of oats, barley and chop. Each beast received four pounds of chop per day at the commencement, increased to ten pounds as the season advanced. They were turned out to water once each day. Messrs. Kitchen turned off two lots of finished cattle last winter, the first going about the middle of February and the others at the middle of May. They were in nice thriving condition to commence with, and averaged about 1,300 pounds when shipped. Messrs. Kitchen intend to extend their loose-feeding capacity, and put water in the stables in the near future. They will not, however, abandon all their single stalls at present.

FARM.

Michigan State Agricultural College Visited by North Middlesex (Ontario) Farmers' Institute.

Within the last few years the farmers over the major part of Ontario have had an opportunity, through the excursions arranged by the Farmers' Institutes, of visiting the Agricultural College and Experimental Farm at Guelph, Ont. During the month of June, 1898, some 30,000 excursionists visited that institution, and within the last few weeks the place has been thronged with visitors, which is doing a very great deal to popularize the institution and break down groundless prejudices that many persons have held concerning it.

The Farmers' Institute of North Middlesex, whose president is R. J. Robinson, and its secretary S. P. Zavitz, this season conceived the idea of visiting the Michigan State College and Farm on June 22nd, with the purpose of picking up, if possible, some helpful ideas. Some 650 persons, including a few ladies, took advantage of the occasion, and arrived at Lansing about noon, and had till 7.15 to examine the various departments and reach the station for the return trip. The College farm embraces 676 acres. The lawns and building sites, the gardens and orchards, cover 114 acres; the original forest 150, and the remainder is devoted as follows: 47 acres to experiment, 320 to systematic rotation of crops, and 45 to woodland pasture. The chief field experiments this year are with fall wheat and sugar beets, but some other lines are receiving attention. Compared with similar work at the Guelph institution, the Michigan farm falls far short in detail and extensive effort.

Regarding the live stock kept at the Station we have nothing but praise to offer, so far at least as some of the breeds of cattle are concerned, especially the Shorthorns, Holsteins, and Jerseys. The Shorthorns are represented by such notable families as Mysies, Victorias and Duchesses, headed by Royal Mysie, by Double Victor, and bred by Col. Harris, of Linwood, Kansas. They are all excellent specimens, of greater size than we are accustomed to see, even in our best herds. The Holsteins include some of the most noted cows of the breed, including Rosa Bonheur 5th (106¾ pounds of milk in one day), and three of her daughters, Houwtje D. (3.45 pounds butter in one day and 933.2 pounds butter in one year) and 5 of her daughters; Bell Sarcastic (3.96 pounds butter in one day and 841.96 pounds in one year) and three of her daughters. We were informed also that five of the Holstein cows have each produced over 500 pounds of butter in a year. This breed is headed by the stock bulls, Colantha Lad and Maurice Bonheur. The Jerseys are headed by Pedro's Marigold Duke, a bull of rare breeding and promise, recently purchased at the dispersion sale of Mr. T. S. Cooper, Coopersburg, Pa. The cows are an exceedingly fine lot, and are descended from Pogis Baron, by Pedro's Stoke Pogis. As high a record as 629 pounds of butter in twelve months is claimed for some of the Jerseys. Other pure breeds represented are Brown Swiss, Aberdeen-Angus, Galloway, and Red Poll. The Station also supports and is experimenting with a herd of 30 general purpose cows. They are largely graded Shorthorns, of the roomy, business type. They were selected throughout the State from farmers, and the first year were made to produce an average of 300 pounds of butter. Owing to the lack of a proper pasture near the barns, these cows are being soiled on corn ensilage, which will be followed by green oats and peas. They are kept housed in Bidwell stalls during hot days and turned into a small grass plot at nights. They are being bred to the Shorthorn bull.

The hogs kept on the farm are Poland-China, Duroc-Jersey, Chester White, Berkshire, and Tamworth. We did not learn of any definite experimental work being conducted with the hogs. They are fed on skim milk, corn meal and middlings, with pasture.

