

# Business Interest Is Aroused

By Henry C. Bell, B.S.A.

One of the leading morning papers to-day says:

"During the present moment all eyes will be fixed with anxious interest on the prairies. . . . Seldom has so much been staked on a single harvest. Seldom has the country been more keenly conscious of its dependence on agriculture. . . . The present year is the grain-grower's opportunity to retrieve his losses, pay his debts and get a solid footing again. Prices will be much lower than two years ago, but much higher than the pre-war level, but costs of production have receded in the past year. . . . The outlook for the wheat crop is promising. Wheat at \$1.80 a bushel offers an encouraging margin of profit, and improved methods of farming are making that business as efficient as any other."

Undoubtedly the last half year has seen such rapid decline in prices for most farm products that many a farmer has been somewhat discouraged with his business. His livestock and livestock products have fallen off in value at an alarming rate. Many of his money crops have been sadly hit. Still the great demand for wheat keeps this important farm product in a commanding position. Especially in those southwestern counties of the province where tobacco, sugar beets, and the like have heretofore been the money getters for the growers, is this question of wheat growing of great importance. From a climatic and soil standpoint, no counties of the Dominion should be capable of producing better yields of wheat than the "corn belt" of Canada, but there are other counties which are capable of producing large and valuable fall wheat yields.

There are fundamental studies concerning wheat growth which could be made of tremendous productive value if wheat growers would but take time to study their crops and analyze their

light dressings of manure as far as possible, and with sufficient high-grade fertilizers, so as to give the young plants that vigorous start which will make it possible for them to make firm attachment to the soil and to prepare for the emergencies of bad weather.

### Make Top as Well as Root.

Plantfood has a large bearing on stooling. The young plant has not only to develop a large and sufficient growth of stalks underground, which we call root, but it must produce also these stalks above ground which are called culms or stools. The number of stools depends on:

- The variety. Various kinds of wheat have a slightly different stooling capacity. Some develop a small number of stalks, others relatively larger.
- The largeness of the meal obtainable. Growing wheat, like any other type of creation, is capable of doing just what the food-strength back of it will enable it to perform. If the food supply in the soil is restricted there will be a small number of stalks, short heads and small early-maturing grain. If the plantfood is sufficient and well-balanced the number of stalks will be greatly increased, the heads materially lengthened and the kernels which form will be much more numerous and plump.

The Delaware Agricultural Experiment Station has carefully investigated this point and has found relative growths as shown in the accompanying cut. To Pot 5 no plantfood was applied, to Plot 11 phosphoric acid was applied, and to Plot 9 nitrogen and phosphoric acid was applied. It is true that this work was carried out in the plant laboratory, but nature is carrying it out continuously in your fields, and precisely the same results



HOW TO INCREASE WHEAT YIELDS.

own specific problems. One of the big essentials to high-yielding wheat is good root development. Constricted root range may upset development. Of course the roots of any crop consist of vastly more material than is attached to the plant when it is pulled from the soil. There are myriads of small rootlets which strike out through the spaces in the soil, and from each of these rootlets spring untold numbers of other small hairlike roots which are commonly called root hairs. It is estimated by plant biologists that the total roots of common farm crops may vary in length from 500 yards to 15 miles, that is the normally developed plant may come within this range. The abnormally developed plant may have much less feeding surface, because the roots are the hands and mouths of any plant. Just where the root range of your wheat crop lies depends upon three things:

- How well your soil is opened up, so that the root hairs can press through it.
- How thoroughly the field is drained, so that there may be sufficient moisture, but not enough to smother expanding roots.
- How strong is the pushing power, or life in the plant back of the root, giving the plant power to shove its roots out into regular areas.

This last depends upon the supply of well-balanced available plantfood.

**Cause and Effect.**  
Plantfood and rooting are intimately related. I do not need to tell practical farmers that rich soils produce greater root growth than poor. Yet many a wheat grower wonders what is the matter with his wheat crop when he sees it stand still, or, after a period of rather unfavorable weather, he sees parts of his field killed out. If he examines a little closer, often he finds what is commonly called "heaving." This is caused by the water in the soil freezing. It is a law of physics that water expands one-tenth in freezing. Therefore, when the soil water expands one-tenth it raises everything with it. When the ice melts the soil drops back into place, but the roots of clover and fall wheat are left high and dry sometimes to the extent of two or three inches. It is this sort of thing which ruins the growth of the wheat crop, because untold numbers of tiny active wheat root-hairs are broken off and it is these multitudinous of active "plantfood-getters" which are of primary importance to the growing wheat. If they are broken off the trunk lines of plantfood are destroyed.

