Conducted by Professor Henry G. Bell

The object of this department is to place at the service of our farm readers the advice of an acknowledged authority on all subjects pertaining to soils and crops.

Address all questions to Professor Henry G. Bell, in care of The Wilson Publishing Company, Limited, Toronto, and answers will appear in this column in the order in which they are received. When writing kindly mention this paper. As space is limited it is advisable where immediate reply is necessary that a stamped and addressed envelope be enclosed with the question, when the answer will be mailed direct.

R. G.:—Will you kindly explain in what way muck soil differs from upland and the best way to fertilize muck land?

Answer:—Muck soil differs from upland soil in many ways. The upland soil is the product of weathering, both the weathering of rocks and of vegetation that has fallen on them, while muck soil is composed chiefly of decaying plant matter, whose decay has been greatly hindered, in many cases by water standing on the soil. On examination, virgin upland soils contain a medium amount of nitrogen, and if clay predominates, contain a medium amount of phosphoric acid and potash. Muck soils on the other hand, contain a large amount of nitrogen in the available form, a small supply of phosphoric acid and a very small supply of potash. Much soils are therefore best adapted for garden truck, which is harvested when the plant has made greatest vegetative growth, or for hay crops. Speaking generally muck soil is slow in spring and crops growing on it tend to prolong their growth and do not ripen in sufficient time to escape frost. If potash-loving crops such as potatoes, sugar beets, etc., are grown, after the first crop or two, there will be a tendancy for the vegetables to be poorly filled out, and the plants to be susceptible to disease. In fertilizing for general crops on muck soil, use a fertilizer with a small amount of nitrogen in order to start the crops off vigorously, a large amount of phosphoric acid,—10% to 12%,—and a medium to abundant supply of potash, under normal conditions as high as 3 to 5%. This of course, should be worked into the soil thoroughly at the time the crop is being planted.

M. F.:—What is the cash value of well rotted manure, by the manure spreader load, allowing seventy bushels for a load? This being well rotted stable manure.

Answer:—It is very hard to state the cash value of well-rotted manure, by the manure spreader load. If the manure has been exposed, the probability is that it will carry no more than 5 to 6 lb. of nitrogen to the ton, probably not more than 2 or 3 lb. phosphoric acid, and 4 or 5 lbs. potash. It is not fair to value this at the price you would have to pay for it in fertilizers, because in fertilizers these plantfoods are in a readily available and concentrated form, whereas in manure the probability is that the material which remains contains a considerable amount of plantfood in the unavailable form. Well-kept manure is highly valuable, but it should always be kept in mind the quality of manure is directly dependent upon its storage, and the handling of the farm animals from which it was obtained. Director Chas. D. Woods of Maine, says as follows:—"Plantfood in manure is not so quickly nor so completely available as in the better forms of chemicals, but after much balancing of pros and cons, it has become generally accepted that the commercial value of the plantfood contained is the only definite thing about a farm manure by which we can measure its agricultural and commercial value."

His opinion is supplemented by that of Director Thorne, for 25 years director of Ohio Experiment Station, who says as follows:—"After more than twenty years' work in the comparison of manure and chemical fertilizers on many crops, the station is not able to credit manure with any value beyond that of the nitrogen, phosphorus, potassium and lime which it carries. When manure costs more than $2.00 per ton spread on the land, it is wiser to use the chemical fertilizers mentioned than to buy manure."

Manure which is supplemented by 40 to 50 lbs. of acid phosphate to the ton has been found to be highly valuable, in fact, yard manure which would correspond with that which you describe supplemented with 40 lbs. of acid phosphate to the ton of manure, or 320 lbs. of acid phosphate per acre, give 11.64 bushels more corn to the acre and almost 6 bushels more wheat per acre as an average of 16 year trials at the Ohio Experiment Station.