The poultry department, referred to elsewhere in this issue by a correspondent who accompanied the excursionists, is not an elaborate one, although some very fine specimens of various breeds are included in the flocks. The apiary department seemed to be in a flourishing condition, and is conducted along the line of experimental work and in connection with the lectures to the students. The dairy department is a small affair compared with the corresponding school at Guelph. We presume it is because Michigan is not particularly a dairy State that comparatively little attention is devoted to that subject at the State College of Agriculture. The farm generally, which is of sandy soil, presented the appearance of being in a good state of cultivation, but the dry weather that has prevailed for several weeks was telling heavily on the spring crops and pastures.

The sheep flock includes specimens of Hampshires, Shropshires, Oxfords, Suffolks, Cotswolds, Dorsets, and Merinos. We judge from their appearance that the farm is not particularly suitable for sheep pasture. A number of very fair specimens of the various breeds were seen. The produce of a Merino-Shropshire cross much resembled the former in color and form, and a Hampshire-Cotswold cross much resembled an Oxford.

On the whole the stock presented a very creditable appearance. With the exception of the three breeds of cattle we have especially mentioned, and one or two breeds of swine, the Guelph Station stock loses nothing by comparison, while it has a much fuller list of the best recognized breeds.

The Michigan Agricultural College was formally opened on May 13, 1857, and claims to be the oldest agricultural college in America. For some seven or eight years it led a precarious existence, being dependent on the bounty of the State Legislature; but, fortunately, it was placed on a solid foundation by the national land grant of 1862. This endowment has grown into a large interest-bearing fund, rendering the College practically independent of the State for its running expenses. In this respect it has an immense advantage over the Ontario Agricultural College, which is entirely supported by the Provincial Government. The Michigan State Legislature, however, has continued to do generously by its State College. It has provided buildings and apparatus at an outlay of some $500,000, and for the current year the State appropriation reaches $140,000, of which $83,000 goes for a new women's building, and $12,000 towards furnishing the same. The sum of $10,000 is given for repairing buildings, $15,000 towards the dairy school, $4,000 for the farm barn, $5,000 for student labor, $2,500 for improved heating, and the balance for minor purposes. The College gets this handsome sum of $140,000 in addition to its running expenses (about $100,000 annually), which, as previously stated, come out of a national endowment fund. This is very liberal treatment, indeed, when it is considered that the whole agricultural appropriation for Ontario this year is $204,217, of which only $51,267 goes to the Guelph College for current expenditure, while the outlay on capital account this year is only $4,110.

The Lansing College covers a wider range of instruction than the Ontario institution, the agricultural course being supplemented by the mechanical course, which was established in 1885. In this latter department particular emphasis is laid on the study of mathematics, the study of theoretical principles underlying the science of machines, and the practice of constructing machines. The equipment is admirable, the carpenter shops, boiler house, electrical laboratory, and various working apartments attracting much attention. This course is covered to some extent in Ontario by the Toronto School of Practical Science, and is not considered there as a necessary complement to the work of an agricultural college. The women's course is also a feature of the Michigan institution which has no parallel at Guelph. It was inaugurated three years ago, and has proved very successful, the attendance last year being 93. The present accommodation is inadequate, and the State Legislature, as already mentioned, has provided amply for a new building. The young women are instructed in domestic science and household economy, and at the same time receive a training in music, art, modern languages, literature, and the usual accomplishments of a regular ladies' seminary. It will be seen from all this that the Michigan Agricultural College is very broad in its scheme of education, and by no means confines itself to scientific and practical agriculture. Of the students entering last year, their proposed occupations after leaving college are given as follows: Farming, 45; mechanical engineering, 53; teaching, 32; electrical engineering, 4; physicians, 2; law, 2; not fully decided, 106. The College enrollment has nearly doubled in the past three years, the number of students in all courses being now 540. The average cost to the pupil for the agricultural course is estimated at from $140 to $175 per year, including uniform. This may be reduced if the student cares to earn money by working for the College. Many do this, and labor during vacation to aid in paying for their education. It is estimated that this summer $2,000 will be paid to students in this way.

The institution is well officered, and other good men are being looked for. We were favored in being escorted by Prof. Herbert W. Mumford, the newly-appointed Professor of Agriculture, who has for four years acted in the capacity of Professor of Animal Husbandry. President J. L. Snyder and Professor Town also accompanied the excursionists about the farm. Among the Ontario guests of the party were the Hon. John Dryden, M. P. P.; Mr. H. J. Pettypiece, M. P. P.; Mr. Wm. Taylor, M. P. P.; and Mr. V. Ratz, M. P. It was expected that State Governor Pingree would receive the excursionists, but he was unable to be at the Capital.

