Soils and Crops

Address communications to Agronomist, 73 Adelaide St. West, Toronto

MR. JONES VISITS HIS WHEAT FIELD.

Wheat is more generally fertilized in Ontario than any other farm crop. Most farmers are of the opinion that it pays better to fertilize wheat than the other crops of the rotation. Aside from the matter of profit, which must come from either increased yield, better quality, or both, there are a number of questions that arose in the mind of Mr. Jones as he walked across his wheat field.

Within certain limits, it makes little difference how many pecks of wheat are seeded per acre. The number of heads developing per square yard of ground is not so much dependent on the number of seeds planted as the ability of the soil to produce strong vigorous plants. For example, eight or nine pecks per acre of seed do not commonly produce a larger crop than do six pecks, although there may be more plants. In the case of the lighter seeding, the plants stool more until about the same number of heads are produced. The fertility of the soil apparently governs the stooling of wheat. Fertilizers promote a heavier root growth, and greater stooling with less winter killing. The quick start which fertilized wheat is able to make in the spring insures an easier maturity, and, often, escape from destructive rusts and drought.

Fooling The Hessian Fly.

The Hessian fly is one of the worst of wheat pests, and yet it is fairly easy to control, if the habits of the insect are understood. In order to reproduce and cause destruction, the adult fly must lay its eggs on young wheat in the early fall. Apparently the wheat plant alone suits this purpose. The eggs develop into larvae which go down into the base of the young wheat plants and destroy them. To avoid the fly, wheat must be seeded late enough to escape the egg-laying season of the fly. Delayed seeding is more hazardous from the standpoint of winter-killing. Careful preparation of the seed-bed, and plenty of available plant food in the soil overcome the handicap of a late seeding and the fly is avoided.

A Big Help in Growing Clover.

A common complaint is that it is harder to grow clover than it used to be thirty or forty years ago. This is undoubtedly true. When the land was first cleared, clover grew easily, abundantly, and luxuriously. But on our Ontario soils, crop after crop was removed without replenishing the plant-food supply of the soil. Furthermore, lime was rapidly removed from the soil by leaching as well as by the crops. Sour soils developed, on which clover does not succeed. Satisfying this need for lime is often the first requirement in successful clover growing. But there are also soils where clover fails because of phosphorous hunger. On such soils a fertilizer containing this plant-food will make a better stand of clover, larger plants that are not so easily heaved out by frosts, and a consequent greater yield of hay.

Fertilizing for the Whole Rotation.

The effects of fertilizer on wheat in a rotation are by no means confined to the wheat crop. The influence may extend over several years, especially if clover follows wheat. The increased clover crop is often very striking. The larger tops and root systems when plowed under have an accumulative effect on the corn, potatoes, or whatever crop follows. The question naturally arises: Is it desirable to make a heavy application of fertilizer for wheat, providing more plant-food than the wheat can utilize, or shall each crop in the rotation be fertilized with a smaller amount of fertilizer? There are certain advantages in the first method. Less labor is involved, and the indications from experimental work on this point are that greater returns are secured from the rotation as a whole. An increase of a bushel of wheat is as good as two bushels of corn or nearly three bushels of oats, and more easily obtained on most soils. Therefore, it may be profitable to make the larger fertilizer application on wheat, especially if followed by clover.

Acquiring the Habit.

The statement, "if you use fertilizer once you'll have to use it always," has a grain of truth in it. If fertilizers are profitable it is, of course, good business to continue to use them, just as it is good business to continue spraying potatoes or testing seed corn. Any of these practices can be discontinued, there is no compulsion about them. The farmer who obtains increased yields from improved practices finds it difficult to go back to the old order. In any sound system of farm management, the use of fertilizer is likely to become a pretty well defined habit.

Effect of Fertilizer on the Soil.

The question, does fertilizer injure the soil, is as old and as definitely answered as the question, does wheat turn into cheat? Nevertheless, the claim is sometimes made that fertilizer causes the soil to lose its organic matter, and to run together. When this condition occurs, the fault can generally be traced to the farming system, and not to fertilizer usage. One of the best proofs of the value of fertilizer in keeping up the organic matter of the soil is in a plot an Experiment Station that received fertilizer without manure for fifteen years. Every crop grown was removed, and yet at the end of the period, this plot contained 15,000 pounds more per acre of organic matter than an adjacent plot which had received no fertilizer. Good farming practice in Ontario wheat soils requires the conservation and building up of the organic matter supply by tillage, rotation, legumes, and care of animal manure.

Red Fields and Sour Soils.

