVE STOCK*
JOURNAL
PUBLISHED WEEKLY
ESTABLISHED 1843

The FARM BOY
and GIRL
SCIENTIFIC and
MECHANICAL

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

THE "fellers" had been playing Indians since early morning. They had roasted green corn and potatoes in the embers of a camp fire and had broiled several sunfish, caught in the mill pond, which they pretended were buffalo steaks. But now the jolly red sun was casting long shadows on the floor of the big woods, and the boys were beginning to get tired. They were just getting ready to start for home when Bull Burton threw up his hat and shouted, "Hurrah, let's have some fun."

"Sure," replied Skinny Williams, "but how? Watching you go crazy?" "Naw," answered Bull. "Let's swing birches."

"What's swinging birches?" asked

A New Kind of Fun

By HOWARD T. KNAPP

Skinny, who lived in the city except during vacation time, and was kind of green.

"You just keep your eye on your Uncle Bart and he will show you a trick with a hole in it," replied Bull, and throwing off his coat he ran to a slender birch and started shinning up the trunk. When he was within a few feet of the top the tree began to bend under his weight. Over and over he came with a graceful swing until the birch was bent nearly double. Then, letting go with his feet, he hung from

the arched tree, his feet nearly touching the ground.

"Now for a jump," he shouted, and with a vigorous kick he sprang into the air, jerked upward by the spring of the birch. For several minutes he bounced up and down like a very noisy rubber ball.

"You can't stump me," cried Skinny, and picking out another birch he started up the tree like a little monkey. But Skinny was not as heavy as Bull, and the tree he had chosen was a little too stiff. It bent over all right,

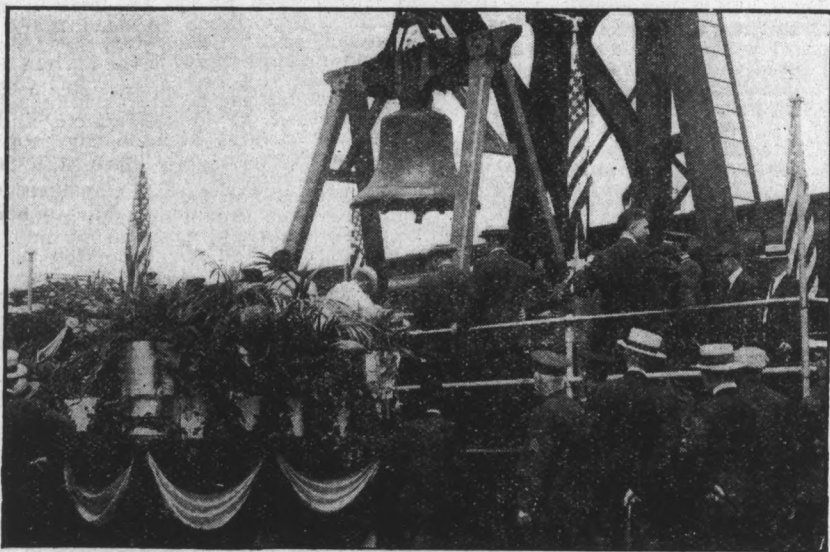
but when he let go with his legs he was left dangling in mid-air, his feet quite a distance from the ground. He was scared, there was no mistake about that, but even then he was cooler than Bull Barton.

"Hang on Skinny, I'll get you down," shouted Bull, as he climbed the next tree, and reaching over grabbed Skinny by the feet, pulling for all he was worth.

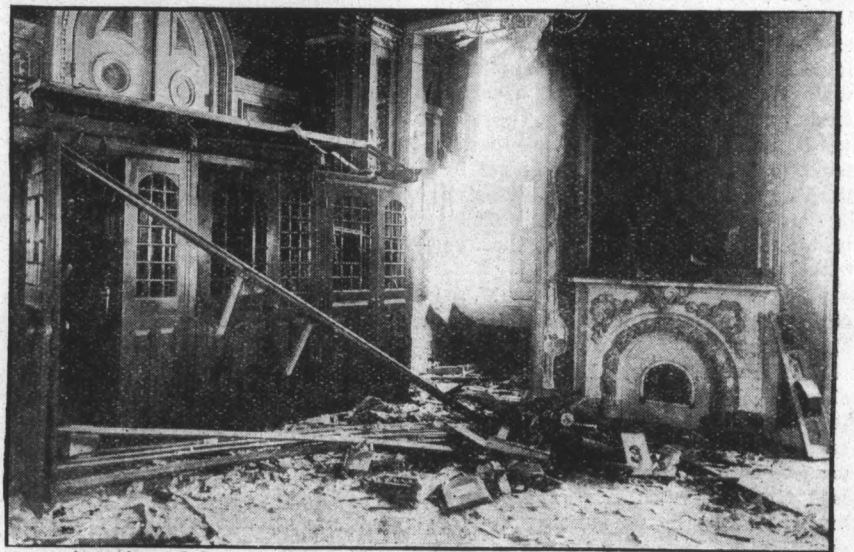
"Quit it, quit it, I say," cried Skinny, kicking and squirming to make Bull let go. You'll pull me off. Quit it now, what are you trying to do anyway?"

"Why I am trying to bend your tree over so you can get off," said Bull, but just then he got a crack on the

WORLD EVENTS IN PICTURES



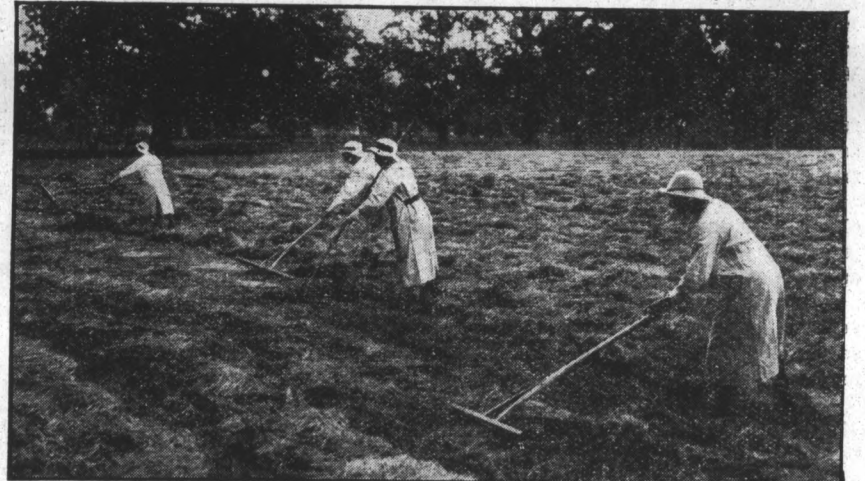
Liberty Bell as it Left for its First Trip to the Pacific Coast.



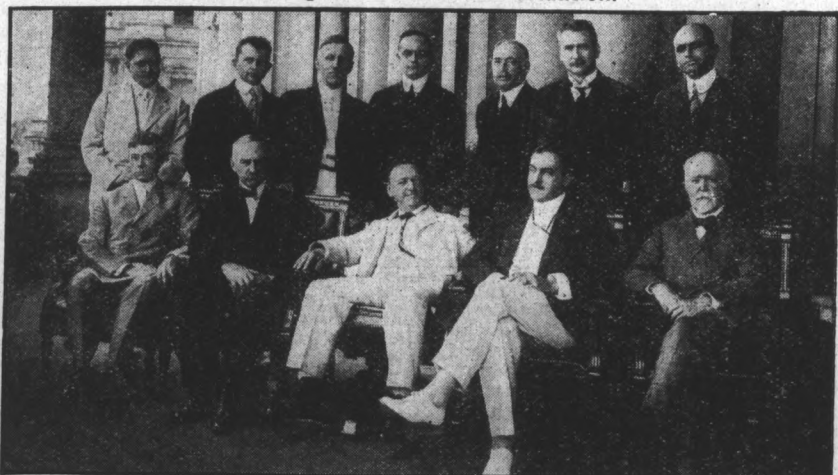
Interior of Senate Wing Damaged Recently by Bomb Explosion.



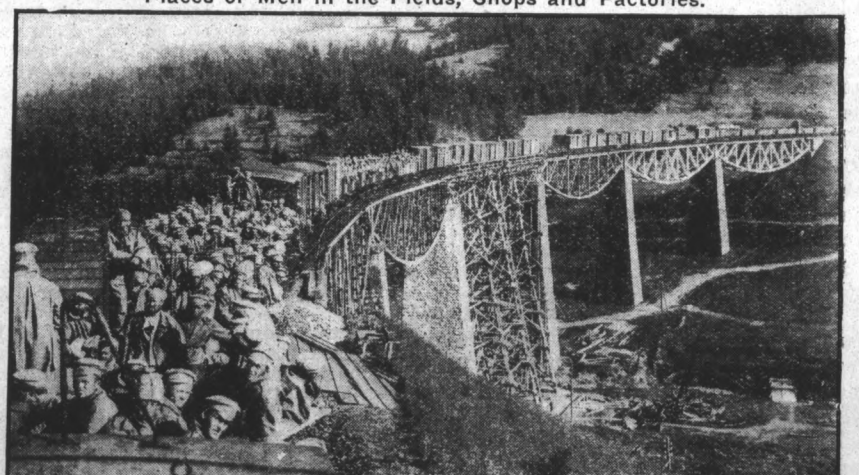
These Russian Children are not Particularly Fond of their Visitor but are Making the Best of the Situation.



Members of the Women's Defense Relief Corps of England are Taking the Places of Men in the Fields, Shops and Factories.



Secretary of the Navy Daniels and his New Advisory Council to which other Members are to be Added.



Trainloads of Russian Prisoners Captured by the Germans in Galicia Enroute to Concentration Camps.

head from Skinny's shoes and he let go in a hurry.

Then Spike Kennedy shinned up Skinny's tree, and the combined weights of the two bent the tree over far enough so Skinny could get off.

"Now try it on my tree," offered Bull.

"No siree," replied Skinny. "I've had enough swinging birches to last me a month of Wednesdays. But say, fellows, seeing all these saplings has given me an idea of how we can have a lot of fun."

"What is it?" asked everyone at once.

"I'm not going to tell you now," answered Skinny, "but if you'll do as I say and not ask any questions, I'll give you all my marbles if you don't say it's a bully scheme."

"All right," said Bull, "we'll take a chance, but we'll have to hurry for it's getting on to chore time. What do you want us to do?"

"Get out your jack knives and cut a lot of saplings, the straighter the better," directed Skinny.

So the boys set to work with a will, chopping down the slender trees and dragging them to Skinny, who trimmed off all the branches and laid the poles in a neat pile. So fast did they work that in a few minutes Skinny called to them to stop.

"Now what?" asked Bull. "When does the fun start?"

"Come with me and I'll soon show you," answered Skinny, shouldering a pile of poles and starting off through the woods for the road. The others divided the rest of the poles and followed their leader, wondering what under the sun he was up to. For half an hour they trudged along the dusty road, and then Skinny stopped in front of a forlorn little house set in a yard overgrown with weeds. The garden, too, was run down and looked as though it raised more weeds than vegetables.

"Why are you stopping here?" asked Bull. "No one lives here but old Mrs. Murphy."

"I know it," replied Skinny, "and she has been so busy working out this spring and summer, trying to earn enough money to keep her granddaughter in school, that she has not had time to work her garden. Just look at those beans running over everything. She will never be able to get to the woods to cut bean poles, so I thought it would be a good idea for us to get them for her as a surprise. What do you think?"

"Well, we've brought the poles this far we might as well put them up," said Bull, "but I don't see where the fun comes in."

"Just wait until she comes home," chuckled Skinny. "She will be so surprised it will be more fun than a circus."

So the boys pitched in with a right good will and almost before you could say Jack Robinson the poles were all in place.

"Cheese it fellers, here comes Mrs. Murphy," warned Spike Kennedy as the last pole was set in the ground, and the next minute the boys were hidden in a clump of bushes at the end of the garden.

Mrs. Murphy, hot and tired after a hard day's work, dropped onto a bench at the side of the porch, and mopped her face with her handkerchief.

"I wonder if I'll have time to pull a few weeds before supper," she said aloud. "And if I don't soon get some poles for the lima beans, they won't amount to shucks."

Then she turned her head and looked over the garden.

"Land sakes!" she exclaimed as she saw the rows of bean poles set up by the boys. "Land sakes, am I dreaming or have the fairies been helping with my work. I can't make it out," and she hurried into the garden as fast as her tired legs would carry her.

"It must have been the fairies for the poles surely couldn't have grown

by themselves," she said, and then she caught sight of a boy hiding in the bushes and dragged Spike Kennedy out by his collar.

"So you are the good fairy that's been helping a poor old woman with her work," she said, her eyes twinkling with kindness.

"No, ma'am, it wasn't me, it was Skinny Williams," protested Spike.

"And where is the other fairy hiding?" asked Mrs. Murphy, but before Spike could answer she caught sight of the other boys and called to them to come out.

"Well, boys, I never before believed in fairies but I do now," she said. "You just wait here a minute," and she ran into the house to come out again in a minute with a big plate piled high with delicious ginger cookies.

"Come on fellers, I have to get home and do the chores," said Bull

Barton, so they said goodbye to Mrs. Murphy and started down the road, but not before the kindly old lady had made them fill their pockets with cookies.

"That surely was a bully idea of yours, Skinny," said Bull as they trudged along. "It was better than a circus to see her face when she first caught sight of those poles. I never before knew it was so much fun to cut bean poles."

"My father says it is always fun to help other people," answered Skinny.

"I guess he's right," replied Bull thoughtfully. "At any rate I had so much fun that next Saturday I'm coming over to weed her garden. If you fellows want to help, all right, if you don't, I'll do it all myself."

"Sure we'll help," cried the boys. "We will make that garden look like a flower bed."

And they did.

THE RED MIST.

By RANDALL PARRISH.

Copyright A. C. McClurg Co.

CHAPTER XVII.

I Choose Death.

"That is my meaning. You are from Jackson's headquarters?"

"I am here under his orders." "The probability is, then, that you possess knowledge of the utmost value to us—worth, let me say, the sparing of life."

I glanced aside at Fox, and caught the look of appeal in his face; then back into the expectant eyes of the colonel.

"You have authority to make me this proposition?" I asked quietly.

"I am in command of this camp, and my recommendation will have weight. I pledge you my influence with General Ramsay."

"What is it you wish to know?"

"The number and disposition of Jackson's troops; where they are at present stationed, and in what force; and any inkling you may have as to his immediate plans of campaign."

"And in return for this information you guarantee me release from arrest?"

"That would be impossible, Sergeant," and he laid his hand on my shoulder. "We shall have to hold you as prisoner of war, but there shall be no charge made involving the death penalty."

I stood motionless a moment, endeavoring to straighten the matter out in my own mind. When I spoke it was as briefly as possible.

"I can only thank you, Colonel Pinckney," I said, "and respectfully decline. I am a soldier, and loyal to my flag; I accepted the chance of such a situation as this when General Jackson requested my services. Even at the cost of life I will not answer your questions, sir."

"You will die the death of a spy; you will be hanged."

"That is as God wills, sir; the threat has no effect upon me."

Fox gripped my arm, and as I glanced at him, I was surprised to see a mist of tears in his eyes.

"Wyatt," he exclaimed, making no pretense of calmness, "do not be hasty in your decision. I would not counsel you to any act of dishonor, but surely some compromise is possible. I not only ask you to consider the situation from your own standpoint, but also from ours. I accompanied Colonel Pinckney in the hope I might have some influence." He hesitated an instant, as though doubtful of his words. "Perhaps I should say, my boy, that another urged me to come."

"Another?"

"Yes—a lady."

My head swam, my heart beating like a trip-hammer.

"Do—do you mean, Captain Fox, that she actually asked you to urge me to save myself by such an act?"

"No, Wyatt; not that. She requested me to accompany Colonel Pinckney, and do all I could on your behalf."

I drew a long breath of relief, my mind clearing, my resolves strengthened! She did care then! God knew I was glad; and she had not urged me to an act of dishonor. And I knew, I understood—she wished me to realize that she was not indifferent to my fate, that her interest was not dead; by the only man she could trust to rightly deliver it. But she would want

me to decide right, for it was not in the character of Noreen Harwood to compromise with duty—better to die a death of disgrace than to live, and read the scorn in her eyes. My heart lightened, and my lips smiled.

"I thank you for your message, Captain Fox," I said sincerely, clasping his hand. "Tell her how glad it made me. But it cannot change my decision; I will answer no questions."

"This is your final reply, Sergeant?" the Colonel's voice had hardened; his eyes had lost their friendliness.

"It is, sir."

"Very well, then; there is nothing more for us to accomplish here, Fox. I think, young man, you will come to your senses too late. Good day, sir."

The door opened to the rap of his knuckles, and the two men passed out, neither one glancing back at me. The sentry asked a question, and I heard Pinckney answer:

"Yes, set the food within, but let no one communicate with the prisoner except on my written order. I will have another sentry posted above."

A soldier entered bearing a camp ration, and a pannikin of water, and placed these on the box. He said nothing, and the colonel stood beside the door watching, until I was left alone. Then the iron shutter closed, and I heard the bar which secured it forced down into place. As I stared about me at the bare, solid walls, I knew that I was already condemned; that the court-martial which would follow would be only a mere form. Yet for the moment this knowledge scarcely penetrated my consciousness—one thing I remembered, her message. She cared! She would serve me if she could! Her thought of me was kindly! I put the food on the floor untouched, and sat down on the box. I wanted to live; I was young, ambitious, and—I loved that girl. I realized this truth clearly, and it became the one ceaseless incentive to effort. Her face arose before me, and I felt that her message was meant for my encouragement. She wanted me to live; wished me to know that she was not indifferent; trusted me to accomplish all that a man could. And I must act now, if at all. The time allowed me was short—how short I could not even guess. I ate the food, not from any sense of hunger, but because I needed it to keep up my strength, my mind ever busy with the problem. Would they give me a few hours respite—opportunity to reflect? If so, there was hope; I could plan and work, with some faith that the coming night would bring me a chance for escape. I was alone, unwatched; there was no place where an eye could peer in on my movements. I dragged the box over to the window, stood on it, and managed to dislodge the bit of iron entangled in the grating. It proved to be part of a discarded horseshoe, flung there carelessly by some farrier, and contained three thin-headed nails. With difficulty I loosened one of these, and fitted the sharp edge into a screwhead of a shelf bracket. The nail afforded little purchase, and I tried three of the screws before finding one loose enough to turn. By this time my fingers were numb and bleeding, yet the final success set my heart throbbing with exultation.

The removal of the screw, which by

chance was the lower one, enabled me to insert the remnant of horseshoe beneath the bracket iron. Slowly, fearful of creating alarm, this improvised lever wrenched the bracket free, until I was enabled to get firm grip on it with my hands. With foot braced, and every muscle strained, I worked that bit of iron back and forth, tearing it free, until I knew that another wrench would separate it entirely from its fastenings. Then I forced it back into place again, pressed down the loosened screws, carefully gathering together the slight debris littering the floor, and cast it into a dark corner. The bracket seemed as solid as ever. Now I must wait for night.

CHAPTER XVIII.

Under Death Sentence.