S. R.:—Will you please advise me how to destroy quack grass?

Answer:—Quack grass is very difficult to destroy. About the only sure remedy is to work the ground early in the spring, following the plowing by disking and rolling and keeping the ground fallow until after midsummer. Every time the quack grass gets a good start go over the ground with a horse rake, raking out all the root stalks after they have started, and taking these where you can dry and burn them. Follow this work by planting a cultivated crop on the land. Constant cultivation will kill out the weed.

W. F.:—Can you tell me how to prevent silage from spoiling? My silage seems to mold and get hot. Do you think it is a good idea to put water on it?

Answer:—Silage should not spoil if the silo is air-tight and permits of the silage settling evenly. The presence of mold shows that either the silage is too dry and bulky, allowing for big air circulation between the spaces of cut corn or the contents of the silo have not been thoroughly packed. The heating of the silo shows that active fermentation is going on. Of course to quite an extent this should go on, because it is fermentation of the silage which produces the conditions which account for its preservation. However, the fermentation should not go on to the extent of destroying the ensilage. I would not consider it good to pour water on the silage. It would tend to make it sloppy and spread the destruction of the silage by washing the spores of mold from one part of the silo to the other. If the silage is very moldy you will have to throw away the moldy part on top.

L.B.:—Will you please give me a balanced ration for a dairy cow? Also for fattening cattle if a different ration is needed.

Answer:—Haecker of Minnesota gives as a ration for 1000 pound cow as follows: Crude protein, 0.7 lbs.; carbo-hydrates, 7.0 lbs.; fat, 0.1 lbs. He supplemented this with considerable figures suggested as an allowance for the dairy cow, provided she was giving more than 3% milk. For fattening steers at different periods of fattening, Henry & Morrison, in their new book on "Feeds and Feeding" give the following:—

Requirements for Given Steers at Different Periods of Fattening.

	Av. Wt. during period lbs.	Dry matter lbs.	Digestible crude protein lbs.	Total Dig. nutrients lbs.	Nutritive ratio lbs.
First 50 days	1.020	22.4–25.5	2.04–2.35	18.4–20.4	1:7.0–1:7.8
Second 50 days	1,140	23.9–27.4	2.17–2.62	19.4–22.2	1:7.0–1:7.8
Third 50 days	1,260	22.7–27.7	2.27–2.65	20.2–23.3	1:7.0–1:7.8

The ocean occupies three-fourths of the surface of the earth.

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8.3 bus. Spring " "
Average of 5 years' test.
Indiana Experimental Station—
7.06 bus. Wheat gained.
Average of 10 years' test.

"Exactly what should be used will depend upon the local conditions, but *in any case it should be remembered that it will pay better to use liberal amounts of fertilizer on wheat now than in ordinary times*, because wheat prices are likely to remain high and it will not require much increase in the yield to pay for liberal fertilization."—PROF. A. T. WIANCKO, Purdue University, Indiana.

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of the Canadian Fertilizer Association
1111 Temple Bldg., Toronto
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Light in The Poultry House.

For some time it has been a question whether artificial light in the poultry house was a benefit or not, and to help solve the problem, the Poultry Division of the Experimental Farms have, tested it for two seasons, during the winter of 1916-17 with two pens (40 birds in all) of Barred Rock pullets and during last winter with two pens of Rock pullet and two pens of Leghorn pullets, (40 birds of each breed).

In each light pen of twenty birds two tungsten 40 watt lamps were used. They were turned on at 6 a.m. and left till daylight, then turned on again in the afternoon before dusk and left till 9 p.m. This was started in November when the days became short and continued until the middle of March when light was unnecessary.

In the 1916-17 test the light pen laid 1106 eggs with a total value of $54.93. The cost of feed was $22.53, the cost of light $2.40, a total cost of $24.73. This gave a balance over cost of feed and light of $30.20 or a cost per dozen eggs of 26.8 cents.

The dark pen laid 636 eggs with a total value of $29.46; cost of feed was $21.09. This gave a balance over cost of feed of 8.37. The cost per dozen eggs was 39.8 cents.