In the early summer months many fields from a distance present a rusty red color, due to the presence of red sorrel, indicator of a sour soil. Because of the fact that there is apparently more and more sorrel each year, fertilizers have been accused of causing soil acidity. Probably the name of one of the principal fertilizing materials, acid phosphate, has had a good deal to do with this belief. There is very good evidence that fertilizers do not cause soil acidity. A plot which received over two tons of sixteen per cent. acid phosphate in fifteen years was actually less acid than adjacent plots that had received no treatment. In some laboratory tests the application of as much as five tons of acid phosphate on an acid soil actually reduced the lime requirement of that soil. While the limestone requirement of a soil may not be increased by the use of fertilizer, it may be very desirable to lime the soil in many cases to get the full benefit of the fertilizer.

The Fertilizers' Act.

An important piece of legislation designed to ensure the sale of genuine fertilizers, and to prevent deception, was passed at the recent session of the Dominion Parliament. This Act, which is under the administration of the Seed Branch of the Dominion Department of Agriculture, requires that a statement of the brand name of the fertilizer and of the minimum percentage of each of its plant food constitutents shall be printed plainly on a tag or label attached to, or printed directly on every containing bag or package. The trade must in no way seek to deceive the public as to the merits or character of a fertilizer. With the exception of basic slag and natural rock phosphate, no material can be sold as a fertilizer that does not contain twelve percent. at least of nitrogen, phosphoric acid or potash. No fertilizer may contain any poisonous substance injurious to plant life. Unless treated by a chemical or physical process, the following can be sold as exempt from the Act, provided the seller does not guarantee them to contain a percentage of nitrogen, phosphoric acid or potash, namely, barnyard or stable manure, slaughter-house paunch manure, fish garbage, cannery, sugar beet or tobacco refuse, stockyard manure, gardeners' compost, and other green vegetable manure or refuse. Any inspector of the Dominion Seed Branch can be applied to for examination of a sample of a suspected fertilizer.

A satisfactory way of treating stone steps and window ledges is with a salt solution. This should be very strong, one part of salt being dissolved in two parts of hot water. Apply this in a warm state to the stone and when dry the making of another application is desirable. Every few months the treatment may be repeated.

Farming Versus Agriculture

In former years, when men essayed
Good Mother Earth to tickle,
It was not counted as a "trade"
To wield the scythe and sickle.
To steer a plow and drive a nag
And, with the feet loam-weighted,
Plod back and forth behind a "drag"
As "Hopping clods," was rated.

He counted brawn ahead of brain,
The doughty son of Labor
Who daily toiled through sun and rain,
As likewise did his neighbor.
He blindly fought the worms and flies
Which yearly were alarming,
And, though he took the county prize,
His toil was classed as "farming."

But, in these days of modern tools
And more progressive seeding,
We learn our precepts in the schools,
And through constructive reading.
A good farm paper fills the need,
And is a potent factor
In raising crops from fertile seed,
As much so as the tractor.

Where formerly we cast aside
All scientific data,
It now affords us joy and pride
To raise a smooth potato.
So, raising live stock, corn and peas,
In spite of pest and vulture,
Is a "profession," if you please,
And classed as "agriculture."

A LAY OFF

—Brooklyn Eagle

THE SUNDAY SCHOOL LESSON

SEPTEMBER 10.

Teaching the Law of God, Neh. 8: 1-3, 5, 6, 8-12. Golden Text—Teach me, O Lord, the way of thy statutes; And I shall keep it unto the end.—Ps. 119: 33.

Lesson Foreword—Ezra's most important work,—his inducement of the Jews to make the law of Moses regulative for their life,—is recorded in to-day's lesson. From the books of Ezra and Nehemiah it would appear that Ezra spent some time,—possibly a number of years,—in Jerusalem before the national assembly was convoked for the purpose of formally accepting the law. The Jews who returned from Babylon, of whom Ezra was the leader, were the most zealous for the adoption of the law. Life in the Exile had probably convinced them that the Law was their only safeguard against national and religious disintegration among the heathen.

I. Reading the Law, 1-3.

V. 1. All the people gathered themselves. To the later Jews, this assembly was known as the "Great Synagogue." They considered it one of the most important gatherings in their history. It would be composed of the people of Jerusalem and of representatives from the outlying Jewish communities in Palestine. **Into the street . . before the water gate.** The Hebrew word for "street" here means literally "the broad or open space." (See ch. 3: 26 and 12: 37.) It was in the vicinity of the temple. **They spoke unto Ezra.** The initiative appears to have been taken by the people.

The book of the law of Moses. This is generally considered to be a section or the whole of the first five books of the Bible. It was commonly called the Law. In it is set forth the historic origin of Israel's institutions as well as guidance regulative for conduct and belief.