IT was dreary waiting, for every unusual sound reaching me brought with it a throb of fear. That my fate was already practically settled I knew, but how long the delay might be remained a problem. All I could hope for was that final action might be postponed until the morrow, thus giving me the protection of the night in which to put my plans into execution. Again and again I reviewed all the circumstances, so far as I understood them, seeking to convince myself that this time would be permitted me. Yet it was all guesswork, and I doubted my own conclusions. Colonel Pinckney was evidently a stern and resolute officer, yet with a kindly expression in his face, yielding me some hope of delay. He would do his duty undoubtedly, but was not a man to take pleasure in the execution of such a sentence involving a human life. He would naturally postpone the inevitable as long as possible, in the hope that I might change my mind, or that some conditions might arise to relieve him of the unpleasant responsibility. He might even decide the matter of sufficient importance to send me to headquarters at Charleston, or hold me under guard to await the arrival of some higher officer. Fox, I felt convinced, would use whatever influence he possessed to delay action and there was a faint hope in my mind also that Noreen might even make a plea to higher authorities in my behalf. I dare not believe she would, but the vague dream of such a thing recurred again and again to my mind.

Of course I had no conception that her thought centered on me, or that there was any depth of personal feeling in the slight interest she had already displayed by her request to Captain Fox. This was no more than the natural expression of a tenderhearted woman. We had been playmates and friends; this fact alone was sufficient to justify an effort on her part to prevent my dying an ignominious death. Besides, my capture had occurred through an attempt to serve her. This was her plea for me, and no other; this was the excuse with which she justified her interest in the case. The fact that she was legally my wife was to be kept secret—was to be forgotten forever, if possible. At first she had been frightened at the situation, fearful lest I urge our relationship as an excuse for being with her; but now she was reassured by my silence. Believing the secret safe in my keeping she was willing to venture a word in my behalf, actuated by dictates of humanity.

This was the conclusion to which I came, and, indeed no other solution appeared probable. But even this did not evidence a dislike for me, a desire to punish, or a deep feeling of animosity. This knowledge alone brought me a real comfort, and a strengthening of courage. I listened at the door, my ear pressed against the iron, distinguishing the tramp of the guard in the corridor without, and occasionally the low rumble of words, as though there were two sentries on duty. To learn all I could I dragged the box to a position below the window, and standing on it, managed to gain a narrow glimpse without, the vista revealing a flap of dirty tent cloth and part of an army wagon backed up against the building, leaving barely enough space for the guard to pace back and forth the length of his beat. I could see his blue-clad legs, with the white stripe, cross and recross in front of me. I tested the strength of the iron grating with my hands, but the bars were firmly imbedded and immovable.

The afternoon brought me two visitors. The first was an infantry captain, quick spoken and immaculate of dress, who merely looked me over much as an entomologist might examine a strange bug, commanding me to yield a view of my profile. From certain questions asked I supposed him endeavoring to identify me with some suspicious character with whom he had previously come in contact. What conclusion the man reached, or what report he made to Pinckney, I am unable to say, for he stalked out again as silently as he had entered, and the guard banged the door shut. The sun must have been well down in the west

when Fox returned. I had been expecting him, trusting to his friendly interest, and with a fleeting hope that Noreen might commission him to bring me some further message. Yet the moment I looked into his face, shadowed by the fading light, I realized that he brought no encouraging news. My heart sank, but I kept a smile on my lips.

"I expected to be out of here before now," I said meaningly, "yet I judge from your expression there is no reprieve."

"And no hope of one, Wyatt," he answered regretfully. "The evidence against you is too strong. The delay in convening a court has been caused by the scarcity of officers in camp. Our forage trains are just beginning to return, but it is now so late that Colonel Pickney has decided to hold you prisoner until morning. I waited until the order was issued before coming here. The court-martial is set for eight o'clock."

"I am thankful for even that delay. There is, I presume, no doubt as to the result?"

"None, so far as I can learn. You are a soldier, Wyatt, and may as well face the truth. I have urged mercy on Colonel Pickney, until he finally ordered me to drop the subject. He is a strict disciplinarian, a bit of a martinet, indeed, and inclined to take the advice of a regular army officer in such matters, rather than rely on volunteers. Has Raymond any special reason to dislike you?"

"Only that I impersonated him in this masquerade."

"Bah! that was mere chance, the selection of his name from the army list. The fellow is naturally vindictive enough, but surely could not harbor personal dislike over so small a matter." He paused hesitatingly, as though doubtful of the propriety of pressing an inquiry. "I trust you will pardon me, Wyatt, but I have wondered if there was not some trouble existing between you relative to the friendship of Miss Harwood."

"That would appear impossible," I replied, somewhat surprised, "for my being with her was accidental."

"Yes; so she insists; but I know Raymond is deeply interested in the girl. Someone told me he actually proposed to her at West Point, and sought this detail in hope of meeting her again. The occurrence which aroused my suspicion that he felt a personal grudge against you was this—I know he promised her to use his influence to have you sent to Charleston for trial, but instead he urged Colonel Pickney to exercise his own authority. I chanced to be in the next room, and overheard."

"You told her?"

"No; I have not seen the young lady since. It is rather a delicate matter to become involved in. I felt that I had better consult with you first. He has not been here?"

"No."

"He informed Pickney that he intended to come. He apparently desired to know just how you chanced to assume his name, and procured the necessary uniform, but I thought he might have some other object."

My mind worked rapidly. That Raymond was treacherous was probably true, and that, whether he actually knew it or not, he had reason to suspicion my relationship with the lady was equally a fact. Yet really he knew nothing, nor was it my privilege to enlighten him. I felt no pangs of jealousy, for, from what little I had observed, Noreen had treated him with marked coldness. There could be no great degree of intimacy between them, or she would have chosen him in this emergency, rather than Captain Fox. But she had revealed to neither officer the fact of our marriage; it was not so much as suspected and it would be treachery on my part to even whisper it in confidence. Her reticence and silence were sufficient to close my lips, for it would not serve her in any way for me to reveal the story to Fox. While I liked the man, and had abundant confidence in his discretion, yet, if I was destined to die, the secret had better perish with me, while if I did escape, she would respect me the more if I thus established my purpose of protecting her from the gossip of the camp.

"How is it, Wyatt?" he asked, as I failed to speak. "Should Miss Harwood be informed of the lieutenant's action?"

"By no means, Captain. If the man exhibits bitterness toward me, it can have no bearing upon her. She is naturally interested in saving the life of an old playmate, and I imagine understands pretty well Raymond's character, without your information. I doubt if she really trusted the fellow even when she made him a messenger."

"So do I, for later she went herself."

"To Colonel Pickney."

"Yes, an hour ago, after Raymond returned with his report. I was at the hotel, and saw her slip out the side door, with a shawl thrown over her head. The lady evidently did not wish to be seen, and had waited until the

lieutenant had gone to his room. Colonel Pickney has headquarters in the big stone house opposite the court yard."

"The old Carter place."

"Yes; I had forgotten you knew the town. It can be seen from the hotel porch, and I had the curiosity to watch. She was inside nearly half an hour, and returned by way of the street. Then she sent for me."

"She told you the result of her interview?"

"It was not even mentioned, but I knew she had met with no success. She seemed distressed, but was anxious that you should know at once the seriousness of your position, and the only hope of escape offered you."

My heart was beating fiercely at this direct evidence of her interest in my affairs. She had even humbled herself to beg for me a chance; perhaps, to Colonel Pickney she had even confessed the truth in hope of changing his decision. But the effort had proven useless; he had named terms, which she evidently considered unworthy.

"What hope?" I asked coldly. "You mean the terms offered me before?"

He bowed gravely, but without speaking.

"And did Miss Harwood request you to urge my acceptance?"

"By no means. Her purpose was to acquaint you with the conditions, to relieve your suspense, and permit you to realize her friendliness. I was to tell you this frankly, but not to urge any decision upon you."

"And I thank you, Captain Fox, and beg you to express to her my appreciation of her kind loyalty. Her interest has brought me happiness even here. But I cannot accept the terms offered by Colonel Pickney. I will give him no information relative to General Jackson's command. My former decision was final. My life is of small account in this struggle, and its preservation would be no excuse for treachery."

Fox grasped my hand firmly in both his own.

"I am glad of your decision, Wyatt," he said earnestly. "I had no doubt of what it would be; nor do I think she had. Is there anything I can do? Any comfort I can add?"

"Only one; I would ask Miss Harwood a single favor. It is that she write my mother the conditions of my death—a woman can do that best."

He took an envelope from his pocket, and a pencil.

"How should such a letter be addressed?"

"Mrs. Margaret Wyatt, Goldsboro, North Carolina."

"I can promise you it shall be done. I sincerely wish, Wyatt, we had met under pleasanter circumstances. This is a sad ending to what might have been a lasting friendship; I confess I have learned to like you, my boy."

"And I you, Captain Fox," I responded earnestly, feeling deeply his friendliness.

"My experiences of war have not made me bitter, and I know there are men on both sides. I am simply doing my duty, as you are doing yours, and there is no enmity between us. And, in spite of every effort at control my voice faltered, 'you will tell Miss Harwood how much her message of kindness meant to me.'"

"I certainly will, my lad—is that all? It may not be possible for me to come again."

"There is nothing else; Jackson will learn the truth through other sources—good-by, and may God guard you."

"Good-by."

Our hands clung, our eyes met, and then he turned away, without venturing to glance back; the door closed behind him, and I stood staring at it through blurred vision. I was still standing there motionless when the iron barrier opened again a few inches and the hand of a soldier pushed a tin containing food along the floor.

"Here's your supper, Johnny," growled a voice indistinctly, "an' I guess you won't be bothered any more to-night."

It was already quite dusk in the cell, but outside the grated window a campfire burned, and the red glare found way through the bars, and rendered the interior visible. I sat on the box, and choked down what food I could, endeavoring to drive away the feeling of depression in which Fox had left me. I needed now strength and courage to front the one chance left.

CHAPTER XIX.

The One Path of Escape.

THERE was absolutely nothing for me to do but wait, but it was hard to judge time. My watch had been taken from me, and I was fearful lest I choose a wrong hour for my exploit. The noise of the camp without was some guide, however, but, as the evening lengthened, a band began playing overhead, and I could hear the sound of feet on the floor above. Evidently a dance was in progress in the big court room, and for the moment my heart seemed to stop beating in a sudden fear that my plan of

escape for that night was blocked. It was the big fireplace opening into this room through which I had hoped to emerge, but I could never accomplish such hope in the midst of the dancers. And they might keep up their dancing to so late an hour as to give me no opportunity before dawn to find a place in which to elude search. Yet the noise was in my favor, if I could only be assured the chimney was wide enough above to permit of my finally reaching the roof. Once there I would discover a way down. The band was a good one, and the musicians played with energy; I could even distinguish the tapping of the leader's foot on the floor almost directly above my head. The noise made by the dancers was muffled and confused, and, while I knew there were voices talking, and could occasionally catch the sound of a laugh, the whole was merely a din, entirely meaningless. The grim incongruity of that merry party above, dancing and laughing in the bright light, and of myself in that black cell below, waiting the certainty of death the next morning, served to steel my resolve—the affair was like an insult, and I felt my blood grow hot in my veins as the strains of a waltz and schottisch mingled with the uproar of nimble feet. I would take the chance, and it might as well be now.

I could hear nothing of the guard in the corridor, although I listened intently, my ear against the iron door, during a lull in that babel overhead. It was hardly likely another inspection would be made, at least not until sentries were again relieved, probably at midnight. To my judgment this would allow me nearly three hours in which to make my effort—and surely half that time should prove sufficient. The band burst into harmony again—a polka, I remember—and I tore free the loosened support. It made an ugly bit of iron, well adapted for the purpose I had in mind. Not only could it be used as a lever, but it was no mean weapon for use in emergency.

I found the iron sheathing difficult to penetrate, and it must have required fifteen or twenty minutes to break the edge loose so as to insert the point of my wedge. The effort tore my hands terribly, but desperation gave me strength which finally pressed back the thin sheet of iron. The bar, once inserted, furnished the necessary leverage, forcing the iron to yield about the rivet heads. The operation required time, and was by no means noiseless, but the blaring of the band drowned the rasping sound, and enabled me to exercise all my strength. This opening gave me both hand and foot-hold, together with a new faith in my ultimate success. I waited between the dances, recruiting strained muscles, and, listening anxiously for any alarming sound in the corridor; only to spring again feverishly to the work the moment the band resumed playing.

Again and again I thought my effort would fail, yet the barrier yielded inch by inch, bursting from the grip of the rivets as I succeeded in achieving leverage, until I forced fully half the iron curtain backward, jamming it against the wall, and thus revealed the black opening into the chimney. It was there just as I had remembered it, and the proof brought me fresh hope, and renewed determination. There was danger ahead, yet the most difficult part of my desperate undertaking had been accomplished.

I knelt down and stared breathlessly into the yawning cavity, and thrust my head into the opening seeking for some gleam of light above. There was none, nor was there any smell of smoke. This discovery relieved one anxiety, while it brought a new problem. Had the oldtime fireplaces been permanently closed, so as to compel me to climb to the very roof in order to obtain an exit? The opening which I had uncovered was sufficiently large to permit the squeezing through of my body, and, once within the chimney I found ample space in which to explore.

(To be continued).

JUST THINK.

BY MARGARET ERSKINE.

Just think that the sky's all a-blue,
And the sun's all a golden glow;
All the clouds but a dreamland fancy;
And you will soon find it so.

Just think that the world's all a-smile,
With a welcome all loving for you;
That it dried all it's tears at your coming;
And you will soon find it true.

It's just thinking the gloom or the sunshine,
It's just living the gold or grey,

That will make us a pathway of mountains,
Or molehills to cross on the way.



Drink
Coca-Cola

because

—it is delicious
—it is refreshing
—it is thirst-quenching

—and because it is the combination of the three. That marks COCA-COLA as a distinctive beverage.

Demand the genuine and avoid disappointment.

THE
COCA-COLA CO.
Atlanta, Ga.



Whenever you see an Arrow, think of Coca-Cola

56-F

Get Rid of House Flies

Those Carriers of Typhoid and Other Dangerous Diseases.

You can do it most effectively by preventing fly-eggs from hatching. And the U. S. Dept. of Agriculture has found Powdered Borax the most effective substance for this purpose. Its application is very simple. Just sprinkle 2 ounces of

20 Mule Team Borax

(the same Borax you have always used in your home) in the garbage can each day through a flour sifter or sieve. For manure piles, apply 10 ounces of 20 Mule Team Borax to 8 bushels of fresh manure in the same manner as above, and sprinkle with water.

For Sale By All Dealers

Make Your Fortune — Grow Wheat

Now is the time for you to come to Canada where thousands of American farmers are making fortunes growing wheat. The Canadian Government now offers you your choice of 125,000 recently surveyed

Free, fertile farms

—splendidly adapted for growing wheat and mixed farming. Act quick—get your pick of the best farms.

Low rates and special stopover privileges for settlers every Tuesday. Come now. Write today for our Free Books, "Home-seekers' Guide," "Bread-basket of the World," "Peace River Country"—and any information you wish about this wonderful country.

R. P. BELL, Gen. Agent,
64 W. Adams St. Chicago, Ill.



**CANADIAN
NORTHERN RY**

When writing advertisers mention Michigan Farmer



Woman and Her Needs

At Home and Elsewhere



A Case of Criminal Negligence

WE are very proud of our American girls. We admire their independence, their ability to "take care of themselves" as we put it, and we make our boast that a girl or a woman can travel from Maine to California unmolested, protected by her sex and the chivalry of our men. Our greatest national boast is the freedom of our women, and we are justly proud of it. But like everything else American, do we not carry it too far and make of it license? To be more explicit, are our young girls not given altogether too much freedom?

We make fun of the European idea of a chaperone. Even in the so-called upper classes where the chaperone might be expected to reign she is almost unknown, or simply known to be flouted. While in the small towns and country places the very suggestion of having an older person about is undreamt of. Our girls do not need to be watched, they know how to take care of themselves, we say.

But do they? We surround them with ignorance, which we misname innocence, and turn them loose to "have a good time." They dance and drive and row and motor with boys and men of all ages from 15 to 50 years, unattended by an older woman, often unaccompanied by anyone at all except their escort. Occasionally the girl makes a confidant of her mother, more often not, and never does the mother have the entire confidence. At the most emotional time of her life, the young girl is turned out uninstructed, absolutely ignorant of the meaning of her moods and impulses, and that so many of them come through unharmed is due to the goodness of God rather than to the care of the mothers.

The girl is left to choose her own company, to pick her own husband, absolutely without advice in the majority of cases. She marries, not with any idea of what she is doing, or with any proper conception of the real meaning of love, but because it is her mating time and some one of the men she knows proposes. Then when things go wrong and divorce follows, we talk wisely about our great national evil, divorce.

The national evil is not divorce. It is paternal negligence. If we would tell our children what marriage really means, if we would watch them as carefully through the teens and early twenties as we do in babyhood, the divorce evil would be mitigated. Nine-tenths of the bad marriages could be averted by a little diplomacy on the part of the parents. But the diplomacy must begin early. In fact it must be started in the child's infancy and kept up through life.

It should start when the 15-year-old daughter first begins to talk about beaux. Gently, but firmly, her youthful mind should be guided into a saner channel, for 15 years is far too tender an age to think of beaux, much less to accept attentions from boys or men of any age. The wise mother will plan different interests and absolutely refuse to allow so young a girl to entertain young men callers.

The watchfulness will follow farther along the years to the time when the daughter, a little older grown, is planning for moonlight drives and walks alone with a male escort. A little tactfulness on the mother's part can make

the excursion into a party of six or eight, with an older person in the group. The daughter should be taught, too, that there is a happy medium between prudery and the familiarity which breeds contempt.

The American girl is all right, of course. She is ours and we have to swear by her. But she might be improved upon. Careful pruning is as necessary to make a perfect girl as to make a perfect shrub or tree, and it needs to be kept up longer. There never is a time when the mother can place her daughter entirely upon her honor and cease to watch her. She can let the daughter think she is on honor from a tender age, but the maternal espionage must never cease if there are to be no regrets.

DEBORAH.

KEEP SWATTING THE FLY.

BY H. A. BEREMAN.

It is estimated that one person in five dies of some disease that is carried by the fly. A hundred thousand Americans die every year of typhoid fever, and the common house fly is the principal carrier of this dread scourge. During the Spanish war flies killed more soldiers than Spanish bullets. In spite of the more favorable surroundings generally, typhoid is more prevalent in the country than in the city.

Every year the public is cautioned repeatedly against this danger by publications telling in specific terms how to control the fly plague. Yet the people at large, especially the people living in villages and rural districts, do very little towards preventing fly contagion. Most folks are too busy with their personal or commercial affairs; they are apathetic and seem to believe

that "what you don't see don't hurt you." After a beloved daughter or a stalwart son has been laid away as a victim of typhoid or some other fly disease it is too late to take precautions.

The one right procedure in this matter is for all high-minded and public spirited persons to help educate all of the people in the life history of the fly and to emphasize the need for prevention as a means of preserving the health.

