Soils and Crops

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

Question:—The opinion prevails in some parts of Canada that hogs of the bacon type are more expensive to grow than those of thick type. What do official experiments show in this regard? How do the different breeds compare in the production of exportable bacon sides?

Answer:—An experiment was carried on at the Central Experimental Farm at Ottawa in 1921, and recorded in the Report of the Animal Husbandry Division of the Experimental Farm for the year ending March 31, 1922, to compare pure-bred Yorkshires, Berkshires, and cross-breds from these two breeds as economical producers of bacon. Four lots of hogs were used. The number of the hogs in the experiment consisted of two pens of cross-breds, eight hogs in each, six hogs of Berkshires and seven Yorkshires. The experiment was carried on for 119 days with the exception of the Yorkshires which were fed for 133 days. Individual weights of pens were taken at the commencement of the experiment, at the end of each thirty-day period, and at the end of the experiment.

The food consisted of mixed grains chopped, tankage and skimmilk. The average daily gain was 1.29 pounds and 1.28 pounds respectively for the cross-bred pens, 1.11 pounds for the Berkshires and .98 pound for the Yorkshires. The average quantities of meal eaten per pound of gain was 2.52 and 2.50 for the cross-breds, 2.51 for the Berkshires, and 2.42 for the Yorkshires. The amount of milk used per pound of grain was 5.66 and 5.68 respectively for the cross-breds, 6.08 for the Berkshires, and 5.5 for the Yorkshires. The total feed per pound of gain was 5.14 and 4.88 cents for the cross-breds, 4.95 cents for the Berkshires, and 4.69 cents for the Yorkshires. This shows that cross-bred swine are capable of making the maximum daily gains with the minimum of food consumed as compared with the Berkshire lot. It will be observed that the Yorkshires made the most economical gain of the four lots being fed, followed by one lot of the cross-breds, the Berkshire lot, and the other lot of cross-breds in the order named.

At the conclusion of the experiment the hogs were slaughtered and their sides compared from the standpoint of the Wiltshire side type. The Berkshires were found to yield sides of the required weight, averaging 50 to 55 pounds a side, but they did not possess sufficient length or uniformity of fleshing to answer the bacon requirements. The cross-bred lot yielded sides averaging between 60 and 65 pounds. The sides were longer and otherwise superior to the Berkshires for manufacturing into Wiltshire sides. The Yorkshire lot showed a marked superiority both in quality of fleshing and the uniformity with which the fat was distributed along the back and sides. Both from the standpoint of economy of feeding and quality of the sides, the Yorkshires surpassed either of the other lots.

Question—Is it more profitable to allow fattening hogs to run at pasture or to supply grain feed in their pens?

Answer:—Much depends on the quality of the pasture. If it consists of luxuriant clover, it is, as a rule, more profitable to allow the hogs their liberty, more especially during the early part of the fattening period. When this is done considerable labor is saved. As a rule, however, slightly better gains are secured when the hogs are housed. In an experiment conducted at the Central Farm at Ottawa in 1921 hogs fed at pasture made greater gains than those fed inside. The outside hogs were slightly older than the others. Twelve hogs were fed outside and ten in the piggery. The experiment was conducted for sixty days. Both received a mixture of chop and skimmilk. The average daily gain made by the hogs on the pasture was 1.38 pounds and for those in the piggery 1.10 pounds. The quantity of meal eaten per pound of gain was 1.83 for those pastured and 1.85 for those fed inside. The quantity of milk consumed by the different lots per pound of gain was 5.33 for those on pasture and 4.75 for those enclosed. The cost of the feed per day per head was 6.36 cents for those on pasture and 5.05 for those in the piggery. The total feed cost per pound for the two lots was almost identical being 4.6 per pound of gain for those on pasture and 4.57 cents for those to whom the grain feed was carried. During the sixty days the enclosed hogs were given 950 pounds of clover.

Question:—Have there been any official experiments conducted to determine the value of the Bang system of tuberculosis control in cattle?