In 1917-18, the yields were not high in either case, and the total difference in egg yield in the six months was by no means large, but the forty birds with light gave a better revenue than the forty without light. This difference was made up in the time that the eggs were received. Those with the light gave their heaviest yields in December and January, while by far the heaviest months for the Leghorns without light were March and April and for the Rocks January and February.

The total figures from the two pens with the light were; Number of eggs, 2470; value, $136.32; cost of feed, $55.48; cost of light, $3.20; balance, $77.64 or a cost of 28.5 cents per dozen.

Those without light laid 2242 eggs; value, $118.90; cost of feed, $60.01; balance, $58.94, or a cost of one dozen eggs, 32.1 cents.

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COMPETITION CLOSES APRIL 20TH, 1919

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INTERNATIONAL LESSON
FEBRUARY 2.

Lesson V. The Giving of The Manna, Exodus 16: 1-36. Golden Text, Matt. 6: 11.

1-10. Hunger in the Wilderness. The exact location of the "wilderness of Sin" is unknown, but it must have been a barren plain or valleys near Mount Sinai. At the best it was a hungry land through which the fugitives were passing, very different from the abundance of Egypt. Long years of subjection and slavery had sapped the manhood of Israel, and the people had no spirit to brave the privations and hardships of such a journey.

11-18. Bread from Heaven. "At even ye shall eat flesh." The flesh came to them in the form of flocks of quails. These birds are still common in that country. They fly in the spring in great numbers across the Gulf of Akabah, and are often so fatigued after their long flight that they can easily be caught or killed. Compare also Num. 11: 31-34.

"In the morning ye shall be filled with bread." In the morning they found "a small round thing, small as the hoar frost on the ground." It was "like coriander seed, white; and the taste of it was like wafers made with honey" (v. 31). Coriander seed is a small fruit, straw-colored, about the size of a pepper corn: In Num. 11: 17 the manna is also said to have been like bdelium, that is a "transparent, wax-like gum or resin, valued for its fragrance." The people "gathered it, and ground it in mills or beat it in mortars, and seethed it in pots and made cakes of it; and the taste of it was as the taste of fresh oil," or oil-cakes (Num. 11: 8). They had no name for it, so they said, "What is it?" which in Hebrew is "man hu" or "man na," and so they continued to call it.

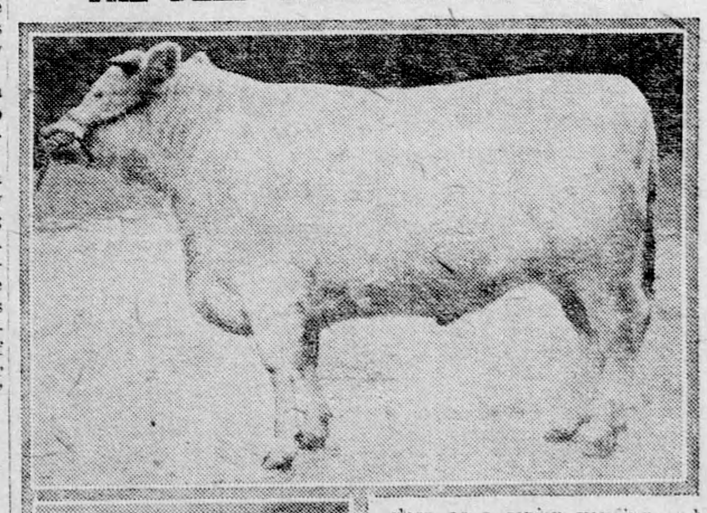
What is now called manna is "the sweet juice of the Tarfa, a species of Tamarisk. It exudes in summer by night from the trunk and branches, and forms small, round, white grains, which partly adhere to the twigs of the trees, and partly drop to the ground." The Arabs gather it, boil it down, and use it on their bread like honey. The Greek monks of Sinai sell it to travellers. It could not, however, have served as food for a multitude of people, for it consists almost entirely of sugar. The manna which fed the Hebrews must have been of a truly miraculous character, unless we may suppose that the memory of this Tarfa juice was preserved and that it grew in tradition to something very much more and greater.

