

paddocks to grow until about five months old, when they are put into the main piggery with fair-sized yards attached. During the finishing two weeks they are housed in roomy pens, without yards, but Mr. Tillson would prefer a little outdoor exercise even then, if it could be conveniently secured. When a shipment is made the pigs of different ages are moved up, so that some are always in preparation for the block and approaching that destiny.

The feed the pigs receive varies somewhat, according to the season and the condition of the feed market, but Mr. MacLeay believes firmly in the virtue of a balanced ration for all classes of stock, and compounds his rations with that in view. The brood sows get slop made from bran, shorts and a little corn, mixed twelve hours ahead, and fed warm in winter. They also get mangels in



MAGGIE 333.

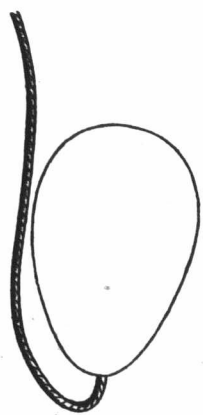
First-prize Tamworth sow at the Winnipeg Industrial. OWNED BY L. A. BRADLEY, PORTAGE LA PRAIRIE, MAN.

winter, and such green food in summer as alfalfa, green oats and peas, tares, rape, etc. During the coming winter cut clover hay will be steamed and fed along with the slop. When the litters are weaned they get skim-milk slop with shorts, bran, pea and corn meal, fed four times a day. The aim is to keep the pigs growing as rapidly as possible, without putting on too much fat. All the growing pigs are fed liberally with green food along with the grain feed, and as the finishing period approaches, the feed is made more concentrated by additions of peas and corn. During the last three weeks they are rushed as fast as possible, when they make rapid gains. The young sows are bred so as to farrow their first litters when 14 to 16 months old. They make good mothers of large litters, with strong constitutions. If they prove thoroughly satisfactory breeders and sucklers they are retained in the herd, raising two litters a year, till it is considered wise to replace them by selections from among their daughters. The system of raising bacon pigs of the most desirable type in the way we have outlined is within the reach of every farmer who has good judgment, and will set himself to the task with becoming energy. The cheapness, simplicity and healthfulness of the outdoor pens must appeal to everyone as far superior to the ordinary foul-smelling pig sty, or other extreme of allowing the swine to roam the farm, dooryard and garden at their sweet will, as we sometime witness on Canadian farms.

Castration Without the Knife.

In buying feeding lambs one is very apt to get among them a few ram lambs, or in his own flock he may have been so careless as to allow some late-dropped lambs to go uncastrated until fall, or he may have a ram that he does not wish to use again. These cases call for emasculation in some way. Castration, be it ever so carefully performed, is dangerous in the sheep after his lambhood is passed. The operation of turning is not difficult—is safe, sure, and makes nearly as nice a wether as does castration. While it is easier to learn this process by personal instruction, yet anyone can do it who will follow closely these directions.

The assistant holds the sheep in a sitting position. The operator grasps the scrotum or bag, and by squeezing it firmly forces the testicles clear out of it and up into the sheep's groin, one on each side. Be sure that the testicles are entirely free of the scrotal membranes; it requires a little force to produce this separation. Now bring down one testicle and turn it squarely upside down, as shown in the cut. The cord is now alongside the testicle and attached to the (now) lower end. Holding it very carefully so that it will not slip, you must turn the testicle three times around the cord, or the cord around the testicle, and when this is done, keeping very careful, hold that it may not untwist, you push the testicle back up into the groin, where it will remain. Repeat the operation with the other side. This cannot be done with young lambs. There is nothing more to be done to the sheep. He will be very stiff for three days and then will do very much better than he would as an entire sheep. The secret of this is that the twisted cord contracts and holds the testicle from coming down into the scrotum, and the circulation being cut off from the testicle it withers away to a large extent and the scrotum also becomes somewhat smaller.



FARM.

Spraying for Mustard.

BY FRANK T. SHUTT, M. A., CHEMIST, DOM. EXPL. FARMS.

The fields of the Experimental Farm being free from mustard, we made the trials upon an adjoining farm, in a field of barley which showed considerable mustard. The size of the plot treated in each case was one-tenth of an acre, and the quantity of solution uniformly supplied to each area was five gallons, or at the rate of fifty gallons per acre. The date of spraying was June 26th, the grain being from fifteen inches to twenty inches high, and the mustard practically the same height and just coming into flower. The chief data may be briefly stated as follows:—

Sulphate of Iron (copperas), five per cent.—No effect upon barley. The leaves were practically all stripped from the stems of the mustard, but the weed was not killed, as evidenced by new leaves subsequently starting, the plant flowering, and the seed pods filling out and maturing. The leafless stems were quite green a fortnight after the spraying, and were apparently furnishing nourishment to the seed.

Sulphate of Iron, ten per cent.—A slight scorching of some of the leaves of the barley was to be noticed. A fortnight after the spraying this was discernible, and though this spray may have slightly retarded growth, it is not probable that the yield of grain was affected.

Though the effect upon the mustard was more pronounced than in the foregoing instance, as noticed by the "spotting" on the stems, it was not sufficiently strong to prevent flowering and the ripening of the seeds, a large proportion of which proved, upon testing, to be vital.

Sulphate of Copper (bluestone), two per cent.—A certain amount of injury to the leaves of the barley resulted, evidently retarding growth to a somewhat greater degree than the ten per cent. iron sulphate solution. At the end of two weeks, however, this effect had practically all disappeared, and it became doubtful if there were any permanent injury to the grain. The mustard very quickly and markedly showed the effect of the spraying, both the stems and the leaves dying without allowing the plant to seed. Two weeks after spraying a few living mustard plants were found in the plot, but it is believed they had escaped the solution, owing to the height and overshadowing of the barley.