A fly lays 500 eggs usually in stable manure but often in human excrement and other forms of filth and decaying matter. The eggs hatch into maggots and in 10 to 15 days they mature into adult flies; from 10 to 13 generations are produced in one season. Thus one fly we neglect to kill early in the season may produce millions by autumn.

Not only are flies propagated in filth but being universal scavengers they feed on filth as readily as upon human food. They carry germs of disease on their legs, deposit them on human food and thus spread disease. In addition they are a tremendous personal annoyance.

We can not make "musca domestica" wipe their feet before coming into the house but we can destroy their breeding places or screen them away from the flies; we can kill them with fly-paper, traps and the swatter; we can place wire netting in the windows and doors of our dwellings to keep the flies out; we can protect human food by screens.

For the farmer this program means spreading daily all stable manure, or storing it in tight boxes or pits until ready for the fields, or spraying the manure piles with arsenate of soda to kill the maggots. It means garbage receptacles, etc. It means screening all privy vaults, cess-pools, cleaning up all filth and trash and keeping things so clean that flies will

not invite themselves to the premises.

As flies travel considerable distances it may sometimes be necessary for neighborhood clubs and co-operative associations to unite to suppress the fly evil. Legislation tending to lessen the menace from this source should be enacted.

HOME QUERIES.

Household Editor:—Will some reader give me full directions for making salt rising bread? Also how to keep fruit pies from running over in the oven?—Young Cook.

We are over-run with big black ants which were brought in with the wood. They get into every dish I put in the warming oven. Please give me some idea how to get rid of them.—A Subscriber.

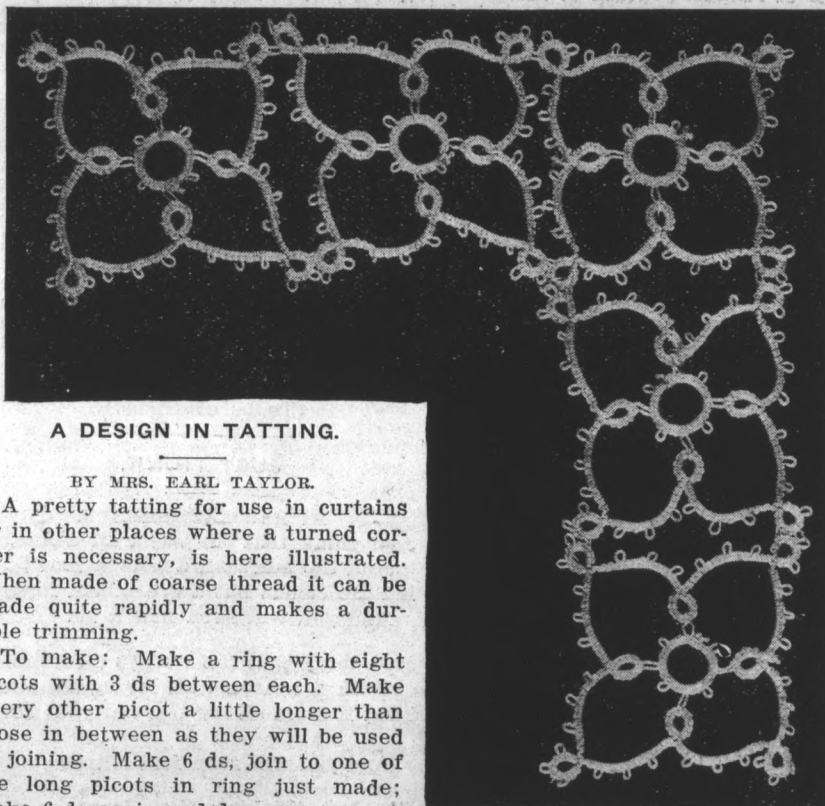
A teaspoonful of tartar emetic in a saucer of sweetened water will rid you of ants. Buy five cents worth at your drug store.

Household Editor:—In reply to Mrs. A. A., of Plainwell, for a recipe for canning strawberries without heating. Mash berries to a smooth pulp, measure, and to each bowl of berries put a bowl of granulated sugar, stir while sugar is dissolved, then can, sealing securely. Currants may be canned in the same way, being sure that every berry is crushed. I have canned both in this way and when opened they were like fresh gathered fruit. This was taken from the Michigan Farmer many years ago and I have gladly returned it, hoping it may help others as it has me. My fruit has always kept perfectly.—Mrs. L. M., Fremont.

Household Editor:—Perhaps this is the recipe for canning strawberries asked for by Mrs. A. A. Select firm, slightly under-ripe berries, wash berries, drop them into jars which have been sterilized, shake berries down but do not press them. Place new rubber on jar and fill to overflowing with heavy boiling syrup. Seal at once. Make syrup as follows: Boil one quart of granulated sugar and one quart of water together for 20 minutes, this makes one and a fourth pints of syrup. Currants and blackberries may be canned the same way. Strawberries should be canned as soon as possible after picking.—B. W.

Household Editor:—Just read the request of Mrs. A. A., Plainwell, for strawberries canned without heat. Am sending mine. Used same last winter which were canned five years ago this summer and they were just like fresh. Mash strawberries thoroughly, preferably by putting through colander. Measure, add one cup of sugar to each cup of pulp. Stir several times during the next 24 hours. Fill cans and seal. In a few weeks they will be filled with bubbles as though they were working, but do not be alarmed. That is only the nature of the stuff. Raspberries, currants, etc., may be canned the same way.—Mrs. S.

Household Editor:—The recipe Mrs. A. A., of Plainwell, asks for is as follows: Mash strawberries through a colander and add a cup of sugar to each cup of mashed berries. Put in cans that have been sterilized and dried, as water will make them spoil. Be sure to get out all the air and fill cans as full as possible, being sure lids are on tight. It is best to test the cans by filling with water and turning them upside down the day before. Wrap cans in papers and pack away



A DESIGN IN TATTING.

BY MRS. EARL TAYLOR.

A pretty tatted for use in curtains or in other places where a turned corner is necessary, is here illustrated. When made of coarse thread it can be made quite rapidly and makes a durable trimming.

To make: Make a ring with eight picots with 3 ds between each. Make every other picot a little longer than those in between as they will be used in joining. Make 6 ds, join to one of the long picots in ring just made; make 6 ds again and draw up.

Now chain 3 ds, picot three times, then chain 3 ds again. Next make a ring of 3 ds, picot, 2 ds, picot until you have 3 picots. Then 3 ds, draw up. Now make the chain of 3 ds, pi-

cot three times, 3 ds, and then another ring of 6 ds, and join onto next long picot in center and so on around. I fastened the medallions together as I made them.

in a box in a dark cool place. This recipe is in high favor with several of my friends, but I prefer them canned whole, as what appeals to the eye, appeals to the taste, too, is my theory. I hull the berries in water and drain them dry. When dry I pack them in cans and set in a warm place while I cook a heavy syrup of sugar and water. This I pour over the berries boiling hot, having a knife in the can so it will not break, and covers in hot water. Let out the air, fill very full and screw covers on tight. Have a cloth and a little warm water in a pail or tub and when cans are all in, pour on boiling water, nearly up to rubbers. Cover closely with blankets and let set one hour. If any of the covers bulge up, loosen slightly, press on top to let air out and seal tightly. Berries canned in this manner do not wither up like those cooked in cans on the stove and are pronounced delicious by all who have eaten them.—Mrs. M. K.

KOHL RABI.

BY CHARLOTTE BIRD.

Kohl rabi is a vegetable which deserves to be better known than it is to the majority of American homes. In shape and flavor it is somewhat like a turnip, but more delicate. It also somewhat resembles cabbage in that it grows in a head and has leaves which resemble degenerate cabbage leaves. It is certainly an odd-looking growth. It is cooked in different ways about like the turnip.

Its culture offers no special difficulties. In the latitude of Michigan the seed may be sown indoors in February or out of doors from late April to July, but if it is to have time to mature, not later than July 15. It will come up in from six to eight days. To do its best it requires a temperature of about 70 degrees. When large enough it should be transplanted in rows two feet apart and the plants should stand from nine to 12 inches apart in the rows.

Kohl rabi must be eaten before it is fully grown, that is, before the skin hardens. This is because age makes this vegetable too tough and fibrous for table use.

A PANSY FAN.

BY MRS. JEFF. DAVIS.

A very attractive way to plant a pansy bed is in the shape of a fan. A partly shaded corner of the flower garden is an ideal place for this. Dig up the ground, fertilize it well, make the edge a neat semi-circle, and then fill with pansy plants as follows: Place them in converging rows, coming toward the edge like the sticks of a fan. This is more effective if this is planted in a northeast or northwest corner, so that the pansy faces all turn toward the open space. This arrangement also permits of more cultivation than if the plants are scattered at random over the bed.

SHORT CUTS TO HOUSEKEEPING.

I was helping care for flowers for a funeral at one time when it was very hot. Some fine pieces were sent in but it was so warm they began to wilt and it was feared would not keep until morning. I placed them in a tub in the cellar and put over the top of the tub a sheet doubled just to cover and wrung from water as before just so it did not drip. In the morning the flowers were even fresher than when first sent and kept much better than those that had the stems in water.—I. B. M.

To clean a white Milan hat scour with pipe clay. Use a rag to rub it on with and use the clay dry. This will soon remove the "tan" from the hat and it will look nearly as good as new.—Mrs. Farmer.

A thin coating made of three parts lard, melted with one part resin and

applied to stoves and grates will prevent them rusting when not in use.—M. A. P.

Molasses Cookies.—One large cup of sugar, one cup of molasses, two eggs, one tablespoon of soda, one teaspoon of salt, one teaspoon of ginger. Mix soft.—O. C. M.

In storing your furs for the summer use a tin box. You can store them in it without dampness, moths or any destroying element. A large tin bucket with a tight fitting cover might answer the same purpose as the tin box.—M. A. P.

Our insane asylums are filled with women who "braced up" when they should have relaxed. If your nerves are at such high tension that you can't lean back, shut your eyes and let everything go.—L. M. T.

HELPFUL HINTS.

I would like to pass along some things that have come to me. First, I will tell what kerosene did for me. Last year I used pure kerosene as a spray on my onions just as they were coming up, and once later used the potato sprayer. I did not lose a dozen onions by insects. I have a paint pail half full of kerosene, stand corn cobs in it until the pail is full and use one to build a fire each time. There is no danger of an explosion.

Last summer I tried to take a grease spot out of a white dress with benzine. It did not have any effect, so I used peroxide of hydrogen on it and it cleaned it all right. A friend told me to clean rugs I should turn them face down on snow when there was a crust, and beat them. This worked fine. Of course, one has to change them to a new place often.—J. D.

MICHIGAN FARMER PATTERNS.

Our latest Fashion Book, containing illustrations of over 400 designs of ladies', misses' and children's garments in current fashions, also newest embroidery designs, and a concise and comprehensive article on dressmaking which gives valuable hints to the home dressmaker, will be sent to any address upon receipt of ten cents.



No. 1318—Boy's blouse suit with trousers. Cut in 4 sizes: 3, 4, 5 and 6 years. It requires 3½ yards of 27-inch material for a four-year size. Price 10c.

No. 1265—Child's bathing suit. Cut in five sizes: 2, 4, 6, 8 and 10 years. It requires 5½ yards of 27-inch material for the eight-year size. Price 10c.

No. 1307—Ladies' corset cover and petticoat. Cut in three sizes: Small, medium and large. It requires 3¼ yards of 36-inch material for a medium size without the ruffle, which will require 3½ yards of embroidery. Price 10c.

No. 1319—Dress for misses and small women. Cut in four sizes: 14, 16, 17 and 18 years. It requires for a 16-year size 4½ yards of 44-inch material. The skirt measures about 2½ yards at the foot. Price 10c.

Your daily bread

Should be as pure and delicious as bread can be. Women who use

New Century Flour

enjoy the keen satisfaction of knowing that their bread, cakes, pies and biscuit are as nutritious and appetizing as best quality selected spring wheat—carefully milled—can make them.

Not bleached. Insist on the sack with "Our Dainty Maid". Most grocers sell it.

General Sales Agents:

New Century Co., Detroit

With Branches at Port Huron, Bay City, Grand Rapids, Saginaw.



"OUR DAINTY MAID"

\$49.75 Buys Pipeless Furnace Ready to Set Up

Astounding! Complete Furnace at Stove Price, and as Easy to Set Up

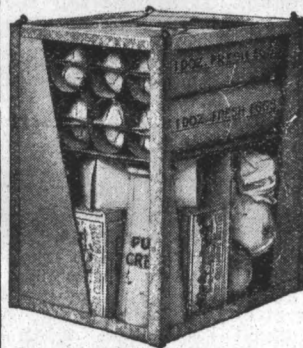
THIS is an entirely new offer from the great Kalamazoo factory. Write at once and get complete proposition with trial offer. Positively highest quality heating plant made. Set up in a jiffy—save \$40 to \$50 or more in installation and plant—no pipes except smoke pipe—one register—heats the whole house with warm air—heats every room. Price quoted is total cost—we pay freight—start shipment within 24 hours—satisfaction or money back—cash or easy payments.

Mail postal today—ask for Pipeless Furnace Circular No. 909

Kalamazoo Stove Co., Mfrs., Kalamazoo, Mich.

300,000 Families Using Kalamazoo Stoves, Ranges, Gas Stoves, Furnaces, Metal Kitchen Cabinets and Tables

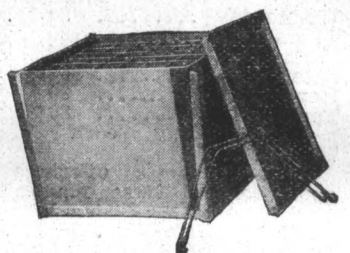
"A Kalamazoo Direct to You"
Trade Mark Registered



Weight 4½ lbs.

Parcel Post or Express Box

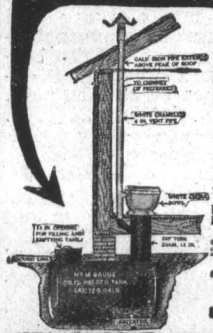
Safe. Light. Strong. Durable. Can be used repeatedly. Box to left equipped to carry safely 10 doz. eggs, or partitions for 4 doz. Eggs. Butter, Chicken, Fruit or Vegetables. Postage empty second zone 9c, filled with eggs 24c. Either style 50c. To the right a fine looking safe box equipped with common fillers to carry 12 doz. eggs, direct or by Express to market and groceries on return. Price 45c. Either box fine for picnic purposes, all kinds of Butter and Egg shipping supplies. Prices F. O. B. Saginaw, Mich., add postage for shipment. Address Dept. E.



Weight 6 lbs.

HARTLEY STEEL CRATED BOX CO., Saginaw, Michigan.

Abolish Your Unsanitary Outhouse



Don't further endanger family health with the filthy, disease-breeding outhouse, cesspool and sewer—enjoy a health-protecting city comfort—sanitary and odorless, the

Kaustine Closet System

Costs a fraction over a penny a day to operate—and no water, no sewer, no plumbing. Enthusiastically endorsed by school boards—urged by health authorities. Inexpensive, too—any man can install. Tank emptied in 20 minutes—twice yearly. For farm and village homes, schools, churches, factories. Send for particulars—our representative will call. **KAUSTINE CO., Dept. 1099 Buffalo, N.Y.**

Government Farmers Wanted. Examination Oct. 13 quarters. Write **OZMENT 17 F. St. Louis.** Good salaries. Free

Try This Lamp Free

Brightest and Cheapest of all Lights. Makes and burns its own gas from coal oil without a wick. Gives light of twenty wick lamps. Uses less oil than one. No chimneys to wash. No wick to trim. Safe. Sure. Reliable. Try a Kero Gas Lamp in your home FREE. Write for one now. Agents wanted everywhere. **The Incandescent Light & Stove Co. CINCINNATI, OHIO**

DAISY FLY KILLER



placed anywhere, attracts and kills all flies. Neat, clean, ornamental, convenient, cheap. Lasts all season. Made of metal, can't spill or tip over; will not soil or injure anything. Guaranteed effective. Sold by Dealers or sent prepaid for \$1.

HAROLD SOMERS, 150 DeKalb Ave., Brooklyn, N. Y.

BOYS WATCH.



Every boy, young or old, would be proud to carry one of these watches. It is 16 size, with a nickel case. Stem set and wind. Regular watch movement with hair spring. Guaranteed by the makers and repaired free of charge for one year, if given ordinary care. Any boy who really wants a watch can easily earn one in one afternoon.

The watch alone free for sending three subscriptions to the Michigan Farmer.

Markets.

WEATHER FORECAST.

Weekly weather forecast for week beginning Wednesday, July 21. For region of Great Lakes the weather will be generally fair and moderate temperatures likely until near the end of the week when, warm weather is probable.

GRAINS AND SEEDS.

July 20, 1915.

Wheat.—The weather upheld the price of wheat last week. Rains in Kansas and Nebraska and over the central states soaked the grain fields and delayed harvesting operations away beyond the usual time. Not only that, but a considerable damage has been done the standing grain, as well as to much of that already in shock. Only about five per cent as much new wheat has been marketed to date this year as for the corresponding period last year. Farmers in the west are also holding the grain they have already threshed, believing that better prices will be realized later on. Foreign markets also show firmness and there appears to be more interest taken by European buyers in the American crop than has been shown at any time during the past fortnight. On Monday's market there was a gain of one cent for cash and two cents for September and December wheat. One year ago No. 2 red wheat was quoted at 81½¢ per bushel. Quotations for the past week are:

	No. 2	No. 1	
	Red.	White.	Sept.
Wednesday	1.28	1.25	1.09½
Thursday	1.33	1.30	1.10½
Friday	1.28	1.25	1.12
Saturday	1.28	1.25	1.11
Monday	1.29	1.26	1.13
Tuesday			1.09

Chicago.—July wheat \$1.11; Sept. \$1.06; Dec. \$1.08½.

Corn.—Crop conditions constitute the important factor in maintaining corn values, although the steady tone of wheat has supported the bulls in their efforts to keep prices up. The crop in the big corn states is from two to three weeks late, so that unusual weather conditions will have to prevail to allow the crop to ripen before frost. There is an improvement in the quality of the grain coming to market. One year ago No. 3 corn was quoted locally at 74½¢ per bushel. Quotations for the week are as follows:

	No. 3	No. 3	
	Mixed.	Yellow.	
Wednesday	80	81	
Thursday	80	81	
Friday	80	81	
Saturday	80½	81½	
Monday	80	81	
Tuesday	80½	81½	

Chicago.—July corn 77c; Sept. 72.5c; Dec. 63.1c.

Oats.—Moderate offerings and a good demand have maintained the market on a firm basis. Weather conditions are delaying the harvest along the Ohio valley and in many sections the crop has been damaged by wind and excessive moisture. One year ago the price of standard oats was 39½¢ per bushel. Quotations for the week are:

	No. 3	
	Standard.	White.
Wednesday	56½	56
Thursday	57	56½
Friday	57	56½
Saturday	57	56½
Monday	57	56½
Tuesday	57	56½

Chicago.—July oats 48.8c; Sept. 37.6c; Dec. 39.2c.

Rye.—This grain is inactive and the price for cash No. 2 has declined to 98c per bushel; August 94c.