The story has a very high value for us as for ancient Israel, in that it illustrates most significantly and beautifully God's care for His people. Compare Deut. 8: 16, and the poetical version of this story in Psalm 78: 18-25.

"An omer a head." Compare v. 36. The tenth part of an ephah would be about 6½ pints.

31-35. The Pot of Manna. This pot of manna, a precious memorial of their sojourn in the wilderness, was kept in the most holy place of the tabernacle, in front of the sacred ark. Compare Heb. 9: 4.

THE BEEF THAT EUROPE WANTS



"Clear The Way 2nd"

Grand Champion Steer at the Guelph Winter Fair, exhibited by Mr. T. A. Russell of Toronto.

"Clear the Way 2nd" is the perfect type of steer for beef. He was awarded the Grand Championship for steers of all classes at the recent Live Stock Show at Guelph, Ont., where he competed against some of the best animals produced in Canada. He was also Grand Champion at the Canadian National Exhibition, Toronto, and took third prize in the class for Shorthorn-sired steers at the Fat Stock Show in Chicago, and was one of a herd of three animals which won a prize there as the best Shorthorn-sired herd. He was also first in his class as a senior yearling and was champion steer in Grades and Crosses of any Breed in the Guelph Show. "Clear the Way 2nd" was sired by Sylvan Power and bred by R. O. Hunter of Exeter, Ont. He was finished to the top bloom when shown.

"There are, of course, two sides to the Canadian live stock industry," said his owner, Mr. A. T. Russell—"live stock and dead stock; that is, breeding stock and stock bred for meat. There never was a time when so much attention was being paid by Canadian live stock men to quality. Freight kills the profit on mediocre animals. High grade stock is the profitable kind for the export trade. In view of the European shortage there is an immense opportunity for both branches of the live stock industry in this country."

"Clear the Way 2nd" represents perfection in form and finish for Christmas beef. It is said that prime Argentine beef reaches the British market of quality equal to Canadian Christmas beef. The Argentine meat trade has been built up by the liberal policy adopted by the breeders in importing the best pure bred sires the world affords. The Canadian live stock industry, by similar attention to quality, has an opportunity now to hold the export trade, developed during the war, permanently, as the principal countries of Europe are deficient in cattle to the extent of 28,000,000 head.

Mothers and daughters of all ages are cordially invited to write to this department. Initials only will be published with each question and its answer as a means of identification, but full name and address must be given in each letter. Write on one side of paper only. Answers will be mailed direct if stamped and addressed envelope is enclosed.

Address all correspondence for this department to Mrs. Helen Law, 233 Woodbine Ave., Toronto.

Progress:—Thank you for your kind words. This department has been crowded out for several weeks because of lack of space. Letters have been answered by mail.

All thoughtful persons are looking forward to the coming of a new era in the history of mankind. The past year was thronged with soul-stirring events, but 1919 may witness tremendous changes. As you say, things can never return to the old plane. People are demanding more of their communities now than ever before. They want better schools and more convenient homes. They are asking for social centre halls and places of amusement. They are insisting upon better roads and marketing facilities. Above all they are demanding that their community give them some of the advantages of the city, in order that farm life may have a little less drudgery, and a little more wholesome enjoyment in it. What is your community doing to meet the growing demands? Have you a social centre where your people may go for entertainment? Have you a public playground suitably equipped for your children in school? Do you ever have a municipal holiday and general get-together? If you live in one of these communities that is doing things for its people, please write and tell us all about it. You may thereby start others along the road to progress.

Maid Marion:—Try the pot-o'-beans game some evening. It is played thus:—

From two to four is the best number of players for the pot-o'-beans game. Place fifty beans on the table and call it the pot. Arrange the players around it and letter them A, B, C, D, from left to right. Each player takes five beans from the pot and puts his hands under the table.

