

noticed that the grain of the average this the inference amount of nitro- approximately the eties which are at the increased elding varieties is in the percentage

h perhaps it has t in question, that ween the hardness f rust.

(Queensland Bul- h not necessarily, ar white, starchy, rue that the firm, tant to a much white sorts." Dr. s condition of the more resistant to inia graminis. mining the gluten- 'haff, a soft white comparatively soft red wheats, Pride

n each of these -sized coffee mill, by using a No. 10 s of the foreman ted that the flour the market.

FLOUR.

s added from a ite texture was of water required e strength.

flour the percent- dded an excess of wed to stand for ed in cold water or until a drop of no blue coloration

ble) the excess of 00° C.

ed (Dr. Armsby— of at least four al- omestarch and fat. he analyses of the

bakers. With flour having a large gluten-content they are able to increase the weight of the bread from three to five per cent. more than they can with an excessively starchy flour, and the bread will not dry out so quickly.

In the case of most varieties of wheat grown on the American continent, it is impossible to trace their lineage back more than a few years. The new varieties that are yearly introduced meet with favor according to their hardness and productivity. Their milling qualities seldom prevent them from gaining popularity until the millers find that they require a more liberal mixture of wheat rich in gluten.

Although the various grades of flour put upon the market differ in gluten-content, the demand for them is regulated by the consumer, and competition in the open markets has sufficient influence among the millers to govern the supply of inferior brands.

The system of valuing wheat according to its weight per measured bushel was an approach toward the actual valuation per gluten-content. The specific gravity of wheat decreases as the percentage of starch increases. It may be noticed from the preceding table that the hardest wheats are those that are considerably above the standard weight.

Wolff estimates the comparative cost of producing portland and carbohydrate substances, allowing the former three times the money value of the latter. Now, according to such a method of valuation, if we allow the Dawson's Golden Chaff wheat \$34c., we would value the Early Red Clawson at \$8c. and the Pride of Genesee at \$94c. per bushel.

There is, however, a demand for white wheats, on account of the color which they give to flour, and their value is sometimes raised above their actual nutritive value.

#### CONCLUSIONS.

If a system could be practiced so that the price paid for wheat would be governed by its gluten-content, the necessity for importing Manitoba hard wheat into our Province would tend to decrease; the actual money value per acre among many of our wheats would be approximately the same; the quality of the grain would receive better attention among those who seek to improve our varieties by selecting and by hybridizing.

The system of judging of the value of wheat from its apparent hardness is a correct one, and the relative percentage of gluten among the varieties could be closely estimated by an instrument similar to the one used in this experiment.

[\*EDITORIAL NOTE.—Mr. G. H. Clark, B. S. A., a graduate of the Ontario Agricultural College, who is now in direct charge of the \$10,000 (prizes) grain-growing competition instituted by Prof. Jas. W. Robertson throughout Canada, writes us that he is much interested in the articles and letters published in the August 1st FARMER'S ADVOCATE, adding that he does not think the millers should unload the whole blame for the present conditions in regard to our winter wheats (and which he does not think are as bad as some represent) upon the farmer. He also sends us the foregoing revised thesis on the "Hardness of wheat in relation to milling qualities," which he prepared and for which he received first-class honors at the Ontario Agricultural College. It is a valuable contribution to this important discussion.

#### Rural Life and Education.

The New York Independent, one of the foremost journals of good standing in the United States, quotes the Hon. W. T. Harris, who said, one year ago, that no educational problem began to compare in magnitude with that of the rural school, and, as we understand it, the right solution of the problem must begin with the educational curriculums laid down and the training of teachers in the Model and Normal Schools and Schools of Pedagogy. Referring to the demand that young people should not be educated away from the farm, but toward it—that is, they should be specifically fitted to comprehend the problems of agriculture and to deal with them with tact, in which course the faculties of the youth would be trained for life service—the Independent goes on to say:

"It was our specific charge that the rural school made merchants and manufacturers, but turned the faces of the brightest of our young folk toward. We have already seen the school curriculum gradually modified, and a wholesome public opinion growing up to accomplish what we desired. The fact is there is no reason why the children of the country should be turned away from the object lessons with which nature surrounds them, to be confined in school rooms to the lessons of books. The book is a version of nature at best; and common sense requires that the child be taught to investigate for himself.