Feed the young wheat crop with

are being obtained where your wheat has a low supply of plantfood, or where it has a medium supply, or where it has a meal large enough to satisfy all its needs. Remember the rooting and stalking of your crop this fall and next spring will depend upon how thoroughly you prepare the home of the plant and how well you balance its food rations, and this thought leads to the last observation which is, that plantfood and yield are directly connected. The materials which aid the formation of starch, protein and other components of your wheat crop enter the plant through the tiny root-hairs already described. Now that material must be carried in the liquid which clings about the soil particles, if the ramifying root-hairs are to absorb it. It is unnecessary to enlarge on this phase of the subject more than to point out a few actual field tests. These establish the principle beyond any controversy. They are not new. Many of them have been in operation beyond the lifetime of most farmers, but in this land of plenty little attention has been given to the plantfood side of wheat growing up to the present time. But here are the yields:

### Wheat Yields Per Acre.

State	Fertilizer	Yield (bus.)
Ohio	No Fertilizer	11.4
	With Acid Phosphate	19.6
	With Comp. Fertilizer	28.8
Delaware	No Fertilizer	11.5
	With Acid Phosphate	19.8
	With Comp. Fertilizer	28.9
Kansas	No Fertilizer	13
	With Comp. Fertilizer	21
	Virginia	No Fertilizer
With Acid Phosphate		11 1-3
With Comp. Fertilizer		14 2-3
Pennsylvania	No Fertilizer	13.4
	With Acid Phosphate	16
	With Comp. Fertilizer	25.7

One thing is certain, if Canadian wheat crops next summer are to show that improvement which is possible, Canadian farmers must not only read and agree with the things that are said about essentials to increasing crop yields, but they must actually put these suggestions into practice. In other words, get good seed wheat now. Obtain fertilizer suited to your conditions at the earliest possible date, so that you will be sure to have it on hand when the ground is ready for wheat sowing. A very little extra yield will pay for 200 to 400 lbs. of fertilizer per acre. You can easily figure what the probable return would be at the average increase in wheat yields obtained at the Experiment Station tests.

It is a well established principle in

farm management that large yields reduce production costs, also that sufficiently large yields increase labor income. Many of these terms are more or less foreign to the every-day man, but in these times when cost must be reduced to its minimum it is absolutely necessary that the younger farming population of the country familiarize themselves with the various angles of farming business and realize the importance of reducing manufacturing cost in their great factory—the farm—by increasing acre production. One of the most productive ways of accomplishing this great end is to fertilize abundantly.

### Improvement in Fruit Handling.

Experience has abundantly proven the advantages derived from standardized handling, grading and packing of fruits. Whereas under the individualistic methods that formerly prevailed, the losses in handling and shipping were very considerable, by close supervision and active co-operation they have been greatly lessened and almost minimized. Investigations have shown that careless picking has also been largely responsible for decay and waste. This, too, is receiving careful expert attention that is resulting in most valuable improvement. With these things considered and with the development of cold storage facilities, the advance in marketing arrangements, and the greater care that is being taken in transportation, officials of the co-operative fruit-growing and dealing associations and of the government departments are looking forward to a more than ordinarily successful season, or at least to a season characterized by a less than ordinary percentage of loss.

A few smooth round stones, a little larger than hens' eggs, put in the feed box, will keep horses from bolting their feed if they have formed the habit.

### Select Lines of Production With Minimum Labor.

In the great majority of agricultural undertakings, labor is the costly or money-consuming factor. The more intensive the work in production of food crops the greater the expenditure of labor for each food unit produced. If consuming markets will warrant high labor expenditures, then all well and good; expend all labor within reason, or whatever the selling price of the product warrants. However, special conditions that justify heavy labor expenditures are usually confined to districts where there is an unlimited market for luxury food crops. But the ordinary food crops, that are most commonly grown in farm practice have not a selling value sufficiently high to permit of a labor expenditure equal to more than 50 per cent. of the selling price of the product. With selling prices for food products too frequently on the decline, with labor charges and general overhead charges comparatively steady, the prospect of profit is not always encouraging. Where selling prices vary as much as 600 per cent. in one year, for certain commodities, those who are forced to sell at the lower level are not likely to receive sufficient for their produce to pay the labor bill.