Sulphate of Copper, five per cent.—This solution damaged the barley in a much more pronounced manner than the preceding solution. In all probability it somewhat lessened the yield of grain, though, as the ground was very uneven in character, no comparative data on this point could be obtained.

The mustard was all killed. An inspection two weeks after spraying did not reveal any living plants.

In order to ascertain the effect of these solutions upon this weed at a younger stage of growth than that just reported upon, mustard seed was sown in rows in a plot upon the Experimental Farm. When the mustard plants had reached the height of six to nine inches they were sprayed as follows: July 20th: **Sulphate of Iron, five per cent.**—Not all killed. The few survivors possessed green stems, and in time sent out new leaves. It is extremely doubtful, however, if the plants will have sufficient strength to flower. **Sulphate of Copper, two per cent.**—All the plants died within a few days.

July 22nd: Further sprayings were made. **Sulphate of Iron, five per cent.**—The stems were stripped of all their leaves, but in the course of a few weeks fresh leaves had appeared on many of the plants. **Sulphate of Iron, ten per cent.**—Though somewhat more severely attacked than by the five per cent. solution, there was sufficient vigor left in many of the plants to send out new leaves after a few weeks.

Sulphate of Copper, two per cent.—Only a very few of the older and more vigorous plants escaped destruction, probably not more than three to five percent. This solution is evidently strong enough to kill all mustard plants six inches in height and less.

Sulphate of Copper, five per cent.—All the plants killed. From the above data I make the following inferences:—

1. That a 2% (two per cent.) solution of sulphate of copper (that is, two pounds in ten gallons of water) is, all things considered, the most effective, safest (as regards the grain crop), and most economical to use. The spraying should be done thoroughly, and for that purpose fifty gallons per acre will be required. If a heavy rain follows the spraying within twenty-four hours, the operation will be required to be repeated.

2. That, in order that the work may be effective, spraying should not be delayed after the mustard plants have reached a height of six to nine inches. If allowed to grow taller than this, stronger solutions would be necessary and in larger quantity, as the grain would then largely protect the mustard.

For many valuable suggestions and much assistance in the work I am indebted to Mr. W. T. Macoun, Horticulturist of the Experimental Farm, who concurs with me in the deductions.

Winter Wheat.

RESULTS OF TESTS MADE BY ONTARIO FARMERS.

Eighty varieties of winter wheat have been grown in the Experimental Department of the Ontario Agricultural College for at least five years in succession; and the power to withstand the cold weather, strength of straw, amount of rust, yield of grain, weight per measured bushel, etc., of each variety have been carefully determined each year. The results of these practical field experiments at the College form the basis for the selection of a few of the very best kinds for testing on the farms throughout the Province. The co-operative experiments of the past few years show that those varieties which have given the best average results in the experiments conducted at the College for five years in succession have nearly always given good satisfaction on the farms of the Province.

In the autumn of 1898, seven varieties of winter wheat were used for the co-operative tests. These were divided into three sets, with three varieties in each set, the Dawson's Golden Chaff being used in all the sets as a basis by which the results of all the varieties could be compared with one another.

The past winter was exceptionally severe on the winter wheat crop throughout Ontario, consequently the number of complete tests is not so large as usual. Reports of successfully conducted co-operative experiments with winter wheat were received from seventy-two experimenters before the 12th inst., at which time we started to work up the summary results, in order to place the information before the wheat-growers at as early a date as possible. It is interesting to know that these seventy-two good reports came from no less than twenty-seven counties and districts in Ontario, including Essex in the west, Carleton in the east, and the District of Algoma in the north. As we sow about one million acres of wheat in Ontario each autumn, the results of the winter-wheat experiments conducted on the different farms throughout the Province are of inestimable value to those interested in wheat-growing.

The following table gives the comparative yield of straw and grain per acre of the varieties of winter wheat tested on seventy-two farms in 1899:

VARIETIES.	Straw per acre. (Tons.)	Grain per acre. (Weighed bushels.)
Dawson's Golden Chaff	1.3	22.5
Stewart's Champion	1.1	22.4
Early Red Clawson	1.3	22.1
Early Genesee Giant	1.2	21.3
Imperial Amber	1.3	20.4
Bearded Winter Fyfe	1.1	19.4
Golden Drop	1.0	16.2

Three of the foregoing varieties have been used in the co-operative tests over Ontario for each of the past six years. The next table gives the average results of the six years' experiments with each of these varieties at the Agricultural College, and also throughout Ontario:

VARIETIES.	O. A. C. Tests. Average 6 years. (Bushels per acre.)	Ontario Tests. Average 6 years. (Bushels per acre.)
Dawson's Golden Chaff	47.5	30.4
Early Genesee Giant	43.5	27.6
Early Red Clawson	43.5	27.6

1. In the average yield of winter wheat per acre, the Dawson's Golden Chaff stood highest among 11 varieties tested over Ontario in the year 1899; among 9 varieties in each of the years 1894, 1895, and 1896; and among 7 varieties in each of the years 1897, 1898, and 1899.

2. In the co-operative experiments for 1899, the Stewart's Champion, Bearded Winter Fyfe and Dawson's Golden Chaff came through the winter the best, and the Golden Drop the poorest.

3. The Early Red Clawson and Imperial Amber were the first and the Bearded Winter Fyfe and



A PIGS' PARADISE ON ANNANDALE FARM.

Stewart's Champion were the last to mature in 1899.

4. Dawson's Golden Chaff and the Early Genesee Giant possessed the strongest straw and the Bearded Winter Fyfe the weakest straw in the tests of this year.

5. Stewart's Champion and the Bearded Winter Fyfe produced the longest and the Golden Drop the shortest straw in 1899.