"We believe that when properly educated no life becomes so attractive as that opened by agriculture. The land is full of intense interest to those who are taught to see it. Entomology and geology as sciences are not abstruse, but deal with the commonest things lying about the child; and with the simplest facts. 'Surely,' says Professor Teegan,

"The teaching of practical school gardening is as valuable as setting the pupils to memorize the height of the principal peaks of the Rocky Mountains."

Chemistry and botany are knowledge of the things children see and handle most. In their elementary

form they are more simple sciences than geography, grammar, or arithmetic. They consider stones, flowers, trees, insects, birds, brooks; exactly what our children long to study. As for teachers, what are normal schools for? To make merchants? Or are they to turn the whole population into middlemen and consumers? Why cannot they furnish teachers of geology as easily as teachers of geography? Give a boy a right sort of schooling till fifteen, and you cannot coax him away from the land. The problem is not solved by establishing chairs of biology in our colleges; for these only create a learned class at the top.

"The farm should be the absolute center of intelligence—the home of science and of art. Every farm should be and will be an experimental station; while every boy and every girl will be a scientific experimenter. In this direction our graded schools are slowly learning to look, while such men as Professor Bailey, of Cornell; Professor Voorhees, of Rutgers, and Professor James, of Toronto, are furnishing the required text-books. It is not necessary to be a prophet in order to foresee that the rural school of the future will be built in gardens of no less than one acre; that it will devote one-half of each day to the study of books; but the other half to the application of what is learned, and to the actual cultivation of the soil. Every school will have attached to it also a shop well furnished with tools. The education of the hands and the brain will go on together; in other words, hand labor will be intellectualized.

"We have entered an age of experimentation. It is difficult to get the full meaning of this fact. But we are surely readjusting the whole of agriculture to the experimental basis. The farmer of the twentieth century will not move in beaten tracks, but will be educated to think his way to new methods, with new crops. The field is absolutely unlimited. It is barely fifty years since we had placed in our gardens the first strawberries, cherries and pears, improved by the Downings, Wilders, Campbells and Rogers. The progress of these fifty years in multiplying new and delicious fruits, more valuable cereals, new and important vegetables, leads the London Spectator to say:

"Imagine a new cereal, in silicate armor, with a head twice as heavy and grains twice as nutritious as those of wheat. A cereal as fruitful as wheat, and as hardy as rye, would change the face of Europe. Farmers may smile, but there are grains no doubt to be born as important as these which we suggest."

"But farmers are not any longer smiling at such dreams; they are working them into garden facts. Professor Goodale, of Harvard University, says:

"There is no reason why we shall not have seedless raspberries, strawberries and blackberries; seedless plums, cherries and peaches, as we already have pineapples, bananas and oranges without seeds."

These are some of the problems that agriculture offers to the educated wit of the coming schoolboy. No one to-day would eat the old-time pears and grapes which were relished by our fathers. An orchardist writes: 'Give me ten years more and I will give you a currant bush that must be picked with a stepladder.' There is progress all along the line—in the orchard, in the garden, and in the grain field. What one part of the world cannot produce is offered by another. The education of the schools is promptly supplemented by the field work of the farmer.

"It must be understood that no other occupation requires for complete success so wide culture, so much educated tact, such a store of information as agriculture. If any one of the industries requires collegiate training, it is this. Every science finds here its application. When we get the right schools we shall get a style of farming that will be as keenly intellectual as the present style is unintelligent and wasteful. Our colleges will then face away from professional life and find their better aim to create a new race of Washingtons and Jeffersons."

#### The Ontario Millers' Importation of Seed Wheat.

The series of articles and letters published in the FARMER'S ADVOCATE for August 1st, on the complaint of the Ontario millers regarding the milling qualities of the more popular winter wheats, particularly Dawson's Golden Chaff, resulting in their importation from Kansas of eighteen or twenty carloads of a hard wheat known as Turkey Red, to be distributed and sold to farmers for the approaching seeding, has been followed up by a vigorous and widespread discussion among farmers and through the local press. Knowing the extent to which Manitoba wheat had to be used to make Ontario flour salable, and the increasingly serious complaints made by the milling fraternity regarding many of our commonly-grown winter wheats, we felt compelled to bring the matter before the public. It was inconceivable that our millers would go to the trouble and expense of importing seed wheat from Kansas unless they had a real grievance. We gave full publicity to their view of the situation, and trust the Turkey Red variety will be generally and thoroughly tested. In order that that might be accomplished, we advised the millers to keep the cost to the farmers down as low as possible, because there is no great money for