Beans.—The demand for beans is light; prices nominally steady with last week. Detroit quotations: Cash \$2.80; Aug., \$2.90. Chicago trade quiet and steady. Pea beans, hand-picked choice, quoted at \$3.18@3.25; common \$3@3.15; red kidneys \$3.25@3.65.

Clover Seed.—Prime spot \$8.30; October \$8.50; alsike \$8.65.

Timothy Seed.—Prime spot \$3.

FLOUR AND FEEDS.

Flour.—Jobbing lots in one-eighth paper sacks are selling on the Detroit market per 196 lbs., as follows: Best patent \$6.50; seconds \$6.20; straight \$6; spring patent \$7.10; rye flour \$6.50.

Feed.—In 100-lb. sacks, jobbing lots are: Bran \$25; standard middlings \$29; fine middlings \$32; cracked corn \$28; corn and oat chop \$30 per ton.

Hay.—Market is firm. Carlots on the track at Detroit are: No. 1 timothy \$20.50@21; standard \$20@20.50; No. 2, \$18.50@19; light mixed \$20@

20.50; No. 1 mixed \$18@18.50; No. 1 clover \$14@15.
New York.—Firm. Prime \$26.50; No. 1, \$22.50; No. 2, \$24.50; shipping \$20 per ton.
Straw.—Rye straw \$9@9.50; wheat and oat straw \$7@7.50 per ton.

DAIRY AND POULTRY PRODUCTS.

Butter.—Market is easy on account of heavy offerings. Prices lower. Extra creamery 25c; firsts 24c; dairy 21c; packing stock 18c.

Eggs.—Prices are lower as a result of large offerings. At present prices business should improve. Quotations for the week 25c per pound.

Chicago.—A steady feeling exists at prices about 1c lower than last week. A moderate business is being done, extras and lower grades selling best. Extra creamery 25½¢; extra firsts 24½¢; firsts 23@23½¢; seconds 21@22½¢; packing stock 19c.

Poultry.—Market steady and supply moderate. Hens are 1c lower; others unchanged. Live.—Broilers No. 1, 23@24c; No. 2, 20@21c; hens 14@14½¢; ducks 15@16c; geese 10@11c.

Chicago.—Demand is fair and offerings are moderate. Prices are unchanged. Fowls, good weights 13c; spg chickens 19c; ducks 13c; young ducks 14@15c; geese 8@9c; spring geese 14@15c; guinea hens \$2.75@3 per dozen.

Eggs.—Market steady on account of light offerings. Prices lower. Fresh stock sells at 18c per dozen.

Chicago.—Market firm with prices higher; conditions favor sellers. Miscellaneous lots, cases included 14@17c; ordinary firsts 16¼@16½¢; firsts 17¼@17½¢.

Veal.—Quoted steady at 13@13½¢ for fancy, and 10@11c for common.

FRUITS AND VEGETABLES.

Cherries.—In demand at \$2.25@2.50 per bushel.

Chicago.—Ruling prices favorable to buyers. Montmorency 16-qt. case 90c; others 75c; sweet \$1.25@1.50.

Raspberries.—Steady and in demand. Reds are quoted at \$4.25@4.50; blacks at \$3@3.25 per 24-qt. case.

Chicago.—Market is steady for all kinds. Soft and mouldy hard to dispose of. Quotations: Blacks \$1.15@1.25 per 16-qt. case; in poor condition \$1; reds \$1.50@1.75 per 24-qt. case; small and soft down to \$1.25.

Blackberries.—Active at \$2.75@3 per 24-qt. case.

Chicago.—Market steady. Michigan dewberries sell at \$1.25@1.50 per 16-qt. case; 24-qt. Indiana Eldorado are quoted at \$1.50@1.65.

Gooseberries.—Are selling well at \$2@2.25 per bushel.

Chicago.—Large, sound berries are in good demand. Downings sell for \$1@1.25 per 16-qt. case; others 90c @ \$1.

Currants.—Cherry currants sell well at \$2.75 per bushel; smaller kinds at \$2@2.25.

Chicago.—Demand is good for large desirable goods. Cherry currant, 16-qt. case, \$1@1.15; others 75@90c.

WOOL.

Boston.—With the broadening out of the market for woolen goods the trade in raw material becomes firmer and prices are advancing for nearly all grades. The strength of the market is more pronounced by reason of the fact that everyone concerned is optimistic of the future, and consequently holders are not pushing sales. There seems, however, to be less speculation than usual. Wools from the fleece states are arriving at the eastern markets, but not in the usual volume. Domestic demand for fine clothing and repeat orders have forced manufacturers to go into the market for the better grades. Michigan unwashed delaines are quoted here at 28@29c; do. combing 29@35c; do. clothing 24@30c.

GRAND RAPIDS.

Local fruit growers estimate that 150,000 bushels of peaches will be sold on the Grand Rapids market from local orchards this season. The crop of Duchesse apples will also be heavy. A fair yield is reported of plums, pears and grapes and half a crop of winter apples. Sour cherries are bringing around 75c per half-bushel; red raspberries \$1.60 per crate; blackcaps \$1.30; gooseberries \$1; currants 75c. New potatoes are worth around 50@60c; green peas 40@50c; wax beans 65c.

DETROIT EASTERN MARKET.

Produce moved fairly well on the Eastern market Tuesday morning at prices that were only fairly satisfactory to the sellers. Cabbage has been a disappointment this year, owing to the large southern crop. It is now selling here at 25c. New potatoes were offered at 65c; lettuce 15c; butter beans 75c; peas 60@65c; red raspberries 22@25c per qt; blacks 15c;

eggs 28@30c per dozen; loose hay is offered sparingly and brings around \$22 per ton.

LIVE STOCK MARKETS.

Buffalo.

July 19, 1915.

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

Receipts here today as follows: Cattle 148 cars; hogs 92 d. d.; sheep and lambs 15 d. d.; calves 1200 head.

With 148 cars of cattle on our market here today and 16,000 reported in Chicago, all the strictly dry-fed and near dry-fed sold full strong, quality considered, and in some instances a dime higher than last week. The common and half-fat slippery kind of all grades and description were dull and unevenly lower from 15@25c per cwt. We think there is no doubt but what the good quality, good fat cattle, and especially the weighty kind, will sell strong and probably somewhat higher from this time on, but we once more want to caution our shippers about the thinish half-fat kinds, as at the close of the market there were probably 20 cars of that kind of cattle left unsold.

We had a moderate supply of hogs here today, about 90 double decks, and a rather slow and 5@10c lower market on everything but pig stuff. Heavy hogs again ruled dull; choice grades weighing around 300 lbs. quotable at \$7.75@7.90; 250 average, around \$8@8.10, and light mixed weighing from 180 up to 210, \$8.20@8.25; the lighter weights from \$8.30@8.35; pigs and lights \$8.40@8.50; roughs generally \$6.50; stags \$5@5.75. Late market was dull on everything excepting the light stuff and several loads of medium weights going over unsold.

The market was slow on lambs and sheep today, with prices steady with the close of last week; most of the choice lambs selling at \$8.50. Look for steady prices last of week with moderate receipts.

We quote: Lambs \$8@8.50; cull to fair \$6@7; yearlings \$6@7; bucks \$3@4.50; handy ewes \$5.50@6; heavy ewes \$4.50@5; wethers \$6@6.75; cull sheep \$3@4; veals, choice to extra \$10@10.25; fair to good \$7@9.50; heavy calves \$5@7.50.

Chicago.

July 19, 1915.

Cattle. Hogs. Sheep.
Receipts today..16,000 45,000 12,000
Same day 1914 16,365 32,555 30,389
Last week.....42,621 98,660 55,453
Same wk 1914..39,977 144,474 74,573
Shipments from here last week included 7,163 cattle, 25,956 hogs and 679 sheep, comparing with 14,316 cattle, 17,718 hogs and 8,187 sheep for the same week last year. Hogs received averaged 236 lbs.

Cattle sold at steady prices today, the offerings being extremely small for Monday. Unusually large hog receipts sent prices down about 15c, with sales at \$6.65@8. Despite the light offerings, buyers were trying to get lambs 15c or more lower, and at a late hour little was done.

Cattle receipts last week were unduly stimulated by the recent sharp advances in prices for corn-fed lots, but, unfortunately, the arrivals came very largely under the undesirable class, there being a generous representation of grassy and warmed-up cattle. The small proportion of choice to fancy cattle, whether long-fed weighty steers or well finished little yearling steers and heifers, sold all right, recent high figures being repeated, but the other descriptions sold slowly at steady reductions in prices. Steers sold largely at \$8.75@10.10, with the best class bringing \$10@10.40 and the best yearlings taken at \$10@10.25. Good steers went at \$9.50@9.95, medium steers at \$8.80@9.45, warmed up steers at \$8.10@8.75 and the lower grade light-weight grassy lots at \$6@8. Yearling steers sold at \$9.50@9.95 for a good class, with sales all the way down to \$7.75@8.75 for the cheaper class of grassy yearlings, and the lowest-priced steers were of the feeder type, these having no outside competition. Butcher cows and heifers had an outlet at \$5.15@9.75, with superior little yearling heifers selling much the highest and the best cows taken at \$7@7.75. Cutters went at \$4.65@5.10, canners at \$3.25@4.60 and bulls at \$5@7.75. Calves found buyers at the usual wide range of prices, with sales ranging at \$5@11 per 100 lbs. The market for cows was on the whole unsatisfactory, especially for the liberal percentage of grassy lots, while the offerings of choice heifers were much too small to go around. With reference to the outlook ahead, it may be said that everything, so far as can be seen, after careful investigation, looks highly favorable for a long maintenance of extremely high prices for well-bred and well fattened cattle, and there is no sense in letting thin and grassy cattle go to market, so long as owners have fine pasturage and enough corn to feed sufficiently. Grass and partly fattened steers closed 40@75c lower than a week earlier.

grassy cows showing irregular declines.

Hogs have undergone the usual daily fluctuations for still another week, alternately declining and rallying in accordance with supply and demand. Whenever the market goes much lower fewer swine are shipped from country points, and this naturally results in advances, the tendency of the best light shipping hogs being to get back to near \$8 after breaks. Naturally, the marked improvement in the eastern shipping demand in recent weeks is a powerful bullish factor. Recent receipts of hogs averaged 238 lbs., comparing with 234 lbs. a week earlier, 240 lbs. one year ago and 243 lbs. two years ago. At times heavy and mixed lots of hogs have undergone the largest advance. The general run of pigs sold at the lowest prices seen since April, but the top prices for the heavier pigs was not much below the best prices of the year. During the latter part of the week small receipts sent prices up to a point that was the highest of the year, Saturday's sales ranging at \$7@8.15, while pigs sold at \$6.25@8. The best heavy hogs brought \$7.95.

Lambs make up most of the daily offerings, including natives and range spring lambs from Idaho and Washington, with range yearlings offered in moderate numbers. Native ewes and bucks are in limited supply, and wethers are scarce. During the past week buyers scored some big victories over sellers, knocking off prices severely. No shipping demand existed worth mentioning, and local packers had things pretty much their own way. At last the ranges are furnishing the greater part of the receipts of lambs and yearlings. There was a decline during the week of \$1.50 per 100 lbs. for most fat lambs, while yearlings were off \$1, but matured ewes were scarce and firm at \$5@6. Cull ewes brought \$2.75@4.50, yearlings \$5.75@7.50, wethers \$5.75@6.75, bucks \$4@4.75 and lambs \$5.50@8.25.

Horses were in smaller domestic and foreign demand last week, and although receipts have fallen off a good deal, some weakness was noted in values. War horses sold at \$135@200, good to prime drafters at \$240@285, chunks at \$165@235, farm horses at \$100@135, farm mares at \$140@175 and inferior horses down to \$75. Drivers sold usually at \$100@200.

CROP AND MARKET NOTES.

(Continued from page 77).

generally good. Not many beans are planted. The apple crop looks good so far. Butter 25c; cream 22c; eggs 17c; hogs \$6.80; corn 65c; oats 45c; chickens 10c.

Kansas.

Smith Co., July 12.—There has been an abundance of rain and prairie hay promises a good crop. The first cutting of alfalfa was heavy, and a very good second crop is about ready for cutting. Wheat is good. Corn small owing to cool weather. Potatoes are good. What fruit is grown here will bear fairly well. Wheat, new \$1.15; fat steers \$6.25@6.50; hogs \$6.50; potatoes \$1.10; butter 20c; butter-fat 21½c; eggs 13c.

Washington.

Klickitat Co., July 10.—Clover yielded two tons per acre, alfalfa three tons. Condition of grain crops good. Corn, potatoes and beans poor. The prospects for early and late apples, pears, peaches and plums very good. There is a big demand for fruit of every kind. Logan berries \$1 per 24-qt. crate; blackberries \$1.50 per crate; Lambert cherries 10@12c per pound; wool 20c; milk 10c per quart; butter-fat 30c per pound.

Colorado.

Weld Co., July 14.—First cutting of alfalfa poor, but good prospects for second cutting. Small grains better than usual. Corn looks good; potatoes and beans good. No fruit except berries owing to late frosts. Cabbage heading nicely; early peas marketed. Butter 25c; butter-fat 30c; eggs 17c; potatoes 2½c per pound.

Missouri.

Vernon Co., July 12.—Timothy good but too wet for haying. Corn looks fairly well on well drained ground. Wheat not cut yet and some fields will be a total loss. Oats are being harvested. Wheat \$1.25; corn 70c; oats 40c; hay \$7; spring chickens 17c; butter 20c; eggs 13c; butter-fat 23c.

Ferry Co., July 12.—Timothy heavy; first crop of red clover light; second crop of alfalfa below average. Wheat about 30 per cent of a normal crop. Early corn looks fine, except on low ground. Potatoes a little better than usual. Beans not grown extensively. A good apple crop but not many pears; plums fair. Wool 26c; milk 20c per gallon; butter-fat 23c.

It is expensive exporting cattle from this side of the Atlantic to Europe, there being inadequate steamer space, and a rate of \$60 per head is likely to check the foreign shipments to some degree.

THIS IS THE FIRST EDITION.

The first edition is sent to those who have not expressed a desire for the latest markets. The late market edition will be sent on request at any time.

DETROIT LIVE STOCK MARKETS.

Thursday's Market.

July 15, 1915.

Cattle.

Receipts 1802. There was another heavy supply of cattle on sale at the local stock yards this week and a very dull, draggy market. While extra good dry-fed steers, canners and bulls brought steady last week's prices all other grades were 25¢ to 35¢ and in some instances 50¢ lower and on Wednesday night nearly 400 were still unsold. The local demand for beef is light and butchers say they are well supplied so little improvement can be looked for in some time, and drovers should go slow for a while. Nothing new has as yet developed in the stocker and feeder situation, but it is rumored that before anything can be taken out of here other than for immediate slaughter that the yards will have to be cleaned again, and the Railway Company is not anxious to go to this seemingly unnecessary expense. The run Thursday was light, which helped out a little but did not raise prices.

Best dry-fed steers \$8.50@9; best handy weight butcher steers, grass \$7.50@7.75; mixed steers and heifers \$6.50@7.25; handy light butchers \$6.25@7; light butchers \$6@6.50; best cows \$5.50@6; butcher cows \$5@5.50; common cows \$4@5; canners \$3@4; best heavy bulls \$5.50@6; bologna bulls \$5@5.75.

Bishop, B. & H. sold Hammond, S. & Co. 25 steers av 1060 at \$8.25, 2 cow and bull av 820 at \$6; to Bresnahan 2 canners av 933 at \$4, 6 cows av 960 at \$5.25, 3 do av 990 at \$5.50, 9 do av 1060 at \$6, 2 do av 1290 at \$6.25, 4 do av 1145 at \$5.50; to Parker, W. & Co. 1 bull wgh 1760 at \$6, 2 do av 980 at \$5.60, 2 do av 855 at \$5.50, 3 do av 800 at \$5.50, 2 do av 1130 at \$6; to Heinrich 24 steers av 906 at \$7.40; to Hammond, S. & Co. 4 do av 935 at \$7.50; to Kull 22 do av 825 at \$7.25, 2 do av 965 at \$7.25; to Mich. B. Co. 14 do av 948 at \$8.10, 11 do av 1062 at \$7.75; to Sullivan P. Co. 6 cows av 1045 at \$5.75, 1 steer wgh 880 at \$7.50; to Hammond, S. & Co. 11 do av 1150 at \$7.85, 1 do wgh 1220 at \$8.50, 1 do wgh 1270 at \$8.50, 4 do av 740 at \$7.50; to Bresnahan 3 cows av 900 at \$4.80, 2 do av 900 at \$5, 3 do av 1125 at \$6, 20 do av 1141 at \$5.75, 4 do av 1104 at \$4.50, 5 do av 1104 at \$5.75, 5 do av 954 at \$5.25, 4 do av 962 at \$4, 8 do av 1030 at \$5.50, 12 do av 1025 at \$5; to Newton B. Co. 18 butchers av 823 at \$7.60, 16 do av 1128 at \$8; to Mason B. Co. 4 do av 940 at \$7; to Sullivan P. Co. 7 do av 860 at \$7; to Hammond, S. & Co. 15 do av 890 at \$6.90.

Veal Calves.

Receipts 591. The veal calf trade was active and some extra good ones brought \$11.25 on Wednesday, but the bulk of sales for good were at \$11, and medium and common from \$7@10.50. The close was strong.

Sandel, S. B. & G. sold Thompson Bros. 2 av 140 at \$10.50; to Hammond, S. & Co. 3 av 165 at \$9, 1 wgh 150 at \$11, 2 av 305 at \$10, 2 av 180 at \$11; to Sullivan P. Co. 5 av 155 at \$11.50, 6 av 160 at \$11, 2 av 145 at \$10.75; to Thompson Bros. 4 av 150 at \$10.75; to Hammond, S. & Co. 5 av 150 at \$11, 6 av 155 at \$10.50.

Sheep and Lambs.

Receipts 1604. In the sheep and lamb division lambs took a slump of 75¢@1 around noon on Wednesday, and at the close were very dull, with several bunches left unsold. On Thursday conditions were no better. Sheep held about steady. Best lambs \$8.50@9; fair do. \$7.50@8; light to common do. \$4.50@5.50; yearlings \$6@7.50; fair to good sheep \$4.50@5; culls and common \$2.50@3.50.

Sandel, S. B. & G. sold Hammond, S. & Co. 17 lambs av 80 at \$9.50, 5 do av 55 at \$7.50, 4 sheep av 130 at \$5.25, 13 lambs av 73 at \$9.75, 7 do av 65 at \$9; to Newton B. Co. 8 do av 65 at \$9.75, 16 sheep av 100 at \$4.50; to Hammond, S. & Co. 11 do av 105 at \$5, 3 yearlings av 80 at \$7.50, 9 lambs av 67 at \$9.75, 13 do av 85 at \$9.50; to Young 31 do av 65 at \$9.25, 15 do av 75 at \$9.25, 8 yearlings av 75 at \$7.50, 31 lambs av 65 at \$9.

Haley & M. sold Thompson Bros. 19 lambs av 65 at \$10, 2 sheep av 112 at \$5.

Roe Com. Co. sold Barlage 12 lambs av 55 at \$8, 16 do av 60 at \$7, 25 do av 80 at \$9, 5 sheep av 160 at \$4.50.