Answer:—The Central Experimental Farm at Ottawa carried on a segregated herd of reacting cattle for about five years. An account of the experience is contained in the Interim Report of the Dominion Animal Husbandman for the year ending March 31, 1922. In December, 1916, a number of the best cows of the main dairy herd that reacted to the tuberculin test were removed to a barn on an adjoining farm. During the following four years other reactors of high type were added to the herd. The cattle were housed and cared for in practically the same manner as the main herd at the Farm. As the calves in the segregated herd were born they were removed to the main barn and many of them saved for future use. Out of 80 calves born 44 healthy specimens have been saved. Twenty-six of this number have been retained in the breeding herd and 18 sold. From time to time the cows in the Bang herd were slaughtered and examined. There was a decided lack of uniformity in the conditions found. Animals long in the herd continued profitable milk producers and, when killed, showed in some cases only slight traces of the disease. With others the disease progressed at a rapid rate. The conclusions reached by the Farm officials are that the practicability of adopting the Bang system depends upon whether the value of the progeny from the segregated cows would justify the extra expense of maintaining the second herd. If at any time the Bang herd would be justified it would be with the entry of the herd in the Accredited Herd System. The expenses of a segregated herd are unavoidably high. Charging the expenses of feed, bedding, rent, and labor against the value of the milk, calves, and manure, in the Central Farm experiment, left a profit slightly exceeding $6,000 for the five-year period.

THE SUNDAY SCHOOL LESSON

APRIL 8.

Abraham, the Hero of Faith, Gen. 12: 1 to 25: 8; Heb. 11: 8-19. Golden Text—Abraham believed God, and it was reckoned unto him for righteousness, Rom. 4: 3.

LESSON FOREWORD.—To-day's lesson gives an epitome of the chief incidents in Abraham's life. To the Old Testament saints Abraham was the ideal Israelite. To the New Testament writers he was the father of all true believers. His is a figure which has fascinated all ages. It is doubtful if there is a grander figure in all literature. In him there appears a certain majesty of person, dignity, courtesy and kindliness. Above all there is piety and it is the piety which is rooted in an unshakeable trust in God which is only strengthened by the severe trials of his life.

I. The Call of Faith, Gen. 12: 1-5.

V. 1. *Get thee out of thy country,* etc. In the ancient world the individual seldom left his tribe and native place. For among his own people he enjoyed the protection of the tribe and all its alliances. In a foreign land he had no rights.

V. 2. *A great nation.* To the ancient Hebrew, probably the greatest blessing was a numerous offspring. Hence God's assertion that Abraham's offspring would develop into a great nation would appear as a goodly promise. The later Israelite believed that his nation could be traced back directly to Abraham. (See Isa. 51: 2.) *Thou shalt be a blessing.* "He and his seed will be, as it were, blessedness incarnate" (Skinner).

V. 3. *And I will bless them,* etc. All who prove friendly to Abraham will share in his prosperity and all who are hostile will be afflicted with misfortune. *In thee shall all families.* The Hebrew text may read, "By thee shall all the families of the earth bless themselves." Every one who wishes to invoke God's blessing will say, "God make me blessed like Abraham."

V. 4. *Out of Haran;* "an important centre of the caravan trade in northwest Mesopotamia." "It was a city of great antiquity and retained its commercial importance in classical and medieval times" (Skinner). Ch. 11: 31 asserts that Abraham's home was in Ur, of the Chaldees—probably Uru in southern Babylonia where was the seat of the moon-worship. Haran would thus be the first stage of the journey to Canaan.

V. 5. *And the souls;* all the servants and slaves he had acquired there.

II. The Wanderings of Faith, Heb. 11: 8-10.

V. 8. To the New Testament writers Abraham was not only the father of the nation, Israel, but the father of the spiritual Israel—the succession of true believers. *When he was called . . obeyed.* With no external proofs to substantiate it, he believed that the voice that called was God's and he obeyed. His obedience was an act of faith. *Not knowing whither he went.* On venturing forth he was guided not by sight but by faith, thus showing how absolute was his faith.

V. 9. *He sojourned.* "The sojourner" is a technical name in the Old Testament for a resident alien. The alien might put himself under the protection of the people with whom he sojourned, or he might remain among them without rights. As a sojourner Abraham would feel that, properly speaking, he did not belong to Canaan. *In tabernacles;* in tents like a nomad. In Palestine to this day there are three classes of residents—city dwellers, peasants and nomads. Both the city dwellers and the peasants live in cities and towns. The nomad, however, has no permanent residence. He is here to-day and away to-morrow.

