

The Ontario Agricultural and Experimental Union.

The fifteenth annual reunion of the members of the above society was held at the Ontario Agricultural College on the 22nd and 23rd December, 1893. There was a good attendance of ex-students, while a large number of farmers from the vicinity of Guelph were also present. Much interest was manifested in the experimental work of the past year.

The meeting was opened by the delivery of the annual address by the president, A. G. McKenzie, Fairview, Ont. He reviewed the work of the association for the past year, and congratulated the members on the success which had attended their efforts to increase the interest which is taken in experimental work throughout the country. He said that the good work that was being done by the Union is already attracting attention beyond our own province. Many very favorable notices have appeared in the papers of both the United States and of Great Britain.

In his address the president brought forward a number of new ideas, the adoption of which he considered would greatly increase the influence of the society for the coming year. At the conclusion of the address a committee was appointed to consider it and report later on.

The reports of the different committees on experimental work were then called for, and as this is the most important work taken up by the Union, we give a full account of the report of this department.

ECONOMIC BOTANY AND ENTOMOLOGY.

Professor Pantou, O. A. C., Guelph, in reporting for this committee, said that the committee appointed to collect information regarding the presence of injurious insects, fungi and weeds throughout the Province of Ontario, sent out one hundred copies of the prepared circular to the secretaries and some others of the Union. The replies may be summarized as follows:—

Weeds.—Forty different species are referred to, but only eleven are named by ten or more correspondents. The following is the list, with figures indicating the number that referred to each:—
Canadian thistle, 42; mustard, 36; couch grass, 28; burdock, 26; ox-eye daisy, 25; rag-weed, 24; pig-weed, 22; cockle, 20; wild oat, 18; pig-weed, 15; wild tares, 12.

Bulletin 46, or report O. A. C., 1893, bulletins 85 and 91, or report O. A. C., 1893, will be found of service in the study of weeds.

Fungi.—Among the mildews, rusts, etc., we find reference is made to 21, and of these only the following are referred to by ten or more observers:—
Rust, 36; loose smut, 18; bunt or stinking smut, 16; smut (corn), 20; potato blight, 30; black knot, 25; spot on apple, 23; grape mildew, 13; pear blight, 12; pea mildew, 10.

The reports upon injurious fungi are not as definite as desired, owing, no doubt, to the fact that most observers consider these plants as the same species, e. g., loose smut and smut are entirely different types of smut; the former, readily seen, is black, the latter concealed in the kernels, which are known as smut balls. We find the same difficulty arising in speaking of potato blight, of which there are at least three types. Some use the term blight or rot for all the kinds. Three types of fungoid pests affect the grape, under the name of mildews by some. Observers should as far as possible give the particular type in each case. We have no doubt that ere long, as a knowledge of these obscure forms of plant life becomes more general, the indefiniteness referred to will be a thing of the past. Rust and smut seem to have been quite common, the former likely owing to climatic conditions when it appeared; the latter may have been from sowing smutty seed. It is to be regretted that so much black knot can still be seen and allowed to remain on the trees as centres of distribution.

We would refer observers to consult the following bulletins and reports for information upon rust, smut, etc.:—Bulletin 2, or O. A. C. report, 1886; potato rot, Bulletin 36, or O. A. C. report, 1888; rust, Bulletin 52, or O. A. C. report, 1890; black knot, Bulletin 56, report, 1890, smut.

Insects.—Fifty species are referred to, the most common being:—

Potato bug, 39; grasshopper, 39; cabbage worm, 27; codling moth, 21; tent-caterpillar, 21; turnip fly, 20; curculio, 18; currant worm, 18; cutworm, 17; wireworm, 16; apple borer, 12; clover midge, 11; pea bug, 10.

From the replies it is readily seen that two insects, not usually common, appeared in many places, viz., grasshoppers and an aphid upon turnips, rape and cabbage. One observer refers to the larva of a moth (*Drasteria erechtea*) affecting the clover.

Reference to Bulletin 87, or O. A. C. report, 1893, will give information as to the best way to get rid of many, if not all, these pests.

In further work we would recommend correspondents to mention any new weeds, blights and insects that have appeared in their districts, as well as the most injurious forms.