With little or no control on the price at which a food product must sell from the farm, the adjustment of the labor cost of operation is apparently the most likely way to obtain relief. The intelligent use of crop rotations in farm practice, more extensive use of properly developed meadows and pastures, more grazing by live stock, more extensive use of farm machinery, proper use of every field, fewer and larger fields and permanent crops where possible, are some of the ways that will lead to reduction in labor costs.

Chronic kickers soon develop a whine that won't wear off.

## Money Advantages of Good Roads

By M. O. Eldridge

Certain direct money advantages follow the improvement of public roads in every community. These advantages are probably most apparent in the reduced cost of hauling. Certain dependent or reflex money advantages also arise in a community where roads have been improved.

The increase in the value of farm lands is an example of the indirect money advantage of improved road conditions. However, it should not be considered that the direct decrease in the cost of hauling and the increase in farm values are not entirely separate and independent. A farm increases in value partly because the cost of hauling is decreased.

The increase of farm values must follow improved roads, for the effect of improved roads is to bring the farms, in a sense, nearer the towns. The fact that on roads with improved surfaces hauling becomes largely independent of the season of the year or weather conditions means another very considerable reduction in hauling costs.

The cost of transporting goods to the railroads and of farm produce to markets is high, due mainly to steep grades and yielding road surfaces on unimproved roads. The worst grade on any road tends to limit the load that can pass over the entire road. For example, if a 1,200-pound horse, by exerting a force equal to one-tenth of his weight, can draw a load of 2,000 pounds on a level earth road, with the same force exerted against the collar he can draw continuously only about 1,000 pounds on a five per cent. grade and only about 750 pounds on a ten per cent. grade.

While steep grades are detrimental on common earth roads, they are far more so on an improved road. Suppose that a 1,200-pound horse can draw a load of 2,000 pounds on a level earth road; under the same conditions this horse can draw continuously a load of 5,000 pounds on a level macadam road in average conditions, but on a five per cent. grade he can draw only 1,600 pounds, while on a ten per cent. grade the load would have to be reduced to 960 pounds. Thus, while the load which can be hauled on a level macadam road is more than double that on the level earth road, the load on a ten per cent. grade is only 210 pounds greater on the macadam than on the earth road.

Therefore, when a road is hard surfaced, the maximum grade allowed must be low in order to secure the full advantage of the hardened surface. Steep grades are also slippery and dangerous in winter, and the maintenance charges are always high. In fact, the better and harder the road surface the more imperative it becomes to secure easy grades.

Excessive grades are usually unnecessary. Steep grades have come about largely from the desire to lay out roads in straight lines and along farm boundaries. The gain in distance in passing over a hill instead of around it is very slight. Many roads have been relocated around hills with no addition to the length.

There has never been on record a case where a properly relocated road was afforded any dispute as to the question of its maintenance reduction of the hauling cost.

The cost of hauling farm produce to market is probably not so much increased by excessive grades as by the

bad conditions of road surfaces. The desirable road surface is hard and reasonably smooth. Almost every road is fairly hard at certain times in the year. Too frequently, however, at the season when the roads must be used, the surface is soft, and the roads are impassable.

Many attempts have been made to fix the relative weights which a horse can draw in an ordinary wagon over level road surfaces of various kinds. The following figures are current and fairly reliable.

On a muddy earth road the amount varies from nothing to a maximum of 800 pounds; on a smooth, dry earth road, from 1,000 to 2,000 pounds; on a gravel road in bad condition, from 1,000 to 1,500 pounds; on a gravel road in good condition, about 3,300 pounds; on a macadam road, from 2,000 to 5,000 pounds; on a brick or concrete road, from 5,000 to 8,000 pounds.

These figures show that if the speed of travel is the same on all these road surfaces a horse will haul on a good macadam road from three to five times as many tons a mile in a day as upon a moderately muddy earth road. This matter may be considered in another way by admitting that one horse is capable of a certain fixed duty each day. Then, with a given load, the effective radius of travel from a given point on a macadam road is from three to five times the radius of travel from that point on a moderately muddy earth road.

Road officials in any locality should have information which will enable them to establish, in some measure, the money value of any proposed system of road improvement. However, it is undesirable for a locality to base its calculations upon generalized data deduced from nation-wide observations. What is needed in the individual instance is an understanding of the methods which must be employed to establish the economic conditions in the locality. Certain facts which are essential, such as the area of the road district or other highway unit, the number of miles of roads of various classes and their distribution, the more important crops, the number of miles of railroad and the number of railroad stations, and similar data, may be accurately obtained. Likewise, the prevailing cost of teams with driver for a ten-hour day.