V. 10. Abraham is represented as living in tents like a nomad because he looked for a better possession than Canaan could afford. "It will be admitted that Abraham's life in Canaan, dwelling in tents and shifting from spot to spot . . did not satisfy his ideal" (Davidson). *A city whose builder and maker is God.* Abraham was really looking for a city whose whole life and appointments would be rooted in fellowship with God. The city which he sought could not be found on this earth. It was the New Jerusalem.

III. The Sacrifice of Faith, Heb. 11: 17-19.

V. 17. *Offered up Isaac.* See Gen., ch. 22. The supreme proof of Abraham's faith was his readiness to offer up Isaac as a sacrificial victim. There was an outburst of child sacrifice to Molech, the god of the underworld, during the reign of Manasseh. *His only begotten son.* Isaac was Abraham's sole hope for the fulfilment of the promise that his seed would become a great nation.

V. 18. *In Isaac,* etc. Abraham has his son, Ishmael, also; but Gen. 21: 12 shows that the line of succession was to be through Isaac and not Ishmael.

V. 19. *God was able,* etc. Abraham is represented as ready to sacrifice Isaac because he believed that God could bring him back from the dead to fulfill the promise. *He received him in a figure.* "The wonderful escape of Isaac was a kind of parable, illustrating the fact of the resurrection" (Scott).

Application.

Genesis has been called a "folk-book" and the story of Abraham and his great adventure is rich in religious stimulus for us still.

We may learn such lessons as the following:

1. *All true religion is a growing experience.* Abraham is commanded to leave the old customs and the traditional beliefs of Mesopotamia behind him, and strike out in search of a new and larger faith. So we must make new discoveries in the realm of Christian faith. We must see more clearly that Christ's spirit is to reach everywhere and control every bit of our civilization.

2. Abraham illustrates the fact that life rests on faith, rather than knowledge. The old hero was to find God in the days ahead, rather than in the past.

3. God is always summoning us as individuals to new regions of faith, new experiences of his grace. The voice is an inner voice, as it was with Abraham. We have no alternative—we must obey as the typical pioneer did.

4. We may "push off" to new faith, and larger endeavor, because God is with us. The future is unknown to us but if he lights up the dark places, what does it matter? He takes care of those who are called to break new ground in any way, in obedience to his voice. Whittier's faith may well be ours:

I know not where his islands lift
Their fronded palms in air;
I only know I cannot drift
Beyond his love and care.

Weed Seed Collections in Schools.

It is not difficult to agree with a remark in a bulletin on "Weeds and Weed Seeds," for which the Dominion Seed Branch is responsible, that no subject in agriculture is better adapted for presentation to school children than the study of seeds. The collection, identification, and study of seeds gives scope for the training of a wide range of faculties, and the intrinsic value of the information so derived is of use in after life. The seeds of weeds constitute one divison, and in this connection a collection of weed seeds for illustration purposes is most important. Unfortunately, as the pamphlet refers to further points out, it is not difficult to make a fairly large and representative collection of weed seeds in almost any district in Canada. There are a number of weeds that occur practically everywhere. On the other hand, a great many are associated with certain crops, or with certain types of soil, or are limited to particular sections of the country. One of the weed seeds with which every child should be made acquainted is Lamb's Quarters. This weed occurs throughout Canada in gardens as well as in cultivated fields. Another common kind is Wild Buckwheat, a weed that is general in cereal crops. A third is Wild Oats, a noxious weed that is similar in shape to the cultivated oat but can be easily distinguished from it. A fourth is Wild Mustard, which is the commonest and one of the most injurious weeds belonging to the mustard family, of which the well known varieties are Hare's Ear mustard, and Tumbling mustard, and two less known, Indian mustard and Black mustard. All these and more than a hundred other weeds are described and illustrated, and methods of eradication in the bulletin referred to.

The reason the boys in France used to crave the juice of canned tomatoes is that this juice is loaded with vitamines, dietitians say, and vitamines ran low in the overseas diet. One dietitian figures that the family ought to eat twelve quarts a head of canned tomatoes between fall and spring.