The Professor of Natural History at the College will always be pleased to assist in determining species of plants or animals referred to him, and will consider it a favor to have such sent him at any time.

APICULTURE.

R. F. Holtermann, in reporting for the apiculture committee, stated that they had been investigating the merits of an automatic self-hiver, which promised to be of great help to bee-keepers. The self-hiver is placed between the old and the new hives; the queen, in attempting to follow a swarm, will be prevented by means of perforated metal trap, which would lead her into the new hive below. The bees, on missing their queen, would return, and finding her in the new hive, would enter, and thus be hived without either labor or anxiety on the part of the bee-keeper. This invention, if successful, will be a great boon to bee-keepers, and especially to those who only keep a few colonies, for if the swarms are lost, as they frequently are, a large share of the season's profit will be gone.

Reports were received from eleven who had used the hiver, and the opinions expressed were that in working for extracted honey it would be found a great success, but that it would not be of so much use to those who were working for comb honey.

DAIRYING.

The experiments in dairying showed that composite samples of milk could be tested at longer intervals than is usually done and the results will be perfectly reliable. By testing samples of the patrons' milk at intervals of three weeks or a month the labors of both the maker and the secretary would be greatly lightened. Prof. Dean had kept samples seven weeks in hot weather, and had found that the results were practically the same as when the tests were made every day.

HORTICULTURE.

E. Lick, Oshawa, gave the report of the horticultural experiments. He stated that great interest was being manifested in the work, and that already twelve persons had made application for experiments next year. In the potatoes four of the varieties were the same as last year. In such cases we give the yield of both years. It will be noticed that the yield is much less than last year, doubtless owing to the unfavorable season.

	1893.	1892.
Rural No. 2	188.9	213.6
Empire State	177.7	255.6
Kaiser	173.3	
Puritan	166.7	
Burpee's Extra Early	166.2	208.3
Summit	165.9	236.3

As will be noticed, the Summit has dropped below in yield this year. By referring to last year's report it will be seen that it was second in yield in 1892, and it also headed the list in 1891. Some members present thought that this was owing to the drier weather, and that the yield would have been greater in comparison with the other varieties had the season not been so dry. Rural No. 2, which promised exceedingly well two years ago, has again satisfied the expectations of its friends by heading the list this year for the greatest number of bushels to the acre. It will be remembered that last year it was a partial failure, owing to the failure of the seed to grow.

In regard to quality, Empire State and Puritan had the most admirers, with Burpee's Extra Early, Rural No. 2, Summit and Kaiser in the order named. Puritan, Burpee's Extra Early and Summit were the earliest; Rural No. 2 the latest, and Kaiser the next late. Rural No. 2 is a round potato. Empire State is a long potato, and does not weigh as many pounds to the bushels, although it yields well. Kaiser is much like No. 2. Puritan is usually a smaller sized white potato. Burpee's Extra Early is about the same as Summit; in shape like Empire State, although of a reddish hue. Summit is a new variety, about four years, grown from seed. One experimentalist thought it a good potato if it did not turn black at the heart in spring, but no one else complained in this respect.

In the discussion which took place the selection of seed was very strongly advised. The tubers should be selected of medium size, perfect in type and from the strongest plants. If this was done, there would be no danger of varieties running out. The practice of spreading the potatoes in the sun for some time previous to planting was also recommended. The advantages claimed were that it ensured against rot, gave them a much earlier start and brought them on ahead of the bug, and that they were much more vigorous and healthy.

The shallow, flat cultivation of potatoes was strongly emphasized by several speakers. Experiments were cited which showed that in many cases a large proportion of the crop was lost from the breaking of the roots, owing to the deep cultivation.

Mr. Hilborn strongly urged the selection of seed, and gave the following answers to questions which were put to him on the subject:—

"How would you select potatoes for seed?" I would select just a medium-sized potato, and the most perfect of its type. If I wanted to grow Early Rose, I would take the nicest of that type and select the smooth ones always. If I were growing a variety that grew long, I would select long potatoes, unless I wanted to shorten the variety. I believe you can change the shape by selecting longer or shorter seed and continuing to do that. I would go over the field where they were growing before they ripened, and for early potatoes I would select the earliest hills to ripen, those with the strongest stalks.