The average load and the average haul are less easily obtained, but they are essential in developing facts. When all the information has been carefully studied it will be possible to derive ton-mile cost for the various classes of commodities hauled. If the area along the roads devoted to various crops and the acreage yield in tons can be compiled, it will be of great value in determining the annual service of the road.

A traffic census should be made and the total hauling charges for the community should be approximately estimated. From a strictly business standpoint it then becomes necessary to make a conservative estimate of the reduction in hauling costs that will result from road improvements.

The important point is that at least the annual haulage charges to the community must be regarded as measuring the interest and maintenance charges which the community can economically afford for an investment in improved roads.

# The Sunday School Lesson

JULY 24.

Saul Proclaims Jesus as the Christ, Acts 9: 19-30. Golden Text—St. Matt. 16: 16.

**Connecting Links**—There is no doubt that Paul's early training in a pious Jewish home, his university education and training in the school of Gamaliel, his knowledge of the Old Testament Scriptures, and of the Greek and Hebrew languages—all combined to qualify him in a unique way for his great task. He was now called to be a preacher of the gospel. He could find the foreshadowings of that gospel and the preparation for Christ's coming in the Jewish writings which he knew so well. He could speak to people of all classes and nationalities in the universally spoken Greek language, or to the Jews in the synagogues in their own Aramaic, or in the Hebrew of their sacred books. He knew the point of view and the methods of the Rabbinical schools, and he could meet and reason with the Jewish doctors on their own ground. Much learning had not made him mad, but had given him an advantage and a power such as few men have possessed. But above all else, in Paul's preparation and equipment was his vision of the risen Christ, and his consciousness of the constant presence, working in him and through him, of the Spirit of God, which was to him identical with the spirit and the mind of Christ.

From the day of his meeting with Christ on the road to Damascus Paul believed himself called to preach the gospel. Ananias, who came to him at Damascus, had said to him, "The God of our fathers hath chosen thee that thou shouldst know his will, and see that just One, and shouldst hear the voice of his mouth. For thou shalt be his witness unto all men of what thou hast seen and heard" (Acts 22: 14, 15). Paul declared also that, in the vision, Christ had said to him, "I have appeared unto thee for this purpose, to make thee a minister and a witness both of these things which thou hast seen, and of those things in the which I will appear unto thee." (Acts 26: 16). This, therefore, became the supreme business of his life, and his one consuming passion, to preach Jesus whom he had persecuted.

19-20. He preached Christ, declaring in the synagogues to the assembled congregations that Jesus was the Christ; that is that He was the long-expected Saviour and King, whose coming had been proclaimed by prophets for seven hundred or more years. He gave Him the title Son of God, recognizing Him thus as divinely sent and authorized to win His Kingdom and to work out the redemption of His people.

21-22. All that heard him were amazed. They knew his fame as persecutor, knew why he had come to Damascus, and were amazed that this dreaded and powerful enemy, who had letters in his pocket authorizing him to arrest and imprison them, had become their friend and advocate. Paul went on preaching, gaining strength, and making converts, until the Jews of Damascus were aroused against him.

23-25. The Jews took counsel to kill him as they had killed his Master. That, they supposed, was the most effective way to silence him. But they did not yet see that a crucified Christ and a martyred Paul might still be stronger than all their enemies. The incident of his escape in a basket lowered from the city wall is mentioned again by Paul in 2 Corinthians 11: 32-33.

In telling of these days in another epistle (Gal. 1: 13-18), Paul says that he went away into Arabia. Whether it was before his preaching in the synagogues, or after, that he went, we do not know. At least it was three years after his leaving Jerusalem that he returned to that city.

26-29. When Saul was come to Jerusalem. The years in Damascus and Arabia had been years of preparation. In the quiet of some Arabian town, or possibly in some monastery of the Jewish sect of the Essenes, to which he would have received a cordial and kindly welcome, he studied his problem and sought to solve it in the light of Holy Scripture. Now he is ready to begin the chief business of his life, and he desires to begin it in Jerusalem.

The disciples, that is, the Christian people of Jerusalem, were afraid of him. They had reason to be. They doubted his sincerity. But Barnabas, a good man, liberal and kindly of spirit, took him and vouched for him, introducing him to the apostles, and telling of his conversion and his preaching in Damascus. See what is said of Barnabas in 4: 36, 37, and 11: 22-24.