Hogs.

Receipts 3819. In the hog department the trade was a trifle better than on Wednesday, all grades selling at \$7.70@7.75.

Friday's Market.

July 16, 1915.

Cattle.

Receipts this week 2017; last week 1842; market very dull; dry-fed canners and bulls steady; others 25¢ lower or 50¢ to 75¢ lower than last week.

Best dry-fed steers \$8.50; best handy weight butcher steers, grass \$7.50@7.75; mixed steers and heifers \$6.50@7.25; handy light butchers \$6.25@7; light butchers \$6@6.50; best cows \$5.50@6; butcher cows \$5@5.50; common cows \$4@5; canners \$3@4; best heavy bulls \$5.50@6, bologna bulls \$5@5.75.

Veal Calves.

Receipts this week 751 last week 863; market steady. Best \$11; others \$7@10.50.

Sheep and Lambs.

Receipts this week 2103; last week 2075; market very dull; lambs 75¢@1.50 lower than last week; sheep steady. Best lambs \$8.50; fair lambs \$7.50@8; light to common lambs \$4.50@5.50; yearlings \$6@7.50; fair to good sheep \$4.50@5; culls and common \$2.50@3.50.

Hogs.

Receipts this week 4971 last week 6934; heavies \$7.75; yorkers \$8.

Veterinary.

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

Cow Gives Bloody Milk.—We have a cow that came fresh one week ago that gives bloody milk from one fore-quarter. M. O. M., Wayne Co.—Your cow bruised udder and if you will ascertain the cause and remove it, she will soon get well.

Injured Hock.—We have a yearling colt which, when two months old jumped from a six-foot gangway, injuring hock which has left a bunch on fore part of hock and the remedies we have applied fail to reduce it. D. H. G., Owosso, Mich.—Apply one part iodine and nine parts lard to bunch once a week.

Chronic Scours.—My eight-year-old mare has scoured all summer and fecal matter which passes from her has an offensive odor, but her appetite is good. She is losing flesh; our local Vet. filed her teeth. W. T., Ortonville, Mich.—Give your mare 1 dr. of dried sulphate of iron, ½ oz. ground ginger and ½ oz. hyposulphite of soda at a dose three times a day. An animal of this kind should not be driven faster than a walk.

Navel Disease.—What is the cause of navel disease? Is it hereditary, or is it caused by unsanitary condition of stable? There are many cases of it in this locality and I would like to know if it can be prevented. S. G., Jeanerette, Mich.—Navel disease is the result of bacterial infection entering the circulation of young colts through the umbilical cord; therefore, to prevent this infection mares, cows, sows and ewes should give birth to their offspring in a clean sanitary place; furthermore, the navel cord of every young animal should be treated promptly after birth and the cord of colts and calves should be tied with a silk or linen string dipped out of one part carbolic acid and nine parts of glycerine or olive oil. A healing solution of some kind should be applied to navel once or twice a day until it heals. It is needless for me to repeat every week or two treatment for this ailment. Clippings should be made of formulas that are useful, and filed for future reference and use.

Indigestion.—What can be done for a mare which I think is wormy and passes thick urine? R. P. T., Cedar Springs, Mich.—Mix one part ground worm seed, two parts powdered sulphate iron, two parts salt and four parts ground gentian and give her a tablespoonful at a dose in feed twice daily.

LIVE STOCK NEWS.

Now that the foot-and-mouth disease is getting under control in all parts of the country, an early normal movement of cattle is expected, and farmers owning well-bred beef cattle are turning their attention to preparing fat stock for the coming International Live Stock Exposition in Chicago. A good showing of fat cattle is expected, and the great shortage of prime beefs is almost sure to result in the auction sales reaching high prices.

Armour & Co. have opened a new three million dollar packing plant in Argentina, built of steel and concrete, with a cattle killing and packing capacity equal to the Armour packing plant in Chicago. It also will handle hogs and sheep. Its products will be carried on 10 refrigerator steamers to New York and London. Slaughtering and packing will be carried on under the rules approved by the United States Department of Agriculture. Lack of sufficient ocean steamer space has checked the exportation of

horses purchased by the Allied powers of Europe, and a short time ago it was learned that the British government was feeding some 35,000 horses at the various concentration points it maintains in the United States. Of late the French government has been buying horses freely.

The Chicago cattle and hog markets are undergoing a widening out of prices because of the excessive proportion of grass-fed consignments and a decreasing percentage of prime corn-fed offerings. Prime weighty steers and superior little yearlings are scarce and soaring to extremely high prices, with the recent top at \$10.40 per 100 lbs., while grass cattle sold extremely low. A similar showing is made in the hog trade, with large arrivals of fattened sows.

The extraordinary scarcity of sheep and lambs in the country fully accounts for the unprecedentedly high prices that have prevailed of late, although following booms in the market there have been the customary reactions, as the packers held back after filling pressing orders and refused to make further purchases except on reduced prices. Chicago is getting steadily increasing supplies of Idaho spring lambs, these usually arriving in big bunches, and limited numbers of shorn lambs and sheep are coming from that important sheep state. This is the season of the year when most of the marketings from sheep districts are made up of spring lambs, and sheep are offered sparingly, with clipped native ewes mostly offered and these are far from numerous. Not long ago a shipment of eight double-decks of Idaho grass spring lambs that averaged 77 lbs. reached the Chicago stock yards, where a buyer paid \$10.60 per 100 lbs. for the lot. Their weight is believed to be close to the high record for Idaho springs at the time they were sold, and the price was high, although later the price for prime spring lambs soared still higher. Certainly the weight shows a high record for June. The big packing firms have stationed buying agents in Louisville, as is their yearly custom, and they are shipping liberal supplies of southern spring lambs direct to the Chicago plants.

SAVE YOUR CORN



Get it now. Have it ready when you need it. It can't be beat in quality. Nothing as good on the market for the price. Shipped on approval to your station. Write Today. Say you are interested. We'll do the rest.

THE INDEPENDENT SILO CO.
2329 University Ave., St. Paul, Minn.

Jack Frost will be after it. If he gets it your time and labor are practically wasted, and profits gone. The safest, the best, the surest way to prevent this is to erect an

INDEPENDENT SILO

For Sale—Rebuilt Machinery

20 H. Pitts traction engine, 20 H. Stevens, 21 H. leader, 20 H. Rumley, 18 H. Russell, 18 H. Port Huron, 18 H. Pitts, 17 H. Frick, 16 H. Gaar-Scott, 16 H. Pitts, 16 H. Huber, 28" Pitts, grain chresher, 30" Port Huron, 30" Pitts, 30" Advance, 32" Huber, 32" Advance, 34" Pitts, 17x22 belt power Volvetering hay press, 17x22 Ohio hay press, and many others. Write us for complete rebuilt list.

THE BANTING MACHINE CO.
114-124 Superior St.,
Toledo, Ohio

SAVE YOUR VETCH SEED by using a fanning mill mesh that will remove nearly all of the eye from the vetch. Can be used in any mill. Price \$2.00 and up according to size. Also vetch seed and inoculate soil for vetch for sale. E. B. FOLLETT, Hale, Michigan.

LILLIE'S IMPROVED GROENE WHEAT A vigorous, red, bearded wheat, very stiff straw, and of good milling qualities, a good yielder, write for sample and prices.

COLON C. LILLIE, Coopersville, Michigan.

Consulting Farm Management Specialist M. A. C. '95. 20 years of successful Farming, Live Stock, Alfalfa and special farm craft. Let me assist you to increase your profits. Services reasonable. J. S. Mitchell, Holly, Mich.

We are commission merchants
Poultry, Calves, Eggs, Fruits and Vegetables. Will be pleased to quote market on request. When writing state what you want quotations on.

HAY OUR NEW LOCATION— 623-625 Wabash Bldg., Pittsburgh, Pa.
Daniel McCaffrey's Sons Co.

FARMERS—We are paying from one to three cents above the highest official Detroit Market quotation for your eggs shipped direct to us by express. Write us for information. It will pay you. American Butter & Cheese Co., Detroit, Mich.

FRUIT Growers, we want your entire crop. Highest market prices. Write for stencil. THE E. L. Richmond Co., Detroit, Mich.

CULL BEANS FOR FEED. Write if you can use a car or less. YOUNG-RANDOLPH SEED CO., Owosso, Mich.

Good Feed—Cheap. Salvage grains. The Bartlett Co., Jackson, Mich.



Developed Under Racing Conditions

That means a stream of sparks so rapid and constant as to be almost a steady flame.

A series of explosions, quick and sharp, beat upon the spark plugs like the blows of a trip hammer.

When you meet emergency conditions and subject your motor to exceptional speed or load strains, you must have dependability.

You have it absolutely if your spark plugs are Champions.



Champion endurance—reliability—dependability—is developed by repeated testing under just such strains in the motors they are built to serve.

75% of all American made motor cars, stationary and traction engines are equipped when new with Champion Spark Plugs.

Do not accept a substitute. There's a Champion specially designed for every motor. Be sure to get the right Champion plug for your car.

The Champion Guarantee—

Complete satisfaction to the user. Free repair, replacement or money back.



Champion Heavy-Duty ½ inch, \$1.00

All Studebaker Cars are equipped at the factory with this plug.

Champion Spark Plug Co.
508 Upton Ave., Toledo, O.

Farms and Farm Lands For Sale

Lake View Farm

215 Acres, 20 Cows, Tools.

Owner forced to sell has just reduced price \$1000 to move it at once; remarkable bargain; delightfully situated near all conveniences, overlooks large beautiful lake; rolling fields out 75 tons hay besides other crops, spring and brook watered pasture for 35 cows, 40 acres wood; fine buildings; 10-room house, running water, 70-ft. basement, barn, big horse barn, tool house, maple shade; if taken now you get 20 cows, two 3-year-old heifers, 3 yearling heifers, lot of machinery for only \$7700, easy terms; full details and traveling directions, page 30, "Strout's Farm Catalogue 38," write today for your free copy.

F. A. STROUT FARM AGENCY,
Station 101, University Block, Syracuse, N. Y.

FARMS, GOOD, CHEAP, PROFITABLE

UNUSUAL OPPORTUNITIES NOW

State Board of Agriculture, Dover, Del.

46 ACRES, new 8-room house with bath room heated by furnace, barn 32x72, one mile from town, ½ mile from good school, 40 rods from electric R. R. crossing and milk station, to phone connection, rural route, one acre berries, land nearly all tilled. W. CROOK, S. Rockwood, Michigan.

400 Acres, 30 Choice Cows, 3 mowers, 2 rakes, 13 barns, fine house, large barn cost about \$4,000 to build, new henry, 14x40, sap house and evaporator, fruit. Timber worth \$3,000. Write for particulars of this great money maker. It's good as GOLD. Price for all \$12,000; cash \$5,000. HALL'S FARM AGENCY, OWEGO, TIAGO CO., NEW YORK

FARMS WANTED—We have direct buyers. Write describing property, naming lowest price. We help buyers locate desirable property Free. American Investment Association, 10 Palace Bldg., Minneapolis, Minn.

WHY PAY RENT when you can buy the best farm land in Michigan at from \$12 to \$20 an acre on easy terms. Write for particulars, STAFFORD BROTHERS, Owners, 15 Merrill Bldg., Saginaw, West Side, Mich.

FREE LAND: Another distribution of choice land, part of Demonstration Plantation, the SHOW plantation of the South, FREE to people having it improved within five years. Need never live on the land. Address Commissioner H. L. Holmes, Block 163, Calvert, Alabama for particulars.

Tennessee Farms. 58 acres; 40 acres bottom, dwelling and other improvements. Five mares from County Seat. Similar bargains. See them with crops on them. Free list. Jenkins & Son, Huntingdon, Tenn.

FARM for sale—two hundred acres, thirty miles from Detroit, under good state of cultivation and good buildings. F. W. PARK, 246 Lothrop, Detroit, Mich.

SEND DESCRIPTION OF YOUR FARM OR RANCH! We have cash buyers. Don't pay commission. Write NATIONAL REAL ESTATE EXCHANGE ASSOCIATION, Dept. 4, Peru, Illinois.

FOR SALE—In Newaygo County, fine fruit and dairy farm, F consisting of 280 acres. For particulars write the owner, WM. RUNTOON, R. R. 1, Twin Lake, Michigan.

Farm Commerce.

Catering to the Market

A Trait of Human Nature that the Farmer Must Recognize Before He Can Market His Products to the Best Advantage.

THE successful marketing of farm products is a matter of satisfying the wants of the trade. The producer must first learn to satisfy entirely, if possible, the class of consumers with whom he is dealing. There is an element of human nature which market men have been quick to exploit but which farmers as a class have utterly ignored. By nature most individuals want to be pleased. They know what they want and know when they get what the want. The successful salesman caters to this attribute of human nature quite as much as to the actual needs of the consumer. It seems queer but it is true, nevertheless, that farmers have failed to grasp this fact which is an important point in a solution of the marketing problem. If a consumer wants Danish Ballhead cabbages, do not try to palm off the Spanish Flathead upon him if you want to keep his trade. He probably knows what he wants or he would not have asked for this particular variety.

Catering a Factor in Selling.

This statement is conservative—thousands of enterprises have failed, not because their product was lacking in merit but it failed to satisfy the class of people with whom it must necessarily find sale. All successful marketing depends upon catering. Those Chicago meat markets which supply a high class of trade would not think for a single moment of buying the cheaper cuts of beef. The butcher well knows that his trade wants sirloin and porterhouse steaks and it would not be satisfied with a chuck steak. On the other hand, those markets that cater to a poor class of trade could not satisfactorily use the expensive cuts.

The judgment of the ultimate consumer is the best criterion of how well a product has met his needs. Those brands of goods which are popular are for the most part, those brands which have satisfied the needs of the consumers. Of course, we must consider the advertising propaganda which may be said to educate consumers as to what they want.

Good Judgment Must be Used.

The farmer must cater to the trade which he attempts to supply and the success of his marketing operations is measured by the completeness with which he satisfies the wants of his customers. California fruit growers would not think of wrapping individually the oranges which they dispose of on the local market. The trade will not pay the price. On the other hand, the Michigan apple grower who supplies a local demand can not profitably wrap his apples individually but should he be catering to a Georgian apple market, the extra wrapping would be justified by extra profits and sales. Apples are not a common crop in Georgia and because of their scarcity, the fancy packs would be welcome.

Respect the Views of the People.

The egg market illustrates a more common example of meeting explicitly the calls of the consumers. Some markets will pay a premium of from two to four cents per dozen on white eggs, while others will pay more for brown eggs. Poultrymen who supply the New York trade would be foolish to keep a breed of chickens that lays brown eggs. The New York egg customers seem to think a brown-shelled

egg is less nutritious than a white-shelled one and so they are willing to pay more for a dozen white eggs than for a dozen brown ones. Now, the Boston people have been subjected to a different sort of advertising. Their views regarding the proper color of egg shells are just as pronounced as are those of the New York people. Boston egg consumers deem a brown-shelled egg more palatable than a white-shelled one. So there you are. These two markets have their particular requirements as to the color of eggs that are sold upon them.

While the poultryman may know that the quality of the egg is in no way dependent upon the color of the shell, he must respect the views of the people who buy his product. The Massachusetts poultryman would be foolish if he attempted to foist a lot of white-shelled eggs upon the Boston market. The place to sell white-shelled eggs is in New York and the place to sell brown-shelled eggs is in Boston.

A Well-known Example.

The history of American agriculture embodies two very striking examples where a class of producers have entirely cut themselves off from a good market by ignoring entirely the demands of the trade. One must understand that as people are educated their demands will differ, and the watchful market man keeps an observing eye upon all these changes as they affect the demand for his product.

A well-known example of a changed demand without a changed supply is the case of the Clydesdale horse breeders. There was a time when Ameri-

can breeders did not object to the great quantities of so-called "feather" upon the legs of the Clydesdale horse. Later they began to demand those Clydesdales having few or no "feathers." The Scotchmen who bred the bulk of the individuals of this breed paid little if any attention to this demand of the American trade. They seemed to bask in their own judgment that a large "feather" was desirable and kept right on breeding Clydesdales with this attribute. As a result of this inattention on the part of the breeders, the breed did not prosper as it may have done in the United States. This may be noted by the fact that but few of these animals are exhibited at our fairs. At the colt show held in conjunction with the recent meetings of the Michigan Improved Live Stock Breeders' Association in East Lansing, there was only one entry in the Clydesdale stallion colt class. Further than this, we have the Department of Agriculture's figures for it that the importations of Clydesdale horses have constantly fallen off and for the fiscal year ending with June 1, 1914, only 96 head of pure-bred Clydesdale horses were imported from Scotland. Had the breeders heeded American demands and bred for a smaller "feather" there is no reason why the breed should not have been very popular today, because it has excellent points to commend it.

Another Illustration.

The Merino sheep breeders of Vermont ignored a market demand. There was a time in the history of the New England states when sheep breeders demanded the Merino sheep with many folds or "aprons" on the neck. However, as civilization began to extend westward and more fertile pastures came into use, sheep men demanded a sheep of greater size and with smoother conformation. These Vermont breeders paid no attention to this demand but persisted in breeding the scrawny, wrinkly sheep of the old type. As a consequence, there came a time when they could not dispose of their surplus. These breeders were ultimately forced out of the sheep business, while had they noted the de-

mand in time, they might have kept right on raising sheep and made good money at it.

These are only two of the most striking examples which American history affords. The farmer who has any commodity to offer the trade should make it his business to study the demands of his customers and then fill that demand. Persistence in offering a product which is not wanted is sure to result in financial failure. The demands are constantly changing and the successful marketing of products depends upon close observation of these changing demands accompanied by efforts to supply them.

Ingham Co

I. J. MATHEWS.

PARCEL POST CHANGES.

An order has been sent out by Postmaster-General Burleson that the size limit of packages for parcel post shipment be increased to a combined length and girth measurement of 84 inches. The old limit was 72 inches, which makes an increase of one foot in the size of length and girth measurement that will be accepted for shipment by the post office department. There has been a widespread demand for this increase. The old limitations excluded from the parcel post service standard sized fruit and berry crates. The new limit will permit the mailing of these packages and should therefore increase the use of the parcel post by small growers and shippers to a very large degree.

The postmaster-general also authorizes the establishment of a receipt system for parcel post packages similar to that now in use by the express companies. Under the new regulation one may receive a receipt for his shipment upon the payment of one cent. The postmaster at the receiving office will give the sender of an ordinary parcel of fourth class mail matter a receipt when the one cent in addition to the regular postage is paid. A one-cent postage stamp to cover the charge for the receipt will be affixed to the parcel in recognition of this payment. The name and address of the party to whom the matter is sent shall be written in the receipt by the sender.

These two changes indicate the progressive spirit of those in charge of the parcel post work. It is apparent at once that both changes will add to the efficiency of the service. The increased limitation in size will enable the public to make a much broader use of the mails as a medium for delivering goods, while the receipt plan will permit farmers and business men to employ this service on the same business basis as they have other common carrier agencies, they being able to better secure themselves in making their shipments.

CITY MARKETS IN MICHIGAN.