"Do you think changing potatoes from one district to another would be an advantage?" It helps, no doubt, from light to heavy, but I think selection has more to do with it. "Should you go farther north or farther south in selecting seed?" I would rather go farther north than south, though I do not think it matters a great deal. We imported 240 varieties from Germany and tested them on the Experimental Farm. I exhibited 1-0 varieties at Toronto the fall of that year, and we found that the imported varieties did not succeed as well as our American sorts. "Did you decide after one year's test or longer?" The test was continued later on, but I left the farm and did not keep track of it, so could not say. "Do you think the temperature potatoes are wintered over at may injure vitality?" I think it possible, but have known potatoes to remain out during the winter and must have been frozen, yet they grew. I think more depends on the tubers and selection. "What is a good average yield of potatoes?" I do not suppose they average 100 bushels throughout the country one year with another. The Rural New Yorker made experiments and quoted 100 bushels to the acre, but I do not think this is a reliable report.

John S. Pearce—I think Mr. Hilborn has struck the key-note of this Union, and that is selection. There cannot be too much stress laid upon this. In the experimental work carried on here there should be a great deal of attention paid to the seed. I have been watching this matter for myself for a great many years, and am fully satisfied that if a number of our young men would go in for making a selection from the old standard varieties and follow it up for three or four years, they would surprise themselves and the country. We always selected typical potatoes of the variety and put one fine potato in a hill, and we had our best results from these.

There was but little to report with regard to the experiments with raspberries and strawberries, but a full report may be expected next year.

AGRICULTURE.

The report of the chief work of the Union, and that in which the most interest was taken, was then delivered by Mr. C. A. Zavitz, Experimentalist, Experimental Farm, Guelph. The work for the past year had consisted in the testing of fertilizers, and also of the different varieties of farm crops.

The year had been rather unfavorable, as it had been the driest for several years, though in a few sections there had been too much rain. The rainfall at Guelph for the five summer months was 11 inches. In 1892 it was 16.9 inches, and for the two previous years it averaged about 12 inches for the same months.

The success of the work can be judged by the increase in the number of packages sent out. In 1886 there was only one experiment, eight experimenters and thirty-five plots. This year there are thirteen distinct experiments—two with fertilizers, three with fodder crops, three with roots, and five with grain; 7,181 packages of fertilizers and seeds were sent out, and successful returns were received from 416 experimenters, who had carried on their work on 2,105 plots. The work has spread over the whole province, and this year there had been a number of successful reports from Algoma, Parry Sound and Muskoka. In regard to those to whom the material is sent, Mr. Zavitz said:—

"We give the first chances to the members of the union, in the second place we send to all experimentalists of previous years who wish to carry on the experiments again this year, and then we send to those who send in applications, whether they are members of the union, ex-students, or whether they have carried on any previous experiments or not."

"With regard to the material sent out I might say we send out only choice varieties, and it is after some four or five years' experiments with each variety that we are able to choose the choicest varieties, and it is these only we send out. We send out nothing about which we do not know a considerable amount at this institution. We try all material, and send out nothing but what is of a superior quality, and not one package was sent out this year without being hand-picked, and there was not one complaint received regarding the quality of the seed from over 1,100 experimentalists."

"We sent spring experiments to 873 farmers. Of these we have received 322 successful reports, and 82 partial reports. After the reports came in, we went over them carefully and culled out those that we thought not correct, or were lacking in any one variety."

"In the spring we sent out a letter, outlining the work of the Union and naming the experiments. Each person to whom this letter was sent was asked to fill in the blank form and send it back to us, so that we could know which experiment he desired, and in this way we got a very good idea of the demand for the different classes of grain. We had sixty applications for fertilizers, and we have the results here of twenty successful experiments. There is no reason why there should not be as many ask for rape as for oats; all had the same chance to choose."

In experiment No. 1, the results this year correspond exactly with the results of last year. Last year we had the results of seven successful experiments, this year we had the results of twenty. The fertilizer used both years was of the same quality and price. The mixture used was made up of nitrate of soda, muriate of potash and superphosphates. The cost of the fertilizer in every instance was \$1.00 to \$1.50 an acre."