Olvie oil is good in many cases of bowel troubles in poultry, and should follow the dose of castor-oil. Olive oil is also useful in egg binding and in cases of enlarged crops, and for dressing the combs of fowls to prevent frost bites.

Home Education

"The Child's First School is the Family"—Froebel.

Training for Unselfishness—By May E. Wilson

Not long ago I heard a very lovable woman say, "If my parents had realized when I was a child, they would have spared me many tears. I was allowed my own way in everything and grew up a disagreeable and selfish girl. Later, when I had to leave home and go among people I found I had to reform myself to be even tolerated. It was a long heart-breaking task, which I had to struggle through alone, overcoming habits which might easily have been kept from becoming habits if I had been guided wisely in my childhood."

Many parents seem to overlook or underestimate the importance of the first appearance of undesirable tendencies in their children which can be overcome, if properly treated while children are still young.

Ill-temper, selfishness, teasing, and fault-finding can be kept from becoming unlovely characteristics if a wise guide gives help at the right time.

At the root of wrong-doing one can always find selfishness. It besets the only child in a home where adults seem to exist to please and spoil him, as well as the little waif on the street where to "have," he has to "snatch." For either of these children, the kindergarten is a blessing. Here in happy surroundings he learns to share in work and play—to give as well as take.

Here a child learns to hang up his wraps; to care for his rubbers; to sit erect, overcoming a desire to slide in his chair; to obey the directions of the teacher, given sometimes by voice, sometimes by the piano; to yield his individual desire and do the thing that is right for him to do at that moment.

The child who at home makes no effort to help himself in putting on his wraps, who sticks out his feet for someone to put on his rubbers, is encouraged to try and do these things for himself, not only by the teacher, but most of all by the sight of the more independent children delightedly accomplishing the task of slipping on rubbers, putting on coats and struggling successfully with slippery buttons.

But perhaps the games help most to develop unselfishness. Early in life one needs to learn to share—to be a good loser—to relinquish smilingly to someone else, and for five days a week kindergarten offers a splendid opportunity.

In a large group of children, where each has equal rights, the selfish child comes to see the need of respecting those rights, which he does by waiting his turn and sharing with others.

And so the pictures, songs, stories, games and handwork open up to him the world about him and lead him from selfishness, out of himself, to unselfishness.

REDUCE THE OVERHEAD

A dealer in implements told us the other day that it took twenty-five cents of every dollar of his receipts to pay his overhead expenses, "and yet," says he, "lots of people think if we charge ten per cent. over costs it is enough."

We suggested that this was a great time to put into practice methods that would tend to reduce that excessive overhead. Extravagant and wasteful practices in business have contributed in no slight degree to the high costs that are still agonizing the consumer. Perhaps some good may come from a condition that causes the retailer to take note seriously of his overhead.

And while thinking of overhead, I wonder if this subject might not well deserve some careful consideration by the farmer. Overhead, strictly speaking, is an expense not directly chargeable to any one product, but remains as an added expense to be spread over all before a true balance can be struck in any one department. Overhead often tells where the money went that you ought to have but have not. It has a subtle way of eating into the profits.

"Rust doth corrupt." It is estimated that the loss due to rusting of steel and iron implements on the American farm runs into hundreds of thousands of dollars annually. Much of this can be avoided by a little effort in the use of shelter, oil, and paint. Carelessness in the use of tools, harnesses and implements out of repair, often causes accidents and breakage otherwise avoidable, resulting in a blow to profits. Paint as a preservative of exposed wood does not cost anything in the long run. The inefficient use of time and labor applied to our job, indirectly means increased overhead.

A liberal application of thought given to the details of our farming business may reasonably be expected to point the way to an appreciable reduction of our overhead expense.

POULTRY

It is a good plan when running an incubator, to set one or two hens at the same time so as to make sure, should there be chicks dead in the shell, where the fault lies.

If the eggs under the hen hatch all right, then there is something wrong with the machine or its management. It may seem that there are more dead chicks when an incubator is used; but when the number of chicks hatched is taken into consideration, the proportionate loss is not much greater than with the hen.