Manistee will have a city market, open from 5:00 a. m. to 4:00 p. m. week days, for the sale of stock, poultry, meats, hay, grain, wood, fruits, vegetables and other farm and garden produce. During market hours no person will be permitted to sell his wares from house to house in the city. A weighmaster under bonds of \$500 will have charge and will enforce rules and collect fees. Manistee county farmers, particularly of Grant and Free-soil townships, have been urging the city to take this action for a long time, the granges being active in the movement. Opening day is not announced but it will be early in July. Saginaw's public market opened for the season May 22, and is being well patronized. The opening hour is 5:00 a. m., while in Detroit and Grand Rapids the city markets open at 4:00 o'clock.

Kalamazoo wants to know whether city markets are being operated successfully elsewhere and is trying to settle the questions through corres-



Over \$500 Worth of Garlic in a Single Load Sold to One Buyer.

Few farm crops consigned to the single braid sells for as much as a double one did then. The accompanying picture shows a single horse load of garlic recently disposed of to a single buyer. In this load there are 36 crates. The crates run about 20 strings to the crate. They brought 75 cents a string of about 50 bulbs. This makes a crate bring \$15 and the load has a value of \$540.

One of the queer facts concerning the handling of this product is that it is scarcely ever packed in the same way as is its cousin, the onion, which is topped and packed in crates. The retailers hang a braid in the show window and sell from the string.

One of the reasons is that it is being used more extensively for seasoning cased meats by packing concerns and therefore jobbing is much more active than in former years. There is also a largely increased demand from retailers who make sales from one to a half dozen bulbs to one family. Six years ago garlic came to Chicago in what was known as double strings, twice the number of bulbs with their clinging tops were plaited in a braid as there are now. Today a

pondence and personal visits to Detroit, Jackson and other places.

Muskegon is also considering the question and has appointed a committee to inspect the Grand Rapids market soon. J. O. Fraleigh, of Casnovia, started the movement in Muskegon and says that a market would be worth more to the city than any factory it might secure, by encouraging farmers to make Muskegon their trading center. A cold storage plant, he says, would soon follow and farmers would be able to put their products in storage and go home, while their products would be delivered in prime condition the following morning in Chicago and Milwaukee markets by water.

Cities are slow in establishing retail markets because of opposition by grocers, hucksters and other middlemen, who are tax payers. The proposition has not been worked out yet completely, not even in Detroit, Grand Rapids, Jackson and the larger cities. European cities look after the matter of economic food supplies for their people, just as they supply water, sewers and other necessities, by establishing food terminals, with rail and water shipping, cold storage, etc. We must come to this and must go even farther in opening quick and economic avenues between farm and consumer's Kent Co. ALMOND GRIFFIN.

BETTER CLOVERSEED WILL BRING HIGHER PRICES.

It is a common practice with some farmers who grow clover for seed to allow clover to rot for several weeks after cutting before they stack it or draw it to the barn. Sometimes red clover cut early is allowed to lie in the swaths or windrows for two months or even longer, exposed to all kinds of weather conditions. Frequently, also, clover stacks, if poorly constructed or unprotected, become wet and musty. Sometimes in wet portions of the stack the clover straw will even become very black and largely decompose before the seed is hulled. The result of this exposure is easily seen in the swelling and sometimes germination of those seeds which are not protected by hard seed coats. Even if the seeds do not germinate, if once they have become thoroughly swollen, even though subsequently dried, they are of no value. If they are not actually dead, they usually possess a very low vitality, being brown and lusterless in appearance and rough and wrinkled in texture. If the seeds are not thoroughly dried in the heads when cut, and the cut clover is rained upon before it has had time to dry a great many seeds may be destroyed. Damage becomes still greater if portions of the stack heat and become very warm as well as wet. An inferior grade of clover seed is produced when the clover is allowed to lie in windrows in the field for several weeks before it is hulled. Varying proportions of the seeds become brown and often actually lose all germinating powers.

The best practice is to allow the clover to become as ripe as possible without danger of loss from shelling when the crop is harvested. Usually the seeds do not ripen evenly and often it will be found that the heads ripening at a particular time will have a larger number of good seeds in than those ripening earlier or those to ripen later. It is to one's advantage to carefully note what the condition is and then harvest at a time that will insure the best condition for the greatest amount of seed.

The writer has usually found it advisable to wait on the weather a little and then do the harvesting in the forenoons when the straw and heads are a little tough from the dew. This prevents waste. By using a mower attachment the swath can be bunched and thrown to one side. This reduces shelling of seed to a minimum. The

bunches should be made small so they will dry out easily and should not be packed together more than is necessary. This will prevent the rotting of the center of the bunches should the weather be inclement. In the event that the seed is obliged to lay out in rains one should accept the first day when the sun and wind dry off the tops of the bunches, to turn them over carefully with a fork so that the under portions will be given a chance to dry and the seeds be prevented from swelling and germinating. Usually the seed hulls better after the straw has had a little rain upon it, that is, the hullers will take the straw faster and get the seed out cleaner; but one should not wait for rains on this account if he can get his crop under cover or hulled before as the rains may be excessive before the straw can again be gotten in good shape and seeds will be damaged as stated above. Hull from the field if possible to secure a machine, as the expense will be less; but if one must wait an indefinite time the clover should be put in the barn or stacked and covered with boards, canvas, marsh hay, or anything that will shed water before it soaks down to the clover straw.

By exercising caution one is quite sure to have a much better grade of clover seed to market, for which he will receive a far better price.

Crop and Market Notes.

Michigan.

Arenac Co., July 12.—Alfalfa is producing well, but hay is light in most localities. Corn is growing well although late. Potatoes looking good. Beans were put in late, and some fields are being badly injured by the worms and insects. Apples and all fruits scarce this season. Wool 27@30c; butter-fat 25c; milk around \$1.12.

Shiawassee Co., July 13.—Heavy rains prevent cultivation and haying. Wheat in good condition. Haying begun and a fair yield; old meadows, however, are very poor. Alfalfa doing splendidly, the first cutting yielding around one and a half tons per acre. Corn is backward but uniform and thrifty. Early potatoes looking well, but late potatoes are rotting in the ground and will be a poor stand. Beans are coming on well. Both early and late apples give promise of a fair crop, but few peaches, plums and pears. Milk 80c per cwt.; wheat \$1.10; corn 70c; eggs 16c; stock of all kinds in good condition.

Sanilac Co., July 14.—Haying has begun and is a light crop. Rains were too late for alfalfa, but clover is still growing. Wheat is a good crop and is ripening fast. Oats and barley are in full head, with the largest acreage we have ever had. Corn is late but looks healthy. Beans are late and small, and will need extra good weather conditions to make a satisfactory crop. Potatoes doing well. Early and late apples a light crop. Wool 32c; eggs 17c; butter-fat 26c; oats 47c; beans \$2.60.

Washtenaw Co., July 9.—The wet and backward weather still continues making it extremely difficult to cure alfalfa and clover. Some very heavy fields of clover, but old meadows and second cuttings will be rather light. Wheat promises to be one of the best crops ever grown. Oats also promise well. The disappointing crop of the year promises to be corn. This necessary crop is the most backward and uneven of any recent year. There is a large acreage of potatoes, both early and late varieties, and looking extremely good. Beans are suffering from the same troubles as the corn. Fruit prospects are not particularly good. Apples dropping badly. Peaches and pears, also plums, in small supply. Milk prices very unsatisfactory. The test basis has been raised and prices net the farmer less than in recent years.

New York.

Niagara Co., July 13.—Hay and clover light. Grain crops all good, the best in years. The acreage of wheat and oats is larger than usual. Apples, pears and plums are a light crop, but peaches are a good crop. Small fruits are good. Beans and corn looking fine. Wool 27c.

New Jersey.

Morris Co., July 12.—Hay and clover crops are good. Wheat is good and harvesting has begun. Corn and potatoes are looking good. New hay \$15; corn \$22 per ton; eggs 24c; butter 32c; hens 16c.

Pennsylvania.

Lancaster Co., July 12.—Timothy hardly half a crop; alfalfa good; clo-

ver practically none. Wheat which is now being harvested is very good; corn backward; potatoes splendid. Apple prospects excellent; pears are practically ruined because of the prevalence of blight; prospects for peaches and plums good. Eggs 17c; butter-fat 32c; poultry, live 13@15c.

Ohio.

Ashtabula Co., July 13.—Weather is cold and wet. No haying done yet on account of unsettled weather. Hay a fair crop. Wheat, rye and oats bumper crop. Wheat harvest will begin in about a week. Early potatoes look good, late ones not up yet. Corn is practically a failure; pastures good and the production of milk is unusually good. Butter 25c; eggs 18c; oats 65c; new potatoes \$1 per bu; hogs \$7.50; veal 9c.

Clermont Co., July 14.—Recent wind storms did great damage to corn, blowing it down and breaking the stalks. Fruit trees were also damaged, entire orchards being broken down in some localities. However, there is promise of a good apple crop, but the pear crop is below normal. The hay crop is more abundant than usual, but has been secured under difficulties on account of frequent rains. All market garden crops, such as onions, early potatoes, sugar corn, beans and cabbage are yielding well and selling at good prices. Clover hay \$22; eggs 12½c; butter 18c; butter-fat 22c.

Coshocton Co., July 12.—Rains have delayed the cutting of wheat, which will be above an average crop, and more than the usual acreage. Corn and oats are doing fine, and early and late potatoes are good. Clover hay in general has not been heavy, but timothy will be an average crop. The second crop of alfalfa is nearly ready, and it will be heavy. There is an extra good stand of young grass. There will be a large crop of all kinds of fruit. Wheat \$1.10; corn 80c; oats 50c; hay \$16; eggs 18c; butter 18c; potatoes 50c; hogs \$7@7.50; spring lambs \$7.50; butter-fat 27c; wool 28@34c.

Hancock Co., July 12.—Hay making about half done and a fair crop, but greatly delayed by rains. Clover and alfalfa are in good condition. Wheat cutting began and will be a heavy crop. Corn and potatoes rather short yet, but warm weather will soon put them in fine condition. Apples and pears will be good, but there are no peaches. Wool 28@30c; butter-fat 25½c; hogs \$7.50; eggs 16c.

Paulding Co., July 12.—Weather is ideal for growing crops. Clover is nearly all cut. First crop of alfalfa is cut and yielded well. Oats, corn and potatoes doing fine. Timothy is being cut. Early apples will be good, late ones prospect is not so good. There will be some plums and pears. Wool 31½c; corn \$1 per cwt; oats 42c; wheat \$1.05; butter-fat 28c.

Shelby Co., July 12.—Heavy rains over this section did much damage to oats which is all down. Corn small for the time of year. Wheat about one-third of a crop, many fields being severely damaged by the chinch bug and the fly. Hay is an average crop. Early potatoes good. All apples are a good prospect, but pears, peaches and plums are a short crop. Butter-fat 24½c; eggs 16c; hogs \$7.40.

Indiana.

Wayne Co., July 12.—We have had an abundance of rain. Both wheat and oats give promise of a good yield. Timothy, clover and alfalfa are yielding well. The second crop of alfalfa is now ready for cutting. Wheat is all cut and threshing will begin in a few days. Corn and potatoes are growing nicely. There are prospects for a large crop of both early and late apples. Cherries were a good crop, other fruit does not promise so well. All live stock is doing well and pastures are in good condition.

Laporte Co., July 6.—Weather still wet and cold. The oat crop is improving fast. Apples promise well, as do also potatoes. Stock is in good shape.

Illinois.

Perry Co., July 12.—Hay is a fine crop, but the weather is unfavorable for securing it. Wheat very poor; oats fair, corn poor prospect. No beans to speak of; potatoes a good crop, but the rains have caused them to rot. Some apples and peaches and a good crop of plums. Wool about 30c; butter-fat 24c; butter 15c; eggs 15c; potatoes 50c; chickens 15c; corn 80c.

Nebraska.

Hitchcock Co., July 10.—Plenty of rain, also hail, in some localities. Wheat is of good quality and harvest has begun. Corn is somewhat slow, many fields having been replanted on account of washing out.

Pierce Co., July 12.—Corn is growing slowly, being only about six inches high. Oats are good and are heading fine. Wheat and rye are ready for cutting and will be a good crop. First cutting of alfalfa made about one and a half tons per acre and the second crop nearly ready to cut. Potatoes (Continued on page 74).

Split Hickory \$39.25

THINK what that means. My big new 5% profit plan has split prices the lowest ever known. Get the New FREE Book.

Split Hickory with 30 days' free road test and 2 years' guarantee. And a price offer that will startle you. Just send me your name on a post card.

H. C. Phelps, Pres.
The Ohio Carriage Mfg. Co.
Station 57
Columbus Ohio

\$39.25

INCREASE BALING PROFITS

with the old reliable ELI designed by pioneer hay press builders who have specialized on hay presses for 25 years.

ELI HAY BALERS make clean-cut bales. Large feed opening—easiest feeding. Highest capacity—greatest profits for you. 40 sizes and styles. An ELI for every baling need. Weight with engine, 4250 lbs. Write for Latest Catalog.

COLLINS PLOW CO.
1117 Hampshire St. Quincy, Ill.

Powerful—Economical

Ellis Engines develop more power on cheap kerosene than other engines do on gasoline. No cranking, no excessive weight, no carbonizing, less vibration, easy to operate. All

ELLIS ENGINES

are sent on 30 days' free trial and guaranteed for 10 years. We do this because we know that Ellis Engines are the biggest value the engine industry has ever known. Thousands of enthusiastic users.

Made in vertical and horizontal types, either stationary or portable, from 1½ H. P. to 15 H. P. Our new booklet describes this money-saver. Send for copy.

ELLIS ENGINE COMPANY
2839 E. Grand Boulevard, Detroit, Mich.

Delivered to you FREE

A sample 1915 model "Ranger" bicycle, on approval and 30 DAYS TRIAL. Write at once for large illustrated catalog showing complete line of bicycles, tires and supplies, and particulars of most marvelous offer ever made on a bicycle. You will be astonished at our low prices and remarkable terms.

RIDER AGENTS Wanted—Boys, make money taking orders for Bicycles, Tires and Sundries from our big catalog.

Do business direct with the leading bicycle house in America. Do not buy until you know what we can do for you. WRITE TO US.

MEAD CYCLE CO., DEPT. R-77 CHICAGO.

Motor (SIGNAL) Trucks

All Standard parts in 1, 1½, 2 and 3½ tons. We will demonstrate in any part of state.

THE MORITZ-MULLIN CO.,
MICHIGAN DISTRIBUTORS.
650 Woodward Ave., Detroit, Mich. Cadillac-840.
"Service First" is "Signal" slogan.

Pump, Grind, Saw

Double Gearing Steel, bronze bearing OILLESS WIND MILLS. No oil, no climbing towers. Made for Hard Use. Feed Grinders, Street Tanks. Wood Wheel Wind Mills. 2½ to 20 H. P. Fuel Saving Engines.

Perkins Wind Mill & Engine Company
Est. 1860. Catalogs free.
135 Main St. Mishawaka, Ind

Less Work

By using low "Electric" steel wheels on your old running gear or using our

Handy Steel Wagon

Save high lifts, get lighter draft, prevent rutting, save money in repairs—steel wheels do not dry out or rot. Write today for free catalog on wagons and wheels.

ELECTRIC WHEEL CO., 35 Elm St., Quincy, Ill.

ENGINE PRICES LOWER

200,000 customers testify to quality of Galloway-built goods. Our engines made in our factories. Modern design. Built for long, hard, continuous users' satisfaction. Don't buy until you investigate these heavy weight, long stroke, large bore, low speed, heavy duty engines. Engine book free. Wm. Galloway Co., Box 155, Waterloo, Iowa.

9875-7750-3950-3475-2675

WANTED—AN IDEA: Who can think of simple thing to patent? Protect your ideas, they may bring you wealth. Write for "Needed Inventions" and "How to get your Patent and Your Money." **RANDOLPH & CO. PATENT ATTORNEYS, DEPT. 67, WASHINGTON, D. C.**

Grange.

STATE GRANGE OFFICERS.

Master—John C. Ketcham, Hastings.
Overseer—C. H. Bramble, Tecumseh.
Lecturer—Dora H. Stockman, Lansing.
Secretary—Jennie Buell, Ann Arbor.
Treasurer—Frank Coward, Bronson.
Executive Committee—C. S. Bartlett, Pontiac; Geo. B. Horton, Fruit Ridge; J. W. Hutchins, Hanover; W. F. Taylor, Shelby.

KENT CITY GRANGE ENTERTAINS POMONA.

Kent County Pomona Grange met Thursday, June 24, with Kent City Grange, the youngest Grange in Kent county, organized a little over one year ago.

With its fine membership of over 60 enthusiastic Grangers, it gives promise of being one of the strongest Granges in the state.

At 10:30 a. m. the meeting was called to order by Pomona Master T. H. MacNaughton with over 80 members present, 13 of the 21 Granges in the county being represented with large delegations. Sparta Grange had the largest representation, 28 being present; Rockford was second, with 22 members present.

Bro. F. N. Church, of Kent City Grange, gave the welcome address and said they had been looking forward to this meeting for weeks with a great deal of pleasure, and hoped all would be benefited by it. Although their Grange had been saddened by the great calamity caused by the tornado of a week previous whereby their master, A. D. Brown, and family had lost all their buildings and contents and the lives of two of their nearest neighbors, he gave Pomona a most hearty welcome.

The response was given by Brother Ernest Alberts, of Alpine Grange, who said Pomona had also looked forward to the meeting with this new Grange for months and hoped Pomona would leave some encouragement and cheer for Kent City Grange. He advised every member to try and make this Pomona meeting one of the very best ever held.

Bro. A. D. Brown, Master of Kent City Grange, said it was an honor to welcome his brothers and sisters from the different Granges throughout the county. He also gave Pomona a most hearty greeting.

Brother R. Farnum, of Sand Lake Grange, in behalf of Kent Pomona, wished to thank Kent City Grange for their invitation and cordial welcome, and hoped all would get some new inspiration to carry home to the different Granges.

Sister Spangenberg, Lecturer of Kent Pomona Grange, made a few remarks and said the date of this meeting—the 24th of June—recalled the story of Grace Richmond; the story of accomplishment, and hoped this day would be one of accomplishment for Pomona.

Brother F. N. Church then spoke on the topic, "Shall the woodlot be preserved?" In part he said: "Nothing was being done to preserve the timber. He could remember when Michigan was a virgin forest and when lumbering and forest fires robbed the state of its forests, and the cheapness of lumber caused a great waste. Many of the farmers got the spirit of waste while working in the lumber woods. He advised all who had waste land to plant trees and teach the younger generation the beauty of preserving the same. A lesson from the previous week was brought out that should teach the people the great need of timber protection.

C. W. Whitney told of the different grades of flour and their harmless adulterants.

At the noon recess nearly all that

were present visited the scene of the cyclone.

At 2:30 the Grange was called to order in open session in the Auditorium and the following program given: Piano solo, Miss Rea Putney, Kent City; vocal solo, Ruth Putney, Kent City; recitation, Mrs. Lena Burch, Rockford; vocal solo, Miss Marian Shorts, Kent City; topic, "Our Needs," Chas. Allmand, Cedar Springs.

