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## ORCHARD AND GARDEN NOTES.

August 15.

It is not too late to plant another row of radishes.

Keep the top soil stirred up even if it is dry and dusty.

Trim out the blight from the apple trees and disinfect all of the cuts.

Celery and egg plant need plenty of water. Always water them thoroughly, in the evening.

During August start geraniums for winter blooming. Break off the slips and put them in the ground beside the old plant. Pot before frost.

Keep the vegetables gathered clean. Eat what you can, and can what you can't. If you don't want them all your neighbors will be glad to help.

## ORCHARD AND GARDEN NOTES.

August 22.

Keep up the fight against the insects.

Early peas planted now will mature before heavy frosts.

When a vegetable goes to seed it becomes a weed. Pull it out.

Winter onions should be planted in September in a well-drained seed bed.

Old raspberry canes should be cut and destroyed as soon as the fruit has been gathered.

Don't let the flowers go to seed. The plants bloom better if the flowers are cut each day.

Sow spinach the latter part of August for early spring use. Select a hardy variety and cover during the winter with two inches of straw.

Don't let the blossoms waste. Send them to a shopgirl behind a counter, or ship to the Sunshine Society or the Salvation Army for distribution.

## EFFECT OF FALL PLOWING UPON SOIL FERTILITY.

Plowing early in the fall liberates more plant food for the spring crop and conserves more moisture. By loosening the surface soil, thus allowing the air to penetrate, the soil particles which contain phosphorus, potassium, and lime are caused to oxidize, which sets free these elements for the plant. The soil compounds originally are very complex and are practically of no benefit to the crop until they are acted upon by the air, the solutions in the soil, and plant juices, so as to decompose them and make them much simpler. Fall plowing has a tendency to let the rains percolate into the soil better, which tends to dissolve and break up the compounds for the use of the spring crop.

Bacteria, which are found in the soil in countless numbers, generally work better where oxygen from the air is readily available, and these in turn break up the organic matter of the soil into simpler compounds, liberating nitrates or nitrogen food for the plant. This is one of the most essential elements for the early growth of the plant. It is often noticed that spring plowing will not cause crops to lodge so badly as fall plowing. This is explained by nitrogen being set free to a larger extent in the loose, porous, fall-plowed than in the more compact soil.

The moisture problem is also a valuable one from the standpoint of productivity of the soil. As stated above, by opening up the soil the fall rains percolate much more rapidly into the soil, while there is a mulch formed on the surface which tends to prevent the water from the subsoil going directly to the surface and being evaporated. Early fall plowing makes a reservoir of the subsoil, storing the water for the crop in the spring. Often where the ground is a little rolling, the water will run off before it has time to soak in when the soil is compact and hard. Those who have practiced summer fallowing know that it increases chances for a good yield the following season, and this is largely due to the liberation of plant food in the soil and conservation of moisture. Fall plowing is very similar, only the soil has not quite so long to bring about these changes as in case of summer fallowing. Where possible it is nearly always advisable to plow as early in the fall as possible.—W. H. Frazier, Assistant Soils Chemist, University Farm, St. Paul.

## MIGRATORY BIRDS PROTECTED.

Western Men Advise in Making New Regulations.

Fifteen men located in sections ranging from California to Massachusetts have recently been appointed to advise Secretary of Agriculture Houston on any matters which may be referred to them regarding the regulations for the protection of migratory birds. They are recognized experts in this line but will serve without pay.

The new regulations, which do not go into effect until October 1, 1913, are in accordance with a recent act of Congress providing for the protection of the migratory birds of the United States. They will undertake to secure uniformity in the protection of migratory game and insectivorous birds, particularly at night and to establish protected migration routes along three great rivers in the central United States. Complete protection for the smaller shore birds and some others which are greatly reduced in number will be attempted and the open season will in some cases be reduced from twenty-five to fifty percent.

One of the Western men appointed to advise in the framing of regulations, is Honorable John F. Lacey, Oskaloosa, Iowa, author of the Lacey Act regulating importation and interstate commerce in birds and game.—J. O. Rankin, University Farm, St. Paul.

## A FEW FACTS ABOUT SHEEP.

Sheep are practically immune to tuberculosis.

There are 54,000,000 sheep in the United States.