It would seem, however, that a chick which is not in the best condition always stood a better chance of leaving the shell when under a hen than when in an incubator. One reason for this may be insufficient moisture in the incubator. This causes the membrane in the egg to become tough and the chick can not break through.

Another reason may be improper ventilation in the incubator. This will cause the chick to die from suffocation, owing to lack of air, or a current of air may dry out and toughen the membrane surrounding the chick. It is well in this case to study the machine used, so as to remedy any defect, or try out another make of incubator.

Where chicks are found dead in the shell, both under the hen and in the incubator, it is best to look at once into the condition of the breeding stock. It is important that the fowls are not so closely related as to make inbreeding a cause, and at the same time it must be seen that they are getting sufficient exercise and the proper amount of the right kind of food.

Spring is the season of faith and hope. Good work based on faith and hope usually brings fulfillment.

The Selection of An Incubator.

Professor W. R. Graham of the Ontario Agricultural College, in a recent public address, declared that hatching by hens at the present day is economically unsound. Professor Graham was referring more particularly to the larger operator, that is to say those who raise hundreds of chickens in the year. It may be stated also that machine hatching is unsafe unless one has a good machine and operates it with intelligence. Mr. F. C. Elford, Dominion Poultry Husbandman, advises against buying a cheap incubator simply because it is cheap. The best, he states, is none too good, and cheap machines are usually dear at any price. In Experimental Farm Circular No. 2 entitled "Artificial Incubation," Mr. Elford gives advice on how to tell a good machine. He says, "Nothing but results are an absolute guarantee that a machine is good, but still there are certain marks that indicate the probable value of a machine for hatching. The first of these is the general appearance. It should be well made, good workmanship and good material entering into its construction. The doors should hang true and fit without friction, the glass large enough and neatly puttied or battened, the paint or stain applied evenly, and the machine should present the appearance of a finished piece of furniture. Good insulation also is absolutely necessary. See that the walls are double and likely to maintain a comparatively even temperature.

"There are, besides the above, many other points of more or less importance. The lamp should have a large enough bowl to last at least thirty hours, convenient to fill, easy to take out and replace, good workable burner and chimney, the mica opening so placed that the whole of the flame is readily seen when the observer is standing, the heater well insulated and made so that it can be cleaned. A reliable thermometer and thermostat, egg-trays that slide in and out without catching, and the height of the machine should be convenient for working."

This circular, which is obtainable through the Publications Branch, Department of Agriculture, Ottawa,, also tells how to operate the incubator.

Forcing Rhubarb.

It is quite an easy matter to secure a succession of fine rhubarb from December to May, by which time garden rhubarb becomes obtainable. The following is the method adopted at the Invermere, B.C., Experimental Station: Old stools of rhubarb are broken up into sets in May and planted in well manured grounds during the summer. By autumn the crowns are in good shape, and are lifted and stored in a shed or cellar which is not frost proof. As needed, the crowns are taken and packed tightly in boxes, in moss, well watered, and placed in the furnace room of the basement where the shoots soon develop.

Another method of forcing rhubarb has been tried successfully at Kentville, N.S. Experimental Station. Clumps of rhubarb which had been two years planted from seedlings were forced under a bench in the greenhouse. These clumps are dug in the fall and allowed thoroughly to freeze before forcing. They were taken inside on January 16 and placed under the bench January 18. Some sand was scattered around the roots to hold moisture. Canvas was placed around the bench to exclude light. The first rhubarb was ready February 3rd and it was finished by March 30th. The area occupied was 22 square feet; the yield was 89.75 pounds, the yield per square foot being 4.07 pounds.

DAIRY

Dairy experts have found that unless milking machines are given care, they are likely to become sources of bacterial contamination.

There are two methods of keeping milking machines clean and sterile. The most prevalent one is to thoroughly clean the machine in the ordinary way and then immerse the teat cup and milker tubes into some chemical solution, usually strong brine made by adding two pounds of salt to a gallon of water. The brine is kept sterile by adding hydrochloride solutions or chloride of lime.

Another accepted method of keeping machines clean is to immerse the milking tubes and teat cups in hot water at a temperature of 160 to 180 degrees F. There is no doubt but what this keeps the machine clean, but certain makes have rubber parts that cannot withstand the high temparatures.

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