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were requested to take these home and to discuss them with their friends.

It was distinctly stated that no effort was being made to teach the farmers of the West anything new, but simply to remind them that the public records which were appearing in the daily newspapers of the inspections of the wheat going forward showed the existence of an alarming state of affairs from the number of cars which were being marked "rejected," and, further, that this was from causes which could to a large measure be prevented. These causes suggested the subjects treated of, which were as follows:

1. Seed Selection by Fanning Mills.—It was pointed out how much could be done by using the fanning mill thoroughly, to blow out all small and broken grains which produce weak, late-maturing plants, and that good plump seed would give strong plants, which would produce a regular and uniform crop. Lack of vigor in the plants made them susceptible to injury from fungous diseases and insect pests.

2. Seed Selection in the Field.—It was advised to select every year some large heads of grain from fully-opened plants, true to a desired type and variety, and to use these for a breeding plot or base of supply for pure seed, thus increasing the yield and improving the quality of the grain. As illustrating the practicability of this measure, it was pointed out that all the millions of bushels of Red Fife wheat now cultivated in the West originated from a single plant found by Mr. David Fife in a field of wheat near Jermyn, Peterborough County, Ontario, in 1842, and also that during the present year a farmer at Moose Jaw had offered for sale 3,000 bushels of a selected strain of wheat, all of which was the product of a single head of wheat selected five years ago.

3. Seed-testing for Vitality.—Many samples were exhibited, showing how difficult it is to know from the appearance of grain what its germinating value is. Some samples, which looked very nearly as good as others which germinated 100%, when tested showed only a germinating power of from 50% to 60%, proving conclusively that if a farmer were to sow such grain without testing it for vitality, he would require to sow double the amount of seed to get a stand for a crop. The simplicity with which grain could be tested was shown by samples of grain which had been sprouted between the folds of a damp cloth placed between two tin dishes to retain the moisture. It was advised to pick out at random just 100 grains from the seed which had been put by for sowing. The cleanness and fascination of this work commended itself particularly to the wives and children of farmers, who could thus, while contributing to their own pleasure, also do something of great benefit to the whole family.

An equally simple and rather better experiment was also shown, of placing the hundred grains in a box of soil, which could be kept in any warm room in the house, and would in a few days show not only how many seeds would germinate, but also the comparative vigor of the young plants.

4. Treatment of Seed Grain to Prevent Smut.—Smut, the fungous disease which is responsible for by far the greater proportion of loss in last year's crop, was specially dealt with. The nature of the disease was explained, and the remedies which had given the best results were recommended, together with the simplest way of applying them. It is well known by farmers in the West that bluestone or formalin are practical remedies for treating seed grain before sowing, so as to destroy the adhering smut spores. This may be done by dipping seed in a solution of 1 lb. of bluestone in 8 gallons of rainwater, or by sprinkling the same over the grain and turning it over thoroughly with a shovel until every grain is wet. It is best to sow as soon as convenient after the seed is dry, but the work may be done at any time when convenient after the middle of March. Ten gallons of solution will treat 8 bushels of oats or 10 bushels of wheat. Instead of the above, commercial formalin may be used, 4 oz. in each gallon of water; 1 lb. of formalin in 32 gallons of water will treat 27 bushels of oats or 32 bushels of wheat. Bluestone and formalin are equally good for wheat, but formalin is much better for oats and barley. After treating with formalin, the seed grain should be heaped up and covered for a few hours with sacks or blankets, to keep the fumes in.

Some of the worst weeds were dealt with in detail, and it was pointed out that even the worst weeds could be controlled if their nature were considered. Farmers were recommended to give this matter special consideration. It was claimed that there were only eight or ten weeds which were noticeably destructive in any one locality, and that if the nature of these were borne in mind the work of destroying them would be much simpler.

Special instructions were given for the eradication of wild oats, stinkweed, field sow thistle and Canada thistle. Particular stress was laid on the value of harrowing, or using a weeder on growing crops for the destruction of the seedlings of all annual weeds while they were small and easily killed. Grain crops should only be harrowed when the land is in proper condition for harrowing, and not before the young grain is three inches high.

JAS. FLETCHER,  
Ottawa, Dominion Entomologist and Botanist.

#### Our Premiums Please Every Time.

We give you the privilege of returning every premium not found to be as represented. We will buy it back. What better guarantee could you want?

#### Another Canadian for New Zealand.

Mr. V. W. Jackson, B. A., who has recently been appointed by the New Zealand Government to introduce nature study and agriculture into the schools of that progressive colony, is an example of what loyalty to conviction will do. In his first school as a teacher, some ten or twelve years ago, he realized the valuable objects in education, saw that nature study was a good thing, put his new ideas into practice, and talked nature study to Wentworth County teachers. University training and honors in science did not take him from the outlook to nature. He continued to advocate "a going back to the soil," and his work for the past two years in the O. A. C., as lecturer in botany and geology, has kept him in touch with the agricultural phase of education. He made these subjects the botany and the geology of the fields. Mr. Jackson would give all the simpler arts a place in education. After graduating from the Ontario Normal College, he took a full course in manual training at the Macdonald Institute, and led the first graduating class of teachers in this subject. Mr. Jackson spent two summers in England, Scotland and Europe, and is well prepared for his important work in New Zealand.



Mr. V. W. Jackson, B. A.,

Who goes on an educational mission to New Zealand.