About fifteen different breeds of sheep are now recognized.

The nutritive value and digestibility of mutton rank quite high.

A pound of mutton can be produced at less cost than any other kind of meat.

Reliable statistics show that sheep are relatively free from diseases dangerous to man.

Of 14,208,724 sheep inspected for food purposes in 1912, only 15,402 were condemned, about one-tenth of one per cent.

One-tenth of these condemnations were due to caseous lymphadenitis, a germ disease causing an inflammation of the lymph-glands.

Of the serious parasitic diseases affecting sheep, stomach worms probably cause the heaviest losses to sheep raisers.

Docking lambs improves their general appearance and increases their market value, without retarding their growth to any extent.

If lambs are not docked or castrated until warm weather, pine tar smeared over the fresh wounds will help to keep the flies away.

To produce the best quality of wool, sheep must have access to plenty of good pasture. Continuous grazing on the same pasture is undesirable.—H. Preston Hoskins, Assistant Veterinarian, University Farm, St. Paul.

## POTATO WILT.

This is the time of the year when potato wilt diseases begin to make their appearance. The symptoms of this wilting may vary to a considerable extent. Frequently the branches and leaves grow upward forming a more or less compact top, the leaves curling and folding along the midrib. The plants become a pale yellowish green while the stem may turn black or brownish at the soil surface, this discoloration sometimes extending as far up as the lower branches. These discolored areas may shrivel up and become dry while often they become soft and decay causing the plants to fall over.

Young plants may be killed prematurely, only small tubers being developed. In other cases the vines are large, the tops presenting a compact rosette appearance, but only small potatoes are produced. Often the formation of small green aerial potatoes in the lower leaf axils or near the surface of the ground, above the discolored portion of the stem, takes place.

The roots are frequently very brittle, breaking off very easily and appearing somewhat rotted. They may be grayish or brownish in color and are often partly covered with a pink mold. The stem branches leading to the tubers appear similar to the roots.

Plants showing any of the above symptoms may be affected with one of a number of diseases. Sometimes it is difficult to determine in the field which disease it is. The treatments needed may be different. Anyone finding the wilt in the field should send a diseased specimen to the Plant Pathologist, University Farm, St. Paul.—A. G. Tolosa, Assistant in Bacteriology, University Farm, St. Paul.

## WHY BURN YOUR WOODLAND?

Such Fire on the Homestead Does Much Harm and Little Good.

The present method of handling homesteads in the forested section of the State is very wasteful. The waste is neither conscious nor unavoidable but it almost invariably occurs. It is due to the settler's lack of foresight and total lack of a plan of operation.

The idea seems to exist that no plan is needed till the farm has been entirely cleared and the whole area is ready for cultivation. As a result the settler builds a shack and starts an irregular clearing, wherever the clearing looks easiest, with absolutely no definite purpose in view. The chances are that the patch when cleared will not be suited to any crop that he can eat. In the meanwhile he burns over the rest of his quarter section in the hope of reducing the labor of clearing in the future, and is obliged to "work out" for the money to buy provisions.

This whole idea is wrong. The timbered, or more especially the cut-over, farm requires a definite plan of operation much more than the farm on the prairies—for it is infinitely harder to make a living on a tract of stump land than on a fertile farm ready for the plow. Among the stumps it is literally a question of making a living; on the prairie it is only a question of the amount of profit.

Most of the difficulty lies in a mistaken point of view. The settler usually starts with the idea that he will clear his whole farm in a very few years, when, as a matter of fact, it will usually require several generations, and in ninety-nine cases out of a hundred, there is a portion of it that will never be cleared. The settler should recognize right at the start that he is undertaking an operation which means many years of hard labor. He should consider his resources, make a careful study of his whole tract and decide what part of it is best suited to potatoes, what part to oats, pasture, and all other probable crops, and what part is least suitable for farming. Then he should carefully estimate how much land he can reasonably expect to clear each year and what sort it had best be to enable him to live off what he can grow. He should also figure out how much stock he can afford to buy and how much he can take care of. If these plans are wisely made he can very often avoid the necessity of "working out" and thus accomplish much more in developing his own place.