Mr. Allmand said in part: "First, we need to be thankful for what we are enjoying; second, we need to look on the bright side of life; third, we need to organize, and organize before it is too late. We should be honest with our boys and girls—give them a fair chance. We need to look at our own life before we find fault with others; speak well of other people. Give flowers while people are living, don't leave all the good things to be said and done after people are dead.

Eight ladies of Rockford Grange gave the play, "How the Story Grew." This was a true story of life which was cleverly given and called forth hearty applause. Piano duet, Miss Zimmerman and Mildred Tower; reading, Hine Smith.

The evening session in the fifth degree was called at seven o'clock with a short business session. The year book committee's report showed a net profit of \$55.20. The worthy master appointed the year book committee to look after and arrange for the August rally, which will be held at North Park on August 19.

The address of the afternoon was given by Dr. M. McCool, Dean of the Department of Soils of the M. A. C. His topic was "Soil Management." He gave opportunity for those interested to ask questions about their particular problems.

The committee on resolutions reported as follows:

Resolved, That we approve and appreciate the wise and statesmanlike conduct of our president and his associates in maintaining peace and good order in our beloved land, while so much of the civilized world is locked in the deadly struggle of war and its horrors of destruction of life and property.

Resolved, That we extend sincere and heartfelt sympathy to the members of Kent City Grange for the loss that they sustained in the tornado which passed over their vicinity, destroying the home of Bro. A. D. Brown and taking the life of some of their neighbors, and also the destruction of much property. We therefore recommend that the members of the neighboring Granges turn out at the proper time and give generous assistance to make good in part the loss which has been sustained.

Resolved, That we extend to Kent City Grange our heartfelt thanks for their invitation and generous hospitality, and for various numbers furnished on the program.

The open meeting was called to order in the Auditorium at 8 p. m. Mr. Lilly, secretary of the West Michigan Fair, was present and told of the many promising things that were offered the farmers this year in the way of premiums for farm exhibits.

A very fine program of music, recitations and dialogues was given which was greatly enjoyed and appreciated by the visitors. One of the very good numbers was a temperance recitation by Miss Grace Playter which met with hearty applause. A paper which is also worthy special mention was given by C. F. Parks, entitled, "A Prophecy—Farming in 1930." He foretold how electricity and science will hold full sway in the execution of farm work. To finish the evening's entertainment Mr. Brott gave a moving picture exhibition.

The ladies of Kent City served a sumptuous dinner and supper to about 150 people. These two events were no small part of the day's enjoyment.

Farmers' Clubs

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

THE FARMERS' CLUB IN MINNESOTA.

(Continued.)

You will probably make a mistake if you think that you can get along all right by speaking without first having committed your thoughts to paper. Fill your mind with knowledge of the subject, and then throw aside all the books and references and write down what you intend to say. This will help you to make new ideas your own. It makes them clearer and helps to fix them in your memory, or brings out their vagueness, proving the necessity of further thought before you are ready to offer them to the public. Then correct what you have written. Cut out unnecessary words and phrases. Make your sentences short so that they may easily be understood, and then if you do not wish to read your paper before the Club, read it to yourself often enough that you may be thoroughly conversant with it. It is hardly advisable to commit it to memory. You will readily understand that all this takes time and patience—so does anything of real value. You will be greatly benefited, you will have something worth while to give to the Club, and the next time you are called upon it will be much easier to make preparation.

Unless one is accustomed to public speaking and is very familiar with his subject, it is well to prepare a brief memorandum on a small card or slip of paper containing the sub-heads to be discussed. The following was used in discussing corn and it may be helpful in the preparation of other topics.

Corn.

Seed.—Selection, testing, grading.

Soil.—Preparation, planting, time, depth, thickness.

Cultivation.—Time, implements to use, what you cultivate for, what to avoid in cultivation.

Harvesting.—Husk from standing stalk, feed as bundle-corn, silage, cut, shock, and shred or husk, hog off.

No Club can attain its greatest usefulness, if in fact it can endure, without having something definite to do. The study courses arranged for this year were prepared with this in mind. A faithful consideration of any one of them will give the Club sufficient work to keep its members wide-awake and interested. Community problems which require collective effort, such as buying and selling organizations, good roads, telephone service, schools, public health, and recreation, may be added. There is something lacking in every community that can be supplied by the efforts of its people. It is a matter of first determining what is most needed, and then by concerted action getting it. An organization such as a Farmers' Club should be the proper medium through which to crystallize and set in motion the best sentiment of a community.

Many business organizations are formed by farmers each year. Wherever the facilities for trading and marketing are not what they should be, it is advisable to form these associations, but there are many matters which should be thoroughly considered before doing so. It is not a good thing to organize in order to prevent someone else from making money, but rather to cut down expenses and to become more efficient. In fact, the main object should be to do business more economically.

Business representing a large number of stockholders can not be run successfully without keeping a complete set of records. No organization

should be attempted without first making sure that such a record will be kept. * * *

SOME PHASES OF DAIRYING.

(Continued from page 67).

will rapidly decrease in size and general value. The care and feeding of the dairy cow have undergone very radical changes. The cow of yesterday was obliged to use much of her strength and vitality to sustain her own body. Today improved ways of feeding in stables that are better ventilated, warmed and lighted enables her to apply her surplus powers to producing milk.

Home-grown Feeds Most Economical.

Economy in rearing dairy heifers demands that home-grown feeds form as much of her rations as possible. A plentiful supply of rich succulent feeds should be given the heifer, not only during the time she is growing, but while she is carrying her calf to enable her to reach the best possible development. Palatability and succulence form much of the value of corn ensilage and root crops by increasing the appetite and strengthening the digestive organs. Clover hay is nearly equal to pasture grass in the amount of food nutrients that it contains, but heifers will not eat enough to sustain their best growth because it lacks the succulent quality. When fed with silage the heifer will consume larger quantities of clover hay than when it is fed alone. With clover hay and ensilage and a limited amount of wheat bran and oats we have an ideal ration to feed the growing dairy heifers.

RELATION OF CHEMISTRY TO AGRICULTURE.

(Continued from page 80).

was ripe one month later, the dry matter was 7,918 lbs.; protein 678 lbs.; nitrogen free extract 4,828 lbs., and the fat 314 lbs.

Water the Great Medium of Growth.

Accompanying this remarkable increase in dry matter, of from 1,619 lbs. at the time of tasseling, to 7,918 lbs. at the ripe period, was a remarkable change in the moisture content of the crop of corn. At the tasseling period it had 18,000 lbs. of water; 21 days later, when it was in milk, it contained 32,000 lbs. of water; and a month later, when it was fully ripe, it contained 28,000 lbs. of water. This shows in a degree how water was used throughout the growth of the crop as the medium through which the plant nutrition was carried on. Remarkable again is the observation of the increase in the protein content, from 240 lbs. when the corn was tasseled, to 678 lbs. when fully ripe; the nitrogen free extract increasing to an even more remarkable extent and the fat increasing similarly. During this increase of the nutritive constituents of the crop there had also been a gradual increase in the crude fibre content from 514 lbs. at the time of tasseling to 1,724 lbs. when fully ripe. It is therefore apparent that while the finished product contained such a great deal more protein and other nutritive constituents than the young plant at the time of tasseling, it also contained a higher percentage of fibre which made the cost to domestic animals of the utilization of these nutrients considerably higher. It is because of these deductions and the hint which has been given as a result of laboratory analysis which has made it seem desirable for purposes of succulence in the ration that the crop be harvested and put into the silo short of complete maturity.

These are types of researches which chemistry has conducted into plant growth and bring to mind perhaps sufficiently the important relationship of chemistry to this branch of agriculture.

(Next week, "Chemistry in Relation to Animal Nutrition").

BREEDERS' DIRECTORY.

CATTLE.

ABERDEEN ANGUS

If you are in need of an extra good bull or a few choice young cows or heifers, we have them for sale. Our herd is headed by the Grand Champion Black Monarch 3rd. We invite you to come to our Farm and see them. They are bred right and priced right. U. L. Clark, Hunters Creek, Mich. Sidney Smith, Mgr.

ABERDEEN-ANGUS

HERD ESTABLISHED IN 1900. TROJAN-EICAS and BLACKBIRDS only. A few young bulls and cows for sale. Also breeders of Percheron, Hackney and Saddle Horses. WOODCOTE STOCK FARM, Ionia, Mich.

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

THE VILLAGE FARM,
Grass Lake, Michigan,
GUERNSEY CATTLE.

MILO D. CAMPBELL CHAS. J. ANGEVINE

BEACH FARM
GUERNSEYS

Combine the blood of the following great producing sires and dams:

Macher Sequel	57 A. R. Daughters
Glenwood Boy of Haddon	37 A. R. "
May Rose King	25 A. R. "
Dairymaid of Pinehurst	21 A. R. "
Dolly Bloom	310 lbs. fat
Imp. Ketch Daisy	336 "
Selma of Pinehurst	714 "
Stanford Princess	762 "
	725 "

Bulls for sale only.

A Dairy Show Every Day.
CAMPBELL & ANGEVINE, Coldwater, Mich.

A GUERNSEY BARGAIN. Two bred heifers. Two mature cows (one fresh). One bull ready for service. A. R. breeding. G. A. WIGENT, Watervliet, Mich.

For Sale—Reg. Guernsey Cattle and BERKSHIRE SWINE either sex. JOHN EBELS, R. 10, Holland, Michigan.

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

GUERNSEYS—Write for prices and particulars. 2 bulls 1 year old. Several bull calves, all from A. R. cows and cows on test. Geo. N. Crawford, Holton, Mich.

GUERNSEY BULLS FOR SALE, ready for service from A. R. Dams. If you want the right kind write for price and breeding. BYERS & BARNES BROS., Coldwater, Michigan.

REGISTERED GUERNSEY COWS and HELPERS for sale at Windermere Farm, Watervliet, Michigan. For particulars address, J. K. BLANCHFORD, Auditorium Tower, Chicago, Ill.

HEREFORDS; Two last Oct. bull calves for sale. Big fellows. ALLEN BROS., Paw Paw, Michigan.

Do You Want A Bull?

Ready For Service.

From a grand daughter of The King of the Pontiacs. Sired by a bull that is more than a half brother to the Champion Holstein Cow of the World, and whose dam is a 30 lb. 6 1/2 % fat daughter of Pontiac Aggie Korndyke who has more 30 lb. daughters than any other living bull. If you do write for pedigree.

EDWIN S. LEWIS, Marshall, Mich.

Espanore Farm,
LANSING, MICHIGAN.

Offers for sale the bull calf Espanore Dichter Fobes, born April 19, 1915. Sired by one of the great bulls of the country and out of a cow with a good A. R. record and a sister to a 55.9 lb. cow. Price for quick sale \$100.

CHAS. S. OSBORN, } Owners.
ADAM E. FERGUSON, }

1 4-YEAR-OLD BULL

A 31-lb. son of Pontiac Korndyke, and out of 27-lb. dam. A 2-year-old and three yearling bulls. The above bulls have breeding and individuality to spare. Also a few richly bred bull calves. These will be priced right. This is a chance to get a valuable bull for little money. Get busy, as this ad. will appear but twice.

L. E. CONNELL, Fayette, Ohio.

The Two Greatest Bulls
KING OF THE PONTIACS
DE KOL 2d's BUTTER BOY 3rd

Have young bulls from cows having high official records and Granddaughters of above bulls. Stock extra good. Prices reasonable.

BIGELOW'S HOLSTEIN FARMS,
BREEDSVILLE, MICH.

REGISTERED Holsteins—Herd headed by Albma Bonte Butter Boy. His dam has A. R. O. records as follows: at 2 yrs. milk 430, butter 18.85; 4 yrs. milk 694.8, butter 27.03; at 6 yrs. milk 620, butter 28.55 lbs. W. B. READER, Howell, Mich.

\$100 Gets 5 mo. 1/2 white grandson of Friend Hengerveld. De Kol & Maplecrest Pontiac Flora Hartog, 30 lbs. butter 7 days, 1232 lbs. in 1 yr. M. L. McLAULIN, Redford, Mich.

FOR SALE—REGISTERED HOLSTEIN BULL born Feb. 26, 1915. Mostly white. Dam has A. R. O. record, also Chester White Pigs. CHARLES I. COOK, Box 438, Fowlerville, Michigan.

JULY 28 | MUMFORD'S DUROC SALE | JULY 28

Brookwater Farm, Ann Arbor, Mich.

50 Head, Including Bred Sows and Gilts. Herd Boars and Spring Pigs

This offering is fully up to the high standard established in our former sales. The offering is bred to or sired by prize winning boars at the Michigan State Fair. This will be an unusual opportunity to buy choice Durocs. You cannot afford to miss it. Send for our catalog and plan to spend July 28 profitably at

JULY 28 | BROOKWATER FARM, | JULY 28
R. F. D. 7, ANN ARBOR, MICHIGAN

REG. HOLSTEIN BULL CALVES good A. R. O. breeding, and plenty of 30-lb. blood in their pedigrees. Dewey C. Pierson, Hadley, Mich.

REGISTERED HOLSTEIN BULL, 4 months old. Very large straight handsome fellow. Just one of the nicest individuals you ever saw, and he is bred some too. \$50 delivered. Write for photo and pedigree. HOBART W. FAX, Mason, Michigan.

High Class HOLSTEINS My herd is headed by Smithdale Alcartra Pontiac, whose dam is the famous Alcartra Polkadot. Have few young bulls and females for sale at reasonable prices. Will buy a few heifers about 15 months, not bred, Farm 1/2 mile from court house. SETH B. RUBERT, Howell, Mich.

MAPLECREST De Kol Hengerveld, an own brother to a World's Champion heads our herd. Choice Bull Calves for sale, or will exchange for registered heifers or cows. HILLCREST FARM, Kalamazoo, Mich.

FOR SALE Registered Holstein Bulls ready for service, and bull calves, also females. FREEMAN J. FISHBECK, Howell, Michigan.

HOLSTEIN BULL CALVES—Don't buy until you write us. No better breeding in Michigan. Long Beach Farm, Augusta, Kalamazoo Co., Mich.

HOLSTEIN CATTLE and Duroc Jersey Swine. Choice pigs of both breeds. Prices reasonable. E. R. CORNELL, Howell, Michigan.

\$40.00 DELIVERED Handsome Holstein bull calf, half black. Registered and all papers. A. R. O. Sire and Dam. ROUGEMONT FARMS, Detroit, Michigan.

MICHIGAN HOME AND TRAINING SCHOOL LAPEER, MICHIGAN Breeder of High Grade Holstein Cattle. Lists and prices upon application.

HOLSTEIN CATTLE and O. I. C. SWINE ELMER E. SMITH, Redford, Michigan.

Holstein-Friesian Breeder—The best families of the breed represented. D. D. AITKEN, Flint, Michigan.

NIXON FARMS
Brooklyn, Mich.

Have Some Registered Jerseys For Sale.

Maple Lane Register of Merit Jersey Herd. Tuberculin tested. U. S. Government. For sale bull calves and heifer calves from R. of M. dams and grand dams, and Hood Farm Sire. IRVIN FOX, Allegan, Michigan.

THE WILDWOOD JERSEY HERD

Registered Jersey Cattle of Quality. Tuberculin tested. Majesty's Wonder No. 90717 heads the herd. Bull calves for sale, also a two-year-old bull that is right. For prices and description write or come. ALVIN BALDEN, Capac, St. Clair Co., Michigan.

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

Jerseys. Bulls ready for service, extra quality sired by Jacoba's Fairy Emanon. No. 10711, from high producing dams. SMITH & PARKER, Howell, Mich.

JERSEYS—THE REGISTER OF MERIT KIND. BROOKWATER FARM, R. No. 7, Ann Arbor, Mich.

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

FISHERTON FARM JERSEYS—Some fine grandsons of Hood Farm Pigs' 9th, from Register of Merit dams. FISHERTON FARM, Pontiac, Michigan.

FOR SALE—A JERSEY BULL eligible to registry, nineteen months old. Financial King blood. E. K. Fitch, Watervliet, Mich.

BIDWELL SHORTHORNS



Albion Stamp 352670

For "Beef and Milk" Registered Bulls, Cows and heifers Scotch-topped roans, reds and whites for sale. Farm at L. S. & M. S. Denot, also D. T. & I. R'y. BIDWELL STOCK FARM, Box B, Tecumseh, Mich.

Shorthorns For Sale, farm 1/2 mile east of Davis, crossing on A. R. R. W. B. McQUILLAN, Chilson, Liv. Co., Michigan.

MILKING SHORTHORNS—Young bulls sired by a sale, DAVIDSON & HALL, Tecumseh, Michigan.

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

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

QUICK Sale. Milking Shorthorn Roan Cow 6 yrs. old. 2721 lbs. milk in 9 mos. Roan heifer calf foot \$300. A Roan 3 yr. out above cow giving 20 lbs. a day 7 mos. after calving \$200. Have sold farm. John Brown, Saranac, Mich.

Dairy Bred Shorthorns of best Bates Strains. Young bulls 7 months old for sale. Price \$100 each. J. B. HUMMEL, Mason, Mich.

FOR SALE—Actor of Sheomet 95745, 4 yrs. A show bull and a chance to see how he breeds. Sure and kind, for breeding and price inquire of WM. E. ANSTERBURG, Homer, Michigan.

HOGS.

Durocs & Victorias—Grand bunch of Gilts due March and April. Comprising the blood of Superba, Defender, Much Col., Orions and others. A few young boars. M. T. STORY, Lowell, Mich.

REGISTERED BERKSHIRE SOWS to farrow soon at \$20 each. B. B. REAVEY, Akron, Michigan.

FOR SALE—Berkshire hogs, both sexes and different ages. Bred gilts for fall farrowing. Poll Angus Bull Calf, not registered. Price right. Chase's Stock Farm, R. 1, Marlette, Mich.

Royalton Bred Berkshires—Boar pigs ready to ship last of July at 12 weeks age with registry papers. Write for pedigree and prices. D. F. VALENTINE, Supt., Temperance, Mich.

HAMPSHIRE Swine—Breeding stock of all ages from most popular strains. Write for breeding. Inspection invited. Floyd Myers, R. 8, Decatur, Ind.

WEST WINDS HAMPSHIRE SWINE. Booking orders for sow pigs immediate shipment. No males to offer. E. P. Hammond, owner, N. A. Wisner, manager, Pontiac, Mich.

HAMPSHIRE SWINE, the kind that wears the belt. Nothing left for sale but a few pigs. S. C. MORT, Elsie, Michigan.

WOULD like to hear from those desiring to start a herd of thoroughbred Chesters. Prices atractive. F. W. ALEXANDER, Vassar, Michigan.

Big Type, O. I. C.'s and Chester White Swine.

400 fall pigs either sex, special prices for the next 30 days, also bred gilts and service males and we are booking orders for spring pig, all our stock is good enough that I will ship O. I. C. and reg. free in the O. I. C. or Chester White Asso. We won, more prizes than all other breeders put together, at Ill. and Wis. State Fairs. Write for Show record.

ROLLING VIEW STOCK FARM Cass City, Michigan.