Paul claims, however, in answer to some of those Jewish Christians who found much fault with him in later years, that he received no authority from the apostles in Jerusalem and did not ask for any. His commission and authority he held himself to have received from Jesus Christ, when He met Him on the way (see Gal. 1: 15-19). He, therefore, felt that he had the same right to speak and teach as James and Peter and the other apostles, being not one whit behind the chiefest of them, and he declares that this right was freely accorded him by the leaders of the Church in Jerusalem. (Gal. 2: 1-9).

30. To Tarsus. It is very much to Paul's credit that he desired to stay in Jerusalem and to face whatever hostility or danger to his life there might be. He wished to preach Christ where he had persecuted His followers. He was willing himself to suffer where he had made others suffer, and so in some measure to atone for the wrong which he had done. He tells (22: 17-21) of a trance, or dream-vision, which came to him in the temple in Jerusalem, while he was praying, in which the Lord appeared to him and commanded him to leave Jerusalem. He pleaded that he might be permitted to stay, saying, "Lord, they know that I imprisoned and beat in every synagogue them that believed on Thee. And when the blood of Thy martyr Stephen was shed, I also was standing by and consenting unto his death, and kept the raiment of them that slew him." But the command was peremptory, "Depart, for I will send thee far hence to the Gentiles."

Added to the effect of this vision was the persuasion of Paul's friends. They brought him down to Caesarea (the seaport) and sent him forth to Tarsus.

Back in his own home city and province, and in the neighboring province of Syria, Paul continued his work (Gal. 1: 21-24) until some years later, when Barnabas sought him to be his helper and co-worker in the church at Antioch (Acts 11: 26).

### Application.

As soon as Paul saw the hollowness of Pharisaism he became an active Christian. There is what someone has called "the pearl of the empty heart." If our fields are not sown with good seed, then very speedily nature sends along the nettles and weeds. A house left standing without occupants will rot and mould and fall to pieces much faster than if it were occupied. And in the spiritual life the danger is not less. It is not enough that a man should cease to drink and smoke and swear. Such a man may well rejoice that he is delivered from such things, but unless he is actively employed in Christian service the evil spirits will soon return from the wilderness.



### Bedtime Stories

Make-Believe.

Sometimes I'm mother's little fox,  
A nice one, very tame;  
And then we play that one glad day  
Out of the woods I came.

When I'm a fox her little girl  
Has always gone away;  
I don't forget to say: "We met  
Out in the woods to-day."

Then mother makes the loveliest den,  
All deep and dark and snug.  
(Table, you know, that's used to sew,  
All covered with a rug.)

And then, while mother sits and sews,  
I cuddle in my den  
Or else steal out and prow about  
And then go in again.

Till—oh, I need my mother's arms  
And do not want to roam;  
I creep up close and smile. She knows  
Her little girl's come home!

### Importance of Pure Dairy Products.

The wholesomeness of milk and of milk products is of as much concern to the Canadian people as to those of the United States. Consequently steps that are taken in the one country to ensure purity are of much interest in the other. At the present moment there are two bills before the House of Representatives at Washington dealing with what is known as "filled milk." One of the measures known as the Voigt bill prohibits the manufacture or sale of what it terms an adulterated food product, the other, known as the Beck bill proposes to tax and license the manufacture of the stuff with drastic regulations. Before

the House Committee on Agriculture, which is engaged in investigating the merits of and the necessity for the Voigt bill, some testimony has been given of vital importance and of noteworthy interest. One of the principal witnesses at the first sitting was Dr. E. V. McCollum, of Johns Hopkins University, Baltimore, a gentleman well known in Canada for his teachings. He detailed studies and experiments in which he has been engaged and which has convinced him that dairy products supply the only protective food likely to be used in sufficient quantity to produce a normal growth in children, preserve normal health in adults and prevent the early beginning of senile decay. He attributed the stunted growth and development of orientals to the general lack of dairy products in their diet. The great races of the world are those who have milk as the basis of their diet. He showed photographs proving that ulcerated sore eyes and rickets resulted from a diet deficient in milk or its products. He thought that every adult should consume two quarts of milk a day. An authority who has also devoted considerable time and energy to research as regards dairy products declares that every argument Dr. McCollum advanced against the sale of counterfeit milk applied with equal force to counterfeit butter. The famous Professor Mendel of Yale and other well-known scientists are to be examined and are expected to furnish much enlightenment regarding the evil effects arising from the consumption of impure and inferior articles that are sold as dairy products or mixed therewith.

The American man on an average is taller than the Briton.

We never saw the Matterhorn or a lot of other great sights, but we don't believe God ever made anything prettier than a golden sunset on a field of ripening grain.