Possibly there will be some portion of the farm which can be burned over to advantage, but what particular part of it should be very carefully considered. There will usually be a considerable part which will not be cleared for forty or fifty years. That part should be definitely selected at the very start and all fire kept out of it. Thus protected it will grow a crop of timber which will, at the end of forty or fifty years, be worth more than the whole farm was at the beginning, and the cost of its production has been nothing. Burn the whole farm over indiscriminately in the beginning and allow the fire to run over it at will from time to time and its uncleared portion will produce little or nothing and the cost of clearing will not be greatly reduced.

A definite plan of operation faithfully carried out can often make a permanent, life-giving farm of a tract of cut-over land which, without a plan, can be only a cruel, relentless breaker of human hearts.—E. G. Cheyney, Foster, University Farm, St. Paul.

## COWS MAKE MORE MONEY.

From a careful investigation we find that our common cows are capable of producing a much larger yield than is secured from the average common cow in the State. During the past decade we have always had at University Farm, in the dairy herd, a number of common cows; that is, cows with no dairy heredity. The average yield from these common cows, for 23 yearly records, is 5,000 pounds of milk and 222 pounds of butter; which last, valued at 27 cents per pound, is equal in round numbers to \$60, for butter alone. The average receipt per common cow in the State is \$46.40; which shows that the average cow is yielding \$14 less per annum than she might easily yield if given the same care and feed as are given the cows at University Farm. Write for Experiment Station Bulletin 130, by T. L. Haecker, Professor of Dairy and Animal Husbandry, University Farm, St. Paul, Minn.

## CHOLERA SERUM BULLETIN.

New Law Provides Serum—New Bulletin Explains Disease—Fight to Check \$50,000,000 Annual Loss.

A law recently put into operation by the Minnesota legislature provides for the sale of anti-hog cholera serum at one-third of a cent per cubic centimeter by the Agricultural Experiment Station at University Farm, St. Paul. Virus is furnished free of charge when it is advisable to use it with the serum. These prices are lower than the previous price and the serum may be administered by competent veterinarians or other persons especially authorized by the Minnesota State Live Stock Sanitary Board. This is but one more step in the fight against a disease which is estimated to have caused losses amounting to \$50,000,000 in 1912. One state alone losing \$10,000,000 worth of hogs. Four years' records of serum-treated animals in Minnesota indicates that the losses in healthy herds are insignificant and that about 80 per cent of the animals treated in sick herds may be saved.

In order that the use of the serum and the nature of the disease may be more fully understood, Dr. H. P. Hoskins, in charge of the serum plant, has prepared "Hog Cholera" Bulletin 37 of the Minnesota Farmers' Library published by the Extension Division. It is written in simple English and avoids technical medical terms. Its illustrations contrast healthy and sick animals and show the appearance of the lungs, kidneys and intestines of hogs dead from cholera. These together with the careful statement of the symptoms of the disease and of other disorders sometimes mistaken for cholera, will help owners to decide whether to order serum. A dosage table states the amount of serum required for hogs of various sizes and enables the owner to decide in advance just how much serum to order and how much the treatment will cost aside from the payment for a veterinarian's services. The virulent blood or Minnesota method of vaccinating pigs at the age of three or four weeks is also described briefly. Its cost is much lower than that of serum treatment.

About 45,000 of these bulletins have already been distributed but those who were not reached in the first distribution may secure copies by addressing the Office of Publications, University Farm, St. Paul.—J. O. Rankin.

## WORMS IN HORSES.

Horses have different kinds of worms inhabiting different parts of the intestines and requiring somewhat different treatments. If those who call on the Experiment Station for information on the subject could give more specific information, describing the worms, or would send us a sample, we could give more definite advice concerning treatment. There is no one specific or best treatment for worms. It is a good plan to keep a mixture of equal parts of salt and sifted hardwood ashes constantly before horses.

For the white worms, six to twelve inches long, and other common worms living free in the intestines, try the following treatment: First give a mild physic, such as a pint to a quart of raw linseed oil. Feed little or no hay for three days. On the fourth day give two to three ounces, that is, from five to seven tablespoonsfuls, of turpentine in a pint of raw linseed oil. Repeat the same dose of turpentine and linseed oil on the fifth day, and repeat the whole process beginning on the fifteenth day from the start.