Prof. Robertson at Brandon.

[FROM OUR MANITOBA AND WESTERN EDITION.]

Prof. Robertson, Dominion Commissioner of Agriculture and Dairying, addressed a meeting of the Brandon Farmers' Institute on June 6th. The attendance was not very large, doubtless owing to bad roads. Prof. Robertson spoke on *Seed Selection*, much along the same lines as in his address before the Agricultural Committee of the House of Commons, a synopsis of which appeared in the FARMER'S ADVOCATE of May 15th. He first referred to the fact that the average yield and quality of the crops, not only of this Province, but of Canada, were showing a slight decrease, whereas in Britain the average yields are now 30 per cent. higher than they were 30 years ago, and in France they are 40 per cent. higher than they were 40 years ago. It is not now as easy to farm successfully as it used to be, owing to partially exhausted soil, increasing weeds, and greater injury from plant diseases and insect attacks. The causes of smaller yields could be summed up as owing to:

(1) An insufficient supply of moisture, which to some extent is controllable. The amount of vegetable matter in the first five inches of soil will largely control the amount of moisture which the soil will retain. Vegetable matter can be supplied in the form of barnyard manure or by seeding down and supplying vegetable matter in the grass roots.

(2) Unfavorable temperature of the soil, a condition largely under control. Rapid evaporation cools the land. Evaporation is more rapid from a rough than a smooth surface, hence rolling assists in checking evaporation and thus makes the soil warmer. For this reason the Professor would roll land a few days after seeding to give the seeds a better chance, following with a light harrow just when the crop is up in order to retain moisture and to kill weeds. For the most rapid germination of seeds and growth of the young plants too much attention can not be given to the preparation of the seed-bed, which should be firm and well packed, with a soil mulch of an inch or an inch and a half of fine, loose soil on the surface.

(3) Lack of suitable plant food for the young plant.

(4) Lack of inherited vigor in the quality of the seed. The quality of the seed depends on the life from which it came. Seed should be pure as to variety, as well as free from weeds and other seeds. Large, heavy seed germinates more quickly and gives bigger crops of better quality.

After enlarging upon these points, he referred to the two great processes of plant growth, that which conduces to the vegetative growth—roots, stems, and loaves—and that which produces seeds and fruit. This principle should be thoroughly understood and the plant supplied with the kind of food required at each stage of its growth. In speaking of the selection of seed he strongly urged the importance of selecting the best seed of the varieties that have proved themselves best suited to the locality, grown on the best land, from the largest-yielding and most perfect plants, and then, with fanning mill, select only the largest and most perfect seed. This system followed up would give better results than changing seed, as in changing seed there is nothing to be gained. Once find a variety suited to the locality, stay with it, and the longer it is grown on the same farm, under the proper conditions and always from carefully selected seed, the better would be the yield and quality. And Prof. Robertson contended that in five years under this system the yield of grain in Manitoba would be increased from 20 to 30 per cent.

Mr. Bedford, being called upon, corroborated what the Professor had said as to the benefits of selecting seed. On the Experimental Farm they had not changed their Red Fyfe wheat, and the average yield was increasing rather than diminishing, and it stood at the top of the list of varieties. The seed of the Banner oats had been obtained ten years ago, and had not been changed, but had always been grown under favorable conditions and the seed carefully selected. Their Banner oats were better in yield and quality now than ever, and were at the head of the list. The first five years' average was about 85 bushels, and the second five years' average was 90 bushels. Nearly all varieties that were poor yielders in the early years of the farm work were poor yielders still, and *vice versa*. He did not think any grain would run out with favorable conditions for growth and proper seed selection.

Dr. Thompson, V. S., Carberry, who has been several times a prizewinner with his Red Fyfe wheat at the Winnipeg Industrial, said that he had not changed his seed for fifteen years, and it was better to-day than at first. He always took the greatest care in selecting his seed and put special stress on the importance of allowing the grain intended for seed to become thoroughly ripened before cutting. He believed in the principle of rolling land, but on account of the liability of rolled land to drift he did not use the roller, but used the press wheels on his seeders and would not think of using a seeder without. Their use made the grain germinate more rapidly and ripen earlier.