A begins the game by closing his left hand and bringing it up to the table in front of B, who guesses how many beans it holds. If B's guess is correct, he gets all the beans in the hand; but if his guess is above or below the number in the hand, then he gives A the difference. For example, if A holds three beans and B guesses two, B must give him one; if he guesses five, he must give him two. If A holds none and B guesses any number up to five he must make good his guess. If A holds any beans and B guesses none, he must give the same number that A holds in his hand. If A holds none and B guesses none, A must pay five to B for his correct guess. If a player does not have enough beans in his hand to make good his guess, he draws five from the pot. After he pays the play goes on as before—from A to B, B to C, and so on.

Every time a player has more than five beans in his hands, he lays the extra ones on the table in front of him as tally. Those may not be used again in the game. Whenever a player is out of beans he takes five more from the pot. The game continues until one of the players has no more beans in his hand and finds the pot empty.

When that occurs, each player puts all the beans he holds into his tally and counts them. The person who has the largest tally wins the game. If you wish to make the play longer, increase the number of beans to seventy-five or a hundred. Corn, rice, marbles, or any other small objects will of course serve in the place of beans.

Patriot:—1. The first contingent that left Canada totalled 33,000 men. 2. Before the war Great Britain had a peace army of 162,251 regulars and 251,195 territorials, or partly trained troops. 3. The armistice was signed at Senlis, southwest of Compiegne, France. 4. When noon in Ontario it is 5 p.m. in London, 5.09 p.m. in Paris and 12:45 a.m. (next day) in Peking. 5. You are right—the first Canadian regiment to land in France was the Princess Patricia Canadian Light Infantry. 6. "The Children's Story of the War" would suit your purpose admirably. It is published in England and bound very attractively with excellent illustrations and maps. Up to the present, eight volumes have been issued which bring the narrative of the war down to the end of 1917. Probably two additional volumes will complete the work. The price at present is $1.25 per volume. Nothing more beautiful or more valuable, both for the present and the future, could be found than a set of these splendid books. Children are delighted with them.

Evangeline writes: "I have to write a paper for our club on this subject: 'My Second Chance—My Children.' Can you help me?"

Our suggestion would be that you show how you can teach your children to avoid making the same mistakes you have made in your own life; how you can instill in them your own high ideals. Perhaps there are things that you yourself have longed to do? You can help your children to attain these things and thus be satisfied through them. Maybe your own health is not good. You can show how, by feeding balanced rations, your children may grow up to be strong and healthy. You can teach your children how to take care of their health. Have you not problems in your community that you can help with, such as better schools, clean amusements, and so forth? Wouldn't this mean that you were helping your children to keep their hearts and minds clean? Suggest how you can make your home attractive to the boys and girls. Show how a wise mother often lets go some of her household duties that she may be a better chum to her children.

With these few suggestions you can develop a most interesting paper.

THE TRAPPER.

Methods of Trapping Fox.

An absolute necessity in trapping fox is a good trail scent which the trapper must rub on the soles of his shoes and on his gloves when working around the traps. The fox is perhaps the hardest of all wild animals to trap and is very suspicious of the human odor. The trail scent helps to kill this odor. Traps should be sprinkled with blood to which the trail scent has been added, or should be boiled in hemlock water.

Traps should be set along the fox runways or where they are most likely to travel. The traps should be set about two feet from a fairly large tree; they should be well covered and the surroundings made to look as natural as possible. About five feet up the tree trunk a dozen drops of the best fox bait should be sprinkled, directly above the traps. In jumping for the bait the fox will be caught in the traps.

Or a stake about six feet long may be driven into the ground so that it stands five feet high. A rabbit should be placed on top of the stake and a few drops of the fox bait placed on it. Traps should be set on either side at the base of the stake and covered will with leaves, light earth, etc. This method attracts foxes from great distances.

Fox should be cased fur side out in preparing for the market. Good stretchers should be used in stretching. Positively no "curing preparations" should be used—the skins dried in a cool place, not exposed to sun fire, or rain. The bone in the fox's tail should be removed to avoid tainting.

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