This dose is for a thousand-pound horse and should be given about in proportion to weight. Judgment should be used concerning the condition and strength of the horse and how easily any particular horse is affected by cathartic medicines. Never give a severe physic to any horse that is thin and weak.—M. H. Reynolds, Veterinarian, University Farm, St. Paul.

## SHEPHERD'S PURSE.

Shepherd's purse is troublesome mainly because of its early and prolific seed-bearing qualities. It is easily subdued by good plowing and clean culture. It yields readily to the cultivator and hoe and may be held in check by any good arrangement of crops in rotation. It often gains a foothold where bare spots have been left in grain fields or at roadsides or in thin meadows and pastures. Well prepared seed-beds and full seeding will prevent the appearance of the weed in most cases.—Andrew Boss, Agriculturist, University Farm, St. Paul.

## PREVENT TEN MILLION DOLLAR LOSS.

A Dollar Spent May Save a Thousand Dollar Loss From Fruit Diseases.

The National Department of Agriculture with the co-operation of several of the experiment stations has developed successful methods of controlling the bitter rot and scab of apples, and the brown rot of peaches, incidentally discovering a new type of spraying mixture (self-boiled lime-sulphur) which may be used without injury, on the tenderest fruits at any stage of their growth. Through the use of these sprays diseases which had caused almost a complete loss of apples and peaches are controlled at a cost of less than one-tenth of one per cent of the net gain from spraying. Bitter rot alone destroyed more than \$10,000,000 worth of apples in one season, and peach rot destroys on the average about twenty per cent of the crop each year. A similar treatment prevents plum and cherry rot, diseases that must also be reckoned with when these fruits become important in this State.—A. F. Woods, Dean and Director, Department of Agriculture, University Farm, St. Paul.

## RYE A GOOD CASH CROP.

Winter rye is proving one of the good cash crops for Minnesota. A field threshed recently at University Farm yielded a little over 40 bushels per acre. The variety grown was Minnesota No. 2, a selection from the crop nursery at University Farm which has proven very well adapted to growth in Minnesota. With rye selling at 55 cents per bushel, this amounts to \$22.00 an acre. To equal this, 24 bushels of wheat would need to be harvested at the present price, 90 cents per bushel. Rye will not always yield 40 bushels to the acre. The average for the State, however, is 18 or 19 bushels and there should be no difficulty whatever in getting 25 bushels or more on land that will produce from 12 to 15 bushels of wheat.

Aside from being a good grain crop, fall rye, sown before September 15, furnishes excellent pasture and is ready again for pasture by April 20 or 25. It can be pastured for two or three weeks in the spring without reducing materially the yield of grain.

The Minnesota Crop Improvement Association maintains a list of names of the farmers growing Minnesota No. 2 rye for seed purposes. A copy of this list can be secured by addressing the Secretary of the Minnesota Crop Improvement Association, University Farm, St. Paul.—Andrew Boss, Agriculturist, University Farm, St. Paul.

## NEW SILO BULLETIN.

How Hollow Clay Block and Solid Concrete Silos Were Made at Crookston, Grand Rapids and University Farm.

Most Minnesota farmers who keep stock and grow corn should have silos. If they wish to build these silos themselves from hollow clay blocks or concrete, they should secure copies of "Two Types of Silos at Northwest Experiment Farm" in which Superintendent C. G. Selvig tells how silos were built of these two materials at Crookston. A brief article by Superintendent A. J. McGuire of the North Central Experiment Farm tells how a hollow clay block silo was built at Grand Rapids, while photographs show another in process of construction and later being filled at the University Farm Dairy Barn.

Although this bulletin undertakes only to tell how certain silos were built and not to recommend particular methods of using these materials or to present full information on silos, brief suggestions are given for the location of the silo, the crop with which to fill it, and co-operation in securing a cutter and engine for filling. A table suggests the number of acres of corn required to fill silos of various sizes and helps to determine how large a silo to build in order to feed a given number of cattle 180 or 240 days.

Other methods of constructing silos of these materials are stated in bulletin distributed by the Experiment Station at Ames, Iowa. Over 40,000 copies of the Minnesota Bulletin have just been distributed and about 20,000 are still available for later inquirers who may address the Office of Publications, University Farm, St. Paul.—J. O. Rankin.