V. 2. Ezra the priest. In the previous verse he was called a scribe—one who was devoted to the study and teaching of the law. From Ezra 7: 11, we learn that he was both a priest and a scribe. **Brought the law;** the book or rolls in which the law was written. **All that could hear with understanding;** all who had attained to the years of mature intelligence, all except children. **The first day of the seventh month.** The first of the month would be a new moon day and the new moon was usually observed with a festival. (See 1 Sam. 20: 5; Isa. 1: 13; Hos. 2: 11, etc.) The people were probably gathered for the festival of the new moon when they decided to enquire of Ezra regarding the law.

V. 3. He read. The reading would consume from five to seven hours. In all likelihood, some of his associates would relieve Ezra for short intervals in the reading.

II. Accepting the Law, 5, 6, 8.

V. 5. In the sight of all the people. According to v. 4, Exra stood on a pulpit or raised platform within sight and hearing of the concourse before him. The people would see him open, that is unroll, the book of the law. **All the people stood up;** to show their reverence for the Law, just as slaves remained standing in the presence of their masters. Standing was often the posture assumed during praying. (See 1 Sam. 1: 26; 1 Kings 8: 22; Luke 18: 11, 13.) Standing during prayer was the custom in the old Scottish churches. To this day standing is the attitude adopted during the reading of the law in the Jewish synagogue.

V. 6. Ezra blessed the Lord; praised and thanked God for his gift of the law to Israel. **The people answered, Amen.** By responding "Amen," the people signified that they accepted and ratified the Law. **Lifting up their hands.** This may be interpreted as a posture of supplication and adoration in prayer (just as Moses held up his hands when he prayed, Ex. 17: 11) or, more probably, as a token that they were taking a vow on themselves to accept and observe the law.

V. 8. From this verse one would infer that the reading of the law was broken at intervals to allow of an exposition, setting forth the sense of the passage read.

III. The Feast, 9-12.

V. 9. This day is holy. As the first day of the month, the feast of the new moon, it was a holy day and it was also holy because in that day the law had been read—a great and historic day for Israel. **Mourn not, nor weep.** As the reading of the law proceeded and the people heard the blessings for keeping it, and the curses for disobeying it, they perceived that they had not been following the law. This occasioned an outburst of profound grief. But Ezra sought to cheer their depressed spirits.

V. 10. Eat the fat, and drink the sweet. Ryle regards this as a proverbial expression, meaning that the occasion is not one of fasting and grief. It should also be remembered that the people had been listening to the reading of the law from early morning and they would be hungry. **Send portions.** A feast day was always one of joy, when gifts were interchanged between friends and distributed among the poor.

V. 11. Hold your peace. Ryle says: "It was ill-omened to make use of words or signs of lamentation on a holy day, Hab. 2: 20, 'The Lord is in his holy temple; let all the earth keep silence before him.'"

V. 12. At first the people had not understood the law and were stricken with grief when they reflected that they had not observed it. But the leaders explained it to them and on understanding it, they turned the day into one of glad feasting.

Application.

A Church, Not a Kingdom. "The exiles returned from Babylon to found not a kingdom, but a church," so says Kirkpatrick. The lesson illustrates that suggestive statement. Nehemiah, governor, and Ezra, the priest, the scribe, united to lead the people in religion. A practical subject for an adult class to discuss is the relation of the state to religion. Moses, leader and revealer; Samuel, prophet and judge; Solomon, king and temple builder and dedicator; Hezekiah, a royal religious reformer; and in this lesson a governor co-operating to convene a great meeting for Bible study. What does the class think of the churches co-operating with the government in school work among Indians? What should be done about the Bible in public schools? Is it not true that the Church exists to make the "kingdom" a "church," that is, to make religion universal in the nation?

Worship and Exposition. "Ezra blessed the Lord, the great God." And they read in the book "distinctly, and gave the sense, and caused them to understand the reading." Most admirable, a worthy example, and still honored in its observance. The opening worship in our public services is a spiritual sacrifice to God, a duty and a privilege important in itself, but it is besides a gracious influence in preparation of the spirit for right understanding of the instruction of "the book." "The things of the Spirit of God are spiritually discerned." The pure in heart see God. If a man will to do His will, he shall know.

And yet we should make a mistake if we should neglect any intellectual help "to understand the reading," and get "the sense." The exposition of competent scholars is valuable. As our Christian religion has come to us from Christ, and his fore-runners, the prophets and his interpreters, the apostles, we should avail ourself of the careful historical and literary study of the documents, the books, that have brought his religion to us. It is in this way we come to understand the reading. A good man said to his son who was preparing for the ministry, "Get to know all you can about your Bible." It was good advice.

Parents as Educators

Cultivating a Child's Sense of Humor

BY EDITH LOCHRIDGE REID.

We are all familiar with the old saying that a sense of humor is a saving grace, but even though we adults, mothers and teachers, appreciate this trait, too often we neglect the opportunity to encourage it in the child. All children love a joke. Even very young children are quick to catch a pun or a play on words. They are always ready for a good laugh, and they are all the happier if some one will enjoy the laugh with them.