O. I. C. PIGS of March and April farrow and Red Polled Bulls. Write JOHN BERNER & SON, R. 4, Grand Ledge, Mich.

JEWETT'S REGISTERED O. I. C.'s BLUE RIBBON O. I. C.'s Growthy type. Photos. J. Carl Jewett, Mason, Mich.

O. I. C.'s—Sows bred to farrow last of June and July. Prices reasonable. G. P. ANDREWS, Danville, Michigan.

O. I. C.—Gilts bred for Aug. and Sept. farrow. Will take orders for March and April pigs. H. W. MANN, Danville, Michigan.

O. I. C.'s—Spring pigs, pairs and trics, not akin, from state fair winners. AVONDALE STOCK FARM, Wayne, Mich.

O. I. C.'s—STRICTLY BIG TYPE

Gilts bred for Sept. farrow and March pigs now ready to ship. Extra good ones at prices that will move them. Pairs not akin. I will be pleased to ship them O. I. D. and record them free in purchaser's name. NEWMAN'S STOCK FARM R. No. 1, Marlette, Mich.

O. I. C. SWINE—Are you on the market for a choice bred sow to farrow the last of Aug. or fore part of Sept. If you are, write me, I have them. A. J. GORDEN, R. No. 2, Dor, Michigan.

O. I. C.'s—8 last fall gilts bred to farrow last of Aug. and in Sept. Big growthy stock, also last Spring pigs and one last fall boar, 1/2 mile west of depot. OTTO B. SCHULZE, Nashville, Mich.

O. I. C.'s—Service boars, gilts, sows, spring pigs—none better. Satisfaction guaranteed. A. R. GRAHAM, Flint, Michigan.

O. I. C. Pigs, 8 to 10 Weeks Old \$10. Pairs not akin. Registered free. C. J. Thompson, Rockford, Mich.

O. I. C. Choice Sept. pigs, either sex. Will take orders for March, April and May pigs, not akin. ALVIN V. HATT, Grass Lake, Mich.

Way Brothers Stock Farm. The home of the big bone O. I. C. Hogs. Stock for sale. Registered free. J. R. Way, Pompei, Mich.

O. I. C. BOARS 10 months. Choice stock, reasonable. WEBER BROS., Royal Oak, Mich.

DUROC JERSEYS—A few fall boars and 12 bred gilts for sale. CAREY U. EDMONDS, Hastings, Michigan.

FOR SALE—Fancy bred gilts, fall males, spring pigs. Of the large, smooth kind. Price to sell. JOHN McNICOLL, Station A, R. 4, Bay City, Mich.

Capitol Herd Duroc Jersey Swine. Established 1888. Spring pigs for sale, satisfaction guaranteed. Express prepaid. J. H. Banghart, East Lansing, Mich.

BIG BONED DUROCS. My herd is not the largest, but the stock is good. M. A. BRAY, Okemos, (Ingham Co.), Michigan.

DUROC JERSEYS—Spring pigs either sex. Gilts bred for Sept. farrow to a son of Volunteer Grand Champion at Intern'l Stock Show Chicago. F. J. Drott, R. 1, Monroe, Mich.

DUROC Jersey bred gilts, bred for Aug. and Sept. farrow from leading blood lines, also a few good boars. Write for circular and prices. W. C. Taylor, Milan, Mich.

Duroc Jersey—March pigs either sex, sired by a son of Volunteer Grand Champion of 3 State Fairs and Chicago Show in 1912. E. H. Morris, Monroe, Mich.

THIS
O. I. C.
SOW WEIGHED 932 LBS.
AT 23 MONTHS OLD
IONIA GIRL

I have started more breeders on the road to success than any man living. I have the largest and finest herd in the U. S. Every one an early developer, ready for the market at six months old. I want to place one hog in each community to advertise my herd. Write for my plan. How to Make Money from Hogs. G. S. BENJAMIN, R. No. 10, Portland, Mich.

MY OH MY!
What an Opportunity.

Starting May 1st, we are going to give to the farmers and breeders an opportunity to get started right in the breeding industry. We are going to give you a chance to get hold of foundation stock that will give you a nucleus for one of the finest and best herds in your community. We are going to show you as we have others, that you will have greater success with our big type

POLAND CHINAS

than with any other breed. We want to place at least one pig, or a pair in every community to advertise our herd. If interested, write for our plan and prices. HILLCREST FARM, Kalamazoo, Mich.

DUROC JERSEYS—Fall and spring pigs either sex, from choice strains. S. C. STAHLMAN, CHERRY LAWN FARM, Shepherd, Michigan.

BIG TYPE P. C. Either sex, pairs or trics not akin. Bred sows and gilts. Have several 1000 lb. boar prospects. Absolutely no later breeding, every thing guaranteed right. FRANK KRUGER, Ravenna, Mich.

POLAND CHINA Spring Pigs from heavy boned prolific stock. Sows bred for Summer and Fall pigs at close prices. ROBERT NEVE, Pierson, Michigan.

Poland Chinas, either sex, all ages. Something good at a low price. Bargains in boars ready for service. P. D. LONG, R. F. D. 8, Grand Rapids, Mich.

POLAND CHINAS of the big type. Boars ready for service. Sows bred for spring farrow. A. A. Wood & Son, Saline, Mich.

LARGE TYPE P. C.—Either sex, pairs and trics, not akin. Am booking orders for bred gilts. W. J. HAGELSHAW, Augusta, Mich.

Big Boned Poland Chinas. Fall gilts bred weighing from 280 to 300 lbs. ROBERT MARTIN, R. F. D. No. 7, Hastings, Mich.

Large Strain P. C. Boars ready for service and sows with pigs. Am breeding sows for fall farrow of the best breeding, to be had at bargain prices for the next 30 days, must have the room for others. H. O. SWARTZ, Schoolcraft, Michigan.

Poland China—Am booking orders for male pigs to be shipped at weaning time. G. W. HOLTON, R. No. 11, Kalamazoo, Michigan.

Big Type Poland China Pigs

35 great stretchy April pigs ready to ship. Write for prices. BEAN CREEK FARM, Addison, Michigan.

FALL PIGS AT HALF PRICE

Bred from the largest strain of Poland Chinas on earth, none bigger. If you ever expect to own a registered Poland China, this is your opportunity. Get busy and order at once. Pairs and trics not akin \$15 each. J. C. BUTLER, Portland, Mich. Bell Phone.

BIG Type boars by Big Smooth Jumbo. Greatest Boar in State, 748 lbs at 17 mos. These boars are long, tall, big bone sold at farmers prices, shipped C. O. D. Call or write. Wm. Waffle, Coldwater, Mich.

BIG Type P. C. Herd boar Chief of Trimgword No. 54375, also Hoesier Giant 2nd Pigs sired by him. On Big Smooth Jumbo (see photo), price on this stock for two weeks. MRS. J. E. BATHWAITE, Brant, Mich.

Registered Yorkshires

The World's Bacon Breed.

Imported Strain. Both Sexes

Prices Reasonable.

Hatch Herd, Ypsilanti, Michigan.

50 YORKSHIRES—All ages. Red Polled Cattle.

Oxford Down Sheep, W. P. Rocks, I. R. Ducks, E. S. OARE, Homer, Mich.

FOR SALE Lawrence Lodge Yorkshires. Boars from 3 to 8 mos. old. W. anling pigs to ship Sept. 1st. GEO. McMULLEN, Grand Ledge, Mich.

For Sale—Yorkshire Gilts from large litters, bred for fall farrowing. Waterman & Waterman, Ann Arbor, Mich. Meadowland Farm.

Mulefoot Hogs—Weaning pigs, pairs not akin. Bred sows and gilts for fall farrow. Two service boars. C. F. BACON, R. 3, Britton, Mich.

Lillie Farmstead Yorkshires. Boars ready for service. L. Gilts bred for Sept. farrow. Spring pigs, pairs and trics, not akin. Colon C. Lillie, Coopersville, Mich.

YORKSHIRES

Bred gilts, service boars, September and October pigs. Prices reasonable. W. C. COOK, R. 42, Ada, Mich.

Pure Bred Mule Foot Hogs FOR SALE—Reduced prices on service boars. R. FRANK SMITH, R. R. 3, Merrill, Michigan

BERKSHIRES Choice spring boars and gilts, priced to move quick. Farmers stock. ELMHURST STOCK FARM, Almont, Mich.

SHEEP.

Registered Oxford Down Sheep—Write your M. F. GANSLEY, Lennon, Michigan.

HORSES

FOR SALE—Registered Percheron Stallion Mares and Fillies at reasonable prices. Inspection invited. F. L. KING & SON, Charlotte, Mich.

Pigeon Pony Farm—Reg. Shetland Ponies, mostly spots, 1 spotted stallion and young stock for sale. Dr. W. T. Morrison, Pigeon, Mich.

Registered Percherons

Brood mares, Fillies and Young Stallions. Priced to sell. Inspection invited. L. C. HUNT & CO., Eaton Rapids, Michigan.

Practical Science.

RELATION OF CHEMISTRY TO AGRICULTURE.

BY FLOYD W. ROBISON.
(Continued).

Hand in hand with the study of the requirements of soils, the method of the renewing of the fertility of the soil and the application of scientific deductions to soil cultivation and soil manipulation, has been conducted a very careful inquiry into the composition of plants and growing crops. While this has been desirable in establishing the fertilizer requirements of a soil and to study administrative agents in their simplest forms; a knowledge of plants in their relation to food values has required an inquiry into the more or less complex combinations of certain of these elements. While the application of fertilizers to a soil has meant the addition largely of mineral manures, we are impressed with the fact that the substances of greatest consideration from a nutritive point of view in plants are not mineral substances at all, but substances which contain varying proportions of so-called non-mineral elements.

In a Study of Plants the Non-minerals Are the Items of Interest.

This is not, of course, rigidly true, but sufficiently so to show that in general the constituents contributed to soils in manures are themselves not directly built into actual food constituents in plants. It is an appreciation of this point which has led us to refer to these mineral constituents, not as plant food, but as administrative agents. It is in their presence, and because of their presence that organic structures are formed into plants and not because they are an integral or even important factor in the compound formed. If phosphoric acid, potash, lime, etc., were valuable, because it were necessary for them to form the foundation for all organic structures, soil exhaustion would be exceedingly rapid, but they seem to exercise in plant nutrition to a large degree the role of mere agents, thereby promoting the desirable conditions under which the carbon, hydrogen, oxygen and nitrogen may be built into the immense and wonderful superstructure of which plants are largely composed.

Plants Exhibit Great Individuality.

The laboratory has been able to simplify to a remarkable degree the various classes or kinds of organic compounds which exist in plants. There are probably no two organic structures exactly alike. We will take for instance, the well-known organic compound, starch. Chemically speaking, starch consists of a complex combination of three elements, carbon, hydrogen and oxygen. No one of these three elements is contributed to the soil in the form of mineral manures, but mineral manures do assist materially in providing the favorable condition under which starch manufacture goes on in the plant tissues. There are no two types of plants which furnish starch of the same character. In ultimate composition they are the same but we are able to distinguish even physical differences. Let us take corn starch for instance. It is essentially physically different from wheat starch, and again, both are materially different from potato starch, so much so that each may be distinguished quite readily. So far as nutritive value is concerned, however, they are the same, and so the chemist has been able to group, in his study of plants and nutrition, the starches together for the purpose of determining the nutritive value of a given product.

The Food Constituent of Plants.

His analysis of a plant and the plant

product he divides in the following way: First, protein; second, fibre; third, fats; fourth, nitrogen-free extract; fifth, mineral matter or ash. These materials all form a very definite relationship to animal nutrition and consequently the study of composition of plants has been a direct forerunner of the study of animal nutrition. Both problems exhibit a wonderful relationship between chemistry and agriculture.

The Importance of Protein.

The protein of plants we have been in the habit of considering as the most essential principle of food products. It is essential because a certain minimum allowance of it is absolutely essential to the maintenance of animal life. It will maintain life alone almost indefinitely. It is this compound in plants which has utilized to the fullest degree what mineral elements are taken up by plants and it is through their relationship to the protein compounds in food that we have any right to call phosphoric acid, lime, iron, and the like, plant foods at all. Aside from this it contains the interesting and all important element, nitrogen, which seems to be the key-stone to the activity of all living matter. An animal will starve to death on a diet of fat exclusively or on a diet of starches exclusively, although the energy equivalent of the starch or of the fat may be far in excess of that demanded by the animal's body. On the other hand, an animal may live apparently indefinitely if supplied with protein in the absence of starch, sugars, or fats, and we therefore have assumed with logical reasoning, the vital relationship of protein to animal nutrition.

The Proper Time to Harvest the Crop.

The science of plant growth does not at all lie in an establishing of the identity of the different compounds which go to make up a plant. This has been, of course, the first aim of the research but it is evident that plants vary materially in nutritive value, depending upon the stage of maturity, which they have attained. Consequently it has been necessary to study the composition of the growing plant at different periods in its growth and we find as a result of this study that there is a point which we may call the optimum point in the life history of the plant, where it presents its greatest quantity of nutritive material. Ordinarily one would be inclined to say that this optimum point is at the full maturity of the plant and this is undoubtedly true with such crops as wheat and the grain crops wherein the grain or the seed is depended upon for food. In the so-called succulent foods, however, the laboratory has shown that there are other points of consideration and the analysis of the plant at the different stages of its growth has shown at what stage it is most advantageous to harvest the crop for the particular purpose to which it is put.

Ladd's Study of the Acre of Corn.

To show just what changes take place in the growth of the crop, we present here the summaries of Henry who quotes experiments of Ladd, of the New York Experiment Station, on the study of an acre of corn. He found when the corn crop was tasselled, 1,619 lbs. of dry matter; 240 lbs. of protein; 654 lbs. of nitrogen free extract, and 72 lbs. of fat. Ten days later the corn had silked. It then had 3,078 lbs. of dry matter, 437 lbs. of protein; 1,399 lbs. of nitrogen free extract, and 168 lbs. of fat. Twelve days later, when the corn was in the milk, the dry matter was 4,643 lbs.; protein 479 lbs.; nitrogen free extract 2,441 lbs., and fat 229 lbs. When the corn

(Continued on page 78).

WHIRLWIND SILO FILLER

"THE Whirlwind is certainly a glutton for work", writes one of many enthusiastic owners.—"It takes the fodder as fast as we can get it there and elevates 'way way up—no hand cutting, chokes, or break-downs."

That's what all Whirlwinds do—The one piece Main Wheel, the heaviest made, means fast work, uniform speed, uniformly applied centrifugal strain and therefore absolute safety.

Fewest working parts, hence least friction. Every piece of Whirlwind iron withstands from 9,000 to 17,000 lbs. greater strains per sq. in. than high grade cast.

It pays to investigate carefully before buying. Write for our free catalogue and book: "Why and How to Fill A Silo." Learn how to judge the real essentials of a Silo Filler.

There's a lot of inside information in our free weekly WHIRLWIND BULLETIN to Agents. It's yours for the asking.

Wilder-Strong Impl't Co.
Box 13, Monroe, Michigan



WHIRLWIND
SIZE G



OLD WAY

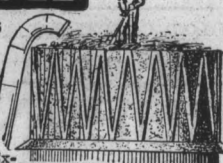
FILL YOUR SILO FULL

HOOSIER WAY



Turn Your Waste Space Into Dollars

Get more silage into your present silo—get it in quicker, easier; finish your filling without bumping your head on the roof—without back-ache. The Hoosier way gives you a top load that settles within a few days to silo top level—no refilling necessary.



Shortage of silage in winter may mean buy feed at high prices. This money would pay for a Hoosier Silo Extension Roof and would give you full value from every inch of your silo.

THE HOOSIER SILO EXTENSION ROOF

Is Strong, Economical, Permanent, can be attached to any Silo—stave steel, concrete or tile. Withstands wind, rain, fire and rust-proof; lasts a lifetime; increases silo capacity $\frac{1}{2}$ to $\frac{3}{4}$; easy to put on; easy to open and close; easy to fill; lessens labor; increases profits. Pays for itself in a season. Guaranteed.

Prepare now—before you build or complete your silo; if you now own a silo it will pay you to replace the old style roof with a Hoosier as others have done. Write now for booklet that shows how others are turning waste space into dollars with the Hoosier Silo Extension Roof. Write today.

SHEET METAL SPECIALTY CO.,

537 N. Y. St., Goshen, Ind.

537 Brokers Bldg., Kansas City, Mo.

Get These Big Profits

Now men everywhere are making big money with the famous Sandwich Hay Press. (Motor Power). \$10—\$15—\$20 a day clear profit is common.

Pays for itself in a short time from the profits. Solid steel construction—certain sure operation. Makes its own power from simple, sturdy Sandwich gas engine (4, 6 or 8 H. P.) on same truck.

Fast Working—Money Making

Get Our Free Book

"Tone Tell" pictures and describes these great presses. Write for a copy now.

SANDWICH MFG. CO., 514 Oak St., Sandwich, Ill.

Box 514, Council Bluffs, Ia.—Box 514, Kansas City, Mo.

Hay Press

Heavy "can't slip" steel belt. Friction clutch right on Press. Simply swallows hay and turns out solid, salable bales. Simple self feeder and block dropper. Engine with magneto. We make Horse and Belt Power Presses too. Write Now.



"The EVERLASTING TILE"

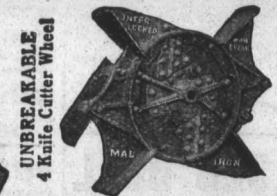


IS YOUR FARM PROPERLY DRAINED?

Are you trying to raise farm produce on improperly drained land? Might as well try to grow hair on a billiard ball. Farm land, to produce, must be cared for with the same efficiency and attention as you would give to your implements. All farming essentials start with perfect and adequate drainage. Let us tell you about our made in Michigan tile—the salt glazed, vitrified kind—in sizes from 3 to 24 inches. Write for carload prices.

AMERICAN SEWER PIPE CO.,
200 St. James Ave., JACKSON, MICH.

"ONCE LAID ALWAYS WORKING"



Capacity
Economy
Safety
New
Different

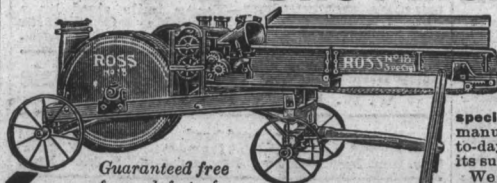
SILO FILLERS AND

Glazed Tile Silos PRICED TO YOUR Home Town

SILOS to earn cost first—then pay. HOW? Ask, giving size.

Kalamazoo TANK & Co., Kalamazoo, Michigan
NO. FORT WORTH, TEXAS. MINNEAPOLIS, MINN. KANSAS CITY, MO.

ROSS Ensilage Cutters and Silo Fillers with Blower



STEEL Cutting Apparatus and Blower

Especially designed for steam power and extraordinarily heavy work. Steel is known to be stronger than cast iron. The Ross is not an ordinary fodder cutter but a special made machine for filling silos. We have manufactured the Ross for 65 years, and to-day it will by its own actions prove its superiority. Write for catalog. We also manufacture the Ross Wood and IN DE-STR-UCT-O Metal Silo.

Guaranteed free from defects for life of machine.

THE E. W. ROSS CO., Box 114 Springfield, O.

ROSS

When writing to advertisers please mention the Michigan Farmer