#### Farm Forestry in the Maritime Provinces

The forest, as well as watering, tempering and protecting the farm, supplies it with much useful and valuable material. Those who have to purchase coal at big prices know how it eats into the year's revenues. Once established, the wood-lot, properly handled, will reproduce itself, and supply in reasonable proportions, not only the fuel, but much of the timber and lumber required in the up-keep and extension of farm construction. The poorest portion of the farm—that unfit for tillage—may thus be made to bring in the best returns. On a well-regulated farm of 100 acres, 25 per cent. should be left in forest. In harvesting, the openings should not be made so large at any time in this wood-lot as not to be easily reseeded from the adjacent trees.

The forest will not only benefit the farm and add to its value in all the ways we have been describing, but it will so beautify it as to make life doubly pleasurable to those upon it, and also to the community in which it is placed. "A thing of beauty is a joy forever"—and what so beautiful as a thrifty tree in the open, a line of trees by the roadside, a clump of trees in some waste corner, a well-kept grove of wind-break sheltering the farm buildings, or a wood-lot lifting its head high to the sky in conscious pride of its worth on the rear line of the holding? The value of that farm, if by any necessity it has to be put on the market, is greatly enhanced by such adornment, and the extra cost of it has been little or nothing to the farmer when everything is computed. Nay, it has paid him a hundredfold, bettering and blessing his life.

"Nature is man's best teacher. She unfolds  
Her treasures to his search, unseals his eye,  
Illumes his mind, and purifies his heart,  
An influence breathes from all the sights and sounds  
Of her existence."  
—Street.

The question comes naturally to every lip: "How are we to restore, in sections impaired, the proportion of forest to field; how maintain it where it exists at present? How are we to bring about in Eastern Canada a sane system of farm forestry?" To our mind, a general-forestry policy should be quickly and effectually evolved by the central authority, not only with regard to the new countries under its control, where the mistakes of older Canada must not be repeated, but also in the older portions, where the national life has been adversely affected by the dangers with which the sacrifice of the forest have menaced it in its economic, agronomic, climatic, hygienic and æsthetic relations. As with agriculture, even where the Provinces have supreme control, a paternal policy, productive of the best results, has been long adopted, federally, by which educational and practical assistance has been bestowed; so, in the forestic endeavor, the presence of the instructor and the bestowal of stock where-with to replant may become necessary. The farmer can thus be taught the value of his wood-lot at comparatively little expense to the country, and the result in prosperity and national happiness will far outreach the returns, great as they have been, in any other line of agricultural effort. A fully-equipped federal department, looking to the maintenance and necessary extension of forestry in every portion of Canada, is the necessity of the hour. Let us hope, then, that in the general impetus which this Council must give to this great national interest, farm forestry in Eastern Canada will not be overlooked.—(Rev. Father Burke, before the Canadian Forestry Convention, January, 1906.)

#### Commercial Bluestone.

The fact that there was a larger proportion of smutty grain in Manitoba and Saskatchewan last season than for some years past aroused a suspicion in the minds of many regarding the quality of the bluestone used in treating the wheat. To ascertain what foundation there might be for this suspicion, we considered it desirable to procure samples from farmers and dealers at various points in the Northwest, and submit them to analysis. In this way we have received since October last in the neighborhood of fifty samples. Their analysis has not revealed the presence of any adulteration, and, without exception, we have reported them of the usual commercial quality or grade.

This finding does not, of course, mean that these samples were chemically pure sulphate of copper; commercial bluestone invariably contains a small percentage of sulphate of iron (copperas) and other impurities, and the samples under examination proved no exception to the rule. The amounts of sulphate of iron obtained varied from 1.04% to 3.82%, which percentages, as we have intimated, are not greater than those which have always been found in the ordinary bluestone upon the market.

Some years ago (1890) there was offered for sale in the Northwest a so-called "Agricultural Bluestone," which, on analysis, proved to contain a very large proportion of sulphate of iron—from 30.0 to 60.0%. Experiments undertaken by us with this material—which differs from ordinary bluestone by the crystals being of a light greenish-blue color—showed conclusively that it was much less effective in smut prevention than bluestone. Further investigation made it clear that sulphate of iron was practically valueless for smut destruction, and consequently, that its presence in any large proportion would considerably reduce the beneficial action of the bluestone. The amount in the ordinary commercial bluestone, however, in the writer's opinion, is not large enough to materially lower the value of the bluestone for the treatment of wheat. It may be added that no sample of this agricultural bluestone has been received at the Experimental Farm laboratories for a number of years, so that we may suppose this spurious article is not for sale in the Northwest.

FRANK T. SHUTT,

Chemist, Dominion Experimental Farms.

#### Nitro-culture in Texas.

O. M. Ball, Mycologist of the Texas Agricultural College, in a bulletin on nitro-culture, summarizes the conclusions of his findings in laboratory experiments as follows: Inoculation with so-called nitro-culture is of more than doubtful value, since only a small proportion of the plants treated developed tubercles, and these were in no observable degree benefited by their presence.

In no case of artificial inoculation were the number and vigor of the tubercles so great as in that occurring by natural means. In experimenting, it was also shown that alfalfa will become inoculated when sown on land growing bur clover, a plant which makes its appearance above the ground at the Texas College during the month of November. Inoculation may likewise be produced by water with a solution of soil on which bur clover has grown, or by making an infusion of the nodules on the roots of bur clover.