Fortunate indeed is the child who has a teacher who indulges a sense of humor in both herself and her children. And if these same pupils receive further encouragement at home through mother, they develop a clean wit which is a joy even while they are small. The children who daily play under my window make remarks that are clever enough for any writer to use in his daily newspaper department, but I am not surpised at their remarks when I know the teacher who has them in charge at least four hours each day. She is always bubbling with mirth and never allows the tiresome details of routine to dull her perspective. She never loses a chance to turn a word or a phrase at the proper moment so that the children catch the humor. And they grow to like this game of matching wits with the keenly alert mind of the joking teacher.

I visited that teacher's room one day and the class was writing a composition on "Mother.' Ruth raised her hand and asked, "How do you spell 'awful'?" Miss Allen looked at her a moment in surprise and then said, "Why Ruth, you don't mean you're using that word in a talk about 'Mother'!" Ruth's eyes danced and a broad smile broke over her face as she replied, "I just asked that on purpose to see you look surprised. I know how to spell that word and I'm saying my mother does awful nice things for me." The idea was that the child planned to use that word (this is not the place to discuss the propriety of its use) and when she saw the opportunity for a joke, she felt at liberty to share her discovery with the teacher because there was that certainty of appreciation which Miss Allen had encouraged.

Yesterday that same crowd of children to which I have previously referred was exploring the mysteries of a new house in process of cnostruction. The carpenters had laid the shingles around the top of the roof in bunches just as they came from the lumber yards, and Dorothy had never happened to see shingles in that shape before. So she said carelessly, "I didn't know shingles came that way," and Bobbie, catching the remark quick as a wink, shouted "How did you think they came, in paste board boxes wrapper in pink tissue paper?" Now Bobbie goes to school to Miss Allen, and in addition he comes from a family who, although very modestly endowed financially, have a wonderful faculty of getting fun out of life. They can construct a gloriously happy home on the very foundation of adversity, simply because they mix in that wonderful saving grace, a sense of humor.

Aside from teaching the children this happy trait, it is a most helpful factor in adding zest to the daily tasks of the teacher. A good laugh is a splendid nerve tonic, as any physician will testify, and the tension of everlastingly-keeping-at-it can be relieved many times during the day by the well-directed habit of roaming off for a moment into "lighter vein." Some children as well as adults are more richly endowed by nature than others with this characteristic of humor, but it is wonderful what cultivation of even the tiniest germ will produce even in the soberest and seemingly dullest individual.

Poultry

The proper housing of chickens is essential. Do not keep more chickens than you have room to care for properly. Allow four square feet of floor space for the American or English breeds and three square feet for smaller breeds as Leghorns. If overcrowded, it will mean disease and loss. Ventilation must be so arranged that there will be no draft on chickens. We are advised for every ten feet of floor space to have one foot of opening in the front part of the house that should face either south or southeast. One-half of this should be glass and the other half covered with muslin. Every house should have a system of ventilation whereby the greatest number of birds that it will hold will receive the benefit of the fresh air. Do not keep too many chickens in your house for that will lower the vitality of the birds and make them susceptible to disease.

Having had my flock culled, I know that it is very important and feel that it has been a factor in making a profit. The undesirable birds, such as the loafers, the ones that are not laying enough eggs to pay for their feed, the old ones, the diseased and also the less vigorous ones, must be taken from the flock before you will be ready to get results from the feed given. Do not think because the hen has the capacity to produce a large number of eggs in a year that she will do so without any attention.

In these days of scientific feeding of stock, we hear much about balanced rations and the extra profit by such feeding. I may well say the feed for Biddy is just as important. A friend remarked to me, "a hen does not lay because she wants to but because she has to lay." This expresses the truth clearly. Give the well-housed, vigorous hen proper food, and a full egg basket is the reward.

We keep a dry mash before the chickens the year 'round. This is fed in self-feeders which the handy man can easily make. We use the grain we raised on the farm. For dry mash we use:

100 pounds ground corn
200 pounds ground oats
100 pounds meat scrap.

In addition to the mash, scratch grain is fed in litter, oats in morning and corn in evening, during the cold weather. For summer months the corn is omitted. Through the winter I feed green food to give variety. I use vegetables and feed six or eight quarts to one hundred hens each day. I plan to have green food that is most easily raised. Pumpkins are the main green food as long as they keep, which is usually until the first of Frebruary. In feeding pumpkins cut them in halves, remove the seed and the hens will do the rest. Cabbage, sugar beets and potatoes help to make variety and are used in this way. In early spring when vegetables are gone I sprout oats. This is excellent feed and much relished but owing to the extra work I omit the sprouted oats as long as I can.

If your local fair is a good one, support it If it isn't a good one, help make a good one out of it.