the Ontario farmer, at the best, in wheat-growing, and experimenting with new varieties is more or less risky, and if done on a large scale, may prove serious. The millers have put the price at \$1 per bushel, which, the Goldie Milling Co. advise us, will hardly cover expenses; but it would be much better to have the trial a success, even at a loss, than that any of the importation should be left over to be ground into flour. If a variety has been hit upon that will combine the good yielding (both grain and straw) and hardy qualities of Dawson's Golden Chaff with the presumably superior milling quality of the importation, it will prove a boon alike to millers and farmers, as the one grows and the other grinds wheat for the money there is in it. We would further suggest that the millers, to encourage growing the new sort, should pay a premium of so much per bushel on the crop harvested next season.

The subject of the milling qualities of wheat has not received the attention in the past that its importance demands, and we believe a great deal of good will come from its discussion now. Such articles as that by Mr. Clark and others appearing in this issue contain information of very great value.

#### Our Food Products at Paris.

BY W. A. MACKINNON, OF GRIMSBY, ONT., IN CHARGE OF THAT DEPARTMENT AT THE PARIS EXPOSITION.

The main entrance to the Canadian section of the British Colonial building is opposite the Algerian pavilion on the slope of the Trocadero Gardens. As the visitor comes along the rose-bordered avenue from the Palace, he is attracted by the sight, rare enough at this season, even in Paris, of a solid mass of beautiful fresh, red-cheeked apples. These are arranged behind plate glass at the side of the door, and facing up the avenue. The rows of apples extend to within a few inches of the ground, so that the effect is that of a bin full of tempting Eden-like fruit, in which the prevailing red color is relieved by a layer of Golden Russets. The majority of passers come up close to examine what they think is an excellent imitation, and some even then refuse to believe that the fruits are natural and genuine, until they have tried their flavor. After that they inspect the cold-storage showcase and the thermometer inside with increasing amazement, interest and praise. They are then convinced that we have means to bring the finest of last season's apples from the different provinces of Canada and to exhibit them in perfect condition at this time of year. The excellence of the natural fruit and the working reality of the modern Canadian cold-storage plant are quite a contrast to the numerous shams that are to be found all over the grounds, even the exhibits of the most important countries.

#### THE AGRICULTURAL TROPHY.

Once inside the building, the visitor's attention is claimed in several different directions. Perhaps it rests longest on the trophy devoted to bottled fruits and grain, which occupies the central position in the court. It has an octagonal shape and is 20 feet high. The base is fitted up with comfortable settees, a convenient rendezvous much appreciated. Eight glass pillars filled with grain support a sort of veranda roof, beneath which are arranged some of the finest varieties of fruit and vegetables, prepared at the various Experimental Farms, and representing all parts of Canada. Among the best fruit shown are Bartlett pears, from the Horticultural Society of Burlington, Ont.; the souvenir pears, put up by J. W. Vanatter, of Goderich; and the Pocklington grapes, sent by M. Burrell, of St. Catharines. Above this display is a pyramid of bottled grains of all kinds, in fancy jars, tastefully arranged, surmounted by a flag draped mast, which, in turn, is crowned by festoons and sheaves of grain in the straw. The whole magnificent trophy, which gives silent but imposing testimony to the agricultural resources of our country, is the work of Mr. Hay, Accountant of the Central Experimental Farm.

#### THE HONEY.

At the right is a six-story stand three stories high, on which is a display of honey, both liquid and granulated, in bottles of various sizes and shapes, arranged about a center of mirror glass. The upper half of the lower storey is fitted with glass panels, behind which comb honey is seen in squares, just as it is sold. The upper two stories are separated only by a sheet of plate glass, which supports the apex of the pyramid while resting on the tops of the bottles beneath. The effect is that of a solid cone of glass and honey four feet high, offering almost no obstruction to the passage of light, which is transformed into the prettiest shades of amber and pearl. This exhibit is one of the most attractive and most admired. It is the climate of Canada in liquid and crystal—flowers, fragrance and sunshine compressed into sweetness.

#### FLOUR AND OATMEAL.

Less beautiful perhaps, but not less interesting, is the display of flour and oatmeal, flaked wheat, rolled oats, and other breakfast foods; this is the main exhibit, both in size and importance, of the western half of the section. Columns of glass filled with flour, flanked by smaller ones filled