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Field Management and Crop Rotation

By Edward C. Parker

This book is described as the link between the school and the farm. It is the first comprehensive book on the essential features of farm management, discussing the most important problem of modern times, the maintenance of soil productivity and the profitable use of capital and labor in agriculture. The fertility of Western soils does not at present necessitate any considerable attention being paid to the use of commercial fertilizers. However, barn-yard manure is being used to advantage on many farms and eventually commercial fertilizers will have to be included in the management of some soils. It is well to be posted on this subject and this book explains the conditions which warrant the use of commercial fertilizers.

Another very valuable feature of the book is the experimental data which it contains, condensed in a very readable and readily available form for practical application. As additional features the book contains discussions on topics such as plowing, soil inoculation, seed selection, improved crop varieties, fungus diseases and weed eradications in order to provide the reader with many of the detailed facts of soil and crop management. The book also has a very complete appendix of useful facts and statistics such as amounts of seed per acre, grass mixtures, feeding standards, fence costs, work capacity of farm machines and crop costs.

As a reference work this book is a valuable addition to the farm library. It is well illustrated, contains 512 pages and the price postpaid is **\$1.50**

The Boy's Workshop

By Clarence B. Kelland

This is the kind of book that every boy would delight in. It tells you how to build all kinds of furniture for camping out, all kinds of fishing tackle, boats, canoes and how to sail them. A chapter is devoted to the construction of sail carts, coasters, aeroplanes, kites, gymnasium equipment, bows and arrows, traps, windmills, etc. Another chapter tells how to make ice-boats, sharpen skates, slides, skis. One of the best chapters describes the boy's workshop, tells how to make his bench and what tools he needs, and there are instructions for building all kinds of furniture, novelties, Christmas presents, toys. Other chapters tell how to catch fur bearing animals, how to run, signaling for boys, how to make all kinds of knots and ties and hammocks. The boy who owns this book will direct his energies to useful work, he will be more contented to stay home and be more useful around the farm. 339 pages profusely illustrated and handsomely bound. Postpaid **\$1.60**

"Happy Hollow Farm"

By Wm. R. Lighton

This is the story of a newspaper man who, tired of city life, took his family and went out to the country to live on a farm. He bought a run down farm and put into it hard work and good management, with the result that he made a big success of his work. More than the financial results was the great pleasure which he and his family derived from their farm work. The story of the book contains a lot of useful hints on managing a farm and will make any farmer and his family more contented with their work. 318 pages, well illustrated and handsomely bound. Postpaid **\$1.35**

Gas, Oil and Steam Engines

By John B. Rathbun

Consulting Engineer and Instructor of the Chicago Technical College

This is a simple, practical and comprehensive book on the construction, operation and repair of all kinds of engines. It deals with the various parts in detail and the various types of engines and also the use of different kinds of fuel. The book is simply written and well illustrated and is a practical treatise for the man who wants to know just how to manage his engine and how to apply it to all kinds of farm work to the best advantage. It pays particular attention to Heat and Power Fuels; it defines the working cycles and thoroughly explains the practical use of the Indicator and Indicator Diagrams. Attention is also paid to the construction and adjustment of the various parts, such as Ignition systems, Carburetors, Lubrication, Cooling Systems, Governors, etc., and all parts of the engine most likely to give trouble. This "Practical Handbook of Gas, Oil and Steam Engines" is one of the best books in its line on the market and is recommended by "The Guide" for the use of all machine men. Postpaid **\$1.00**

FOUNDATION FOR THE ENGINE

If a gasoline engine is to do its work properly it must be on a really firm foundation. A footing that gives even a small amount not only lessens the efficiency of the engine, but increases the wear and tear very rapidly. The following instructions, issued by one of the cement companies, for building a foundation, should be filed away against the time when they may be wanted:

The concrete should be mixed in the proportion of 1 part Portland cement, 3 parts clean, well-graded sand, and 5 parts crushed stone or gravel. All parts should be determined by volume and the use of accurate measuring boxes should be rigidly observed. The sand should all pass a ¼-inch mesh sieve, and the crushed stone or gravel should pass readily thru a 1½-inch sieve. In no case should bank-run gravel be used as taken from the deposit. It should be passed over ¼-inch and 1½-inch screens. That which passes the ¼-

inch screen is sand, and that which passes the 1½-inch screen is retained on the ¼-inch screen as gravel. If the size of the engine warrants the use of a reinforced concrete footing, a 1:2:4 mix should be used for the reinforced portion of the concrete. Sufficient water should be used to form a plastic, wet consistence, but not enough to cause separation of the cement and aggregates when placed. For footings over 6 or 8 square feet in plan, stone up to 2¼ inches may be used. The stone should be graded, as this will insure a strong, dense concrete. After the exact location of the center line of the foundation has been carefully established, a pit 2 feet to 4 feet deep should be excavated, the length and width being the exact size of the footing. Deposit the mushy wet concrete to the depth determined on the plan. In order to thoroughly key the engine foundation to the footing, embed 3 or 4-inch stones in the portion of the footing under the engine so that they will protrude from the footing.

A box form 8 inches larger in length and width than the engine base should be carefully set over the footing. The inside of the forms should be thoroughly oiled to prevent the concrete from adhering to same. It is essential that the anchor bolts for the engine be carefully spaced and so placed as to take care of any small variations in position. Use a templet for this purpose, and supply for each bolt greased gas-pipes of twice the diameter of the bolts, the pipes to be removed before the engine is set. The purpose of the pipes is to provide for such slight adjustment of bolts as may be required. The anchor bolts should be embedded in the concrete at least 18 inches and supplied with cast-iron washers at the lower ends.

After the templet has been accurately set over the forms and the bolts so arranged that the tops are at proper elevation, the concrete is carefully deposited and spaded in the forms. Turn the gas-pipes from time to time, thus preventing them from sticking to the concrete. The concrete along the forms should be carefully spaded to prevent the formation of air bubbles or pockets.

Damp burlap should be placed over the form after the concrete is placed. This will insure normal setting of the material. After twenty-four hours remove the form. The engine may be set and the bolts adjusted after forty-eight hours. Before the engine is set remove the gas pipes referred to above, and when the engine is finally placed, fill the space around the bolts with 1:1 mortar.

Do not use the engine until the base is at least two weeks old. If necessary to have an exhaust or drain pipe, this may be installed in the form before the concrete is deposited.

Nature Notes

By S. J. Wigley

CONCERNING CATERPILLARS

Had we more orchards and fruit gardens on our western prairies we should view with some alarm and less indifference the increasing number of tent caterpillars and fall web worms. At present these pests are content to feed upon choke cherry and wild goose-berry leaves and man, with other plagues to contend with may well leave Dame Nature to attend to this one.

The tent caterpillar and fall web worm are the only grubs that build tents or nests; the former for shel-

chola attacks the colonies and the dead bodies filled with dark fluid are found stuck to the trees. Sometimes, too, a fungous growth may attack them and their dead bodies are filled with pores ready to spread the disease.

Cutworms are sometimes attacked by a fungus known as Empusa virens, and crawl to a fence or stone to die. Another kind of fungus (Cordyceps melotonthae) destroys white grubs. An entrance being effected into the grub's body the fungus will grow and increase in size, sending out a "stalk" sometimes six inches long and of a dark red color. These curious fruiting bodies produce spores in great quantities and without doubt keep white grubs in check. Perhaps man will some day be able to control cutworms and wireworms by means of this disease, but weather changes so affect the spores that any benefits are uncertain. The spores fall on the caterpillar and throw out germ threads which penetrate the skin and then form another kind of spore inside the body of their victim. Sometimes the whole caterpillar is covered with a white mouldy growth known as the Isaria form.

In New Zealand the Maoris hunt for the club-like fruiting bodies growing on the grub. By them they are known as "hotete" and are greedily eaten because of their nutty flavor. Insect parasites are, however, the most effective way nature has to lessen the number of caterpillars. Certain little flies are constantly laying eggs, either in or on the caterpillar's bodies. To aid nature in this work man has imported several foreign species and the success of this experiment, especially in the States, may be regarded as one of science's most important victories in recent years.

Several kinds of beetles and bugs feed upon caterpillars. One of these, known as the fiery ground beetle (Calosoma calidum) is brownish black in color with three rows of reddish spots on each wing cover. Farmers should learn to recognize this friend for it makes cutworms its special prey.

The black ground wasp, too, has a grudge against cutworms and hunts them continuously. Indeed, all wasps use caterpillars as food for young wasp grubs.

Our knowledge of insect friends is as yet very limited and earnest observers are needed in all parts of the Dominion to aid in a most useful and fascinating pursuit.

NOT SO CRAZY

The good clergyman was administering to the needs of the inmates of a private lunatic asylum, and he was especially warned against an exceedingly cross-grained, recently-arrived patient. Nothing daunted, however, the reverend gentleman entered the little room where the man was confined and began conversation with him.

"Is it true," inquired the crazy man, "that Queen Elizabeth has recently married the Sultan of Turkey?"

"Quite true," replied the visitor, bent on humoring the patient.

"And it is also true, I suppose," went on the demented one, "that Lloyd-George has been made Lord Chancellor with a salary of twenty thousand dollars a year?"

"Quite, quite true," said the clergyman, fervently.

"Ah!" said the madman, rubbing his hands with glee. "And, pray, what may you be?"

"I? Oh, I am a minister of the gospel."

"Well," said the man, reflectively, "you look like a minister of the church and you may be one, but you are about the biggest, cold-blooded liar I ever met."

CLERGY AND THE WAR

Nearly 20,000 clergymen of all denominations, being young men of military age, have received Lord Derby's letter inviting them to enlist. The archbishops and bishops of the Church of England have protested against the letter being sent to their clergy, holding that "the solemn ordination to the ministry of Word and Sacrament is not consonant with combatant service in the field." The clergy nevertheless are urging others to do what they refuse to do themselves.



TENT CATERPILLARS

ter against cold in early spring, the latter as a protection against enemies. The tent caterpillar protected by hairs and possibly a bitter taste, fearlessly leaves his tent to feed. The web worm, gnawing in and binding leaf after leaf feeds safely in his ever enlarging house, during the months of July and August.

Nature has several methods however, of keeping caterpillars in check. Birds decline to eat tent caterpillars, but when the chrysalis stage is reached the empty silken cocoons tell quite another tale. Sometimes a disease like