

lion bushels of wheat were produced. Add to this the wheat grown in Ontario and the other Eastern Provinces and we already have a total of over 93 million bushels. These figures are full of promise for the future of Canada as a great wheat-exporting country.

WHEAT QUALITY

Under the climatic conditions which prevail in the Canadian Northwest, wheat of excellent quality is grown, which is much sought after by millers to mix with the flour of wheats of a lower grade, so that a desirable and uniform strength may be maintained in the flour they produce. This strength in flour, which is so highly developed in that made from No. 1 hard wheat grown in the Northwest, is due to the presence of a large proportion of gluten of high quality. The relative proportions of the more important constituents in wheat will depend on the character and tendencies of the individual variety, the climatic conditions under which it is grown, and the fertility of the soil. The chief constituents of wheat are gluten, starch and fat, all highly nutritious in their character. Starch forms the larger portion of the substance of the grain, ranging in spring wheat from 65 to 68 per cent.; gluten from 11 to about 13; and fat from about $1\frac{3}{4}$ to $2\frac{1}{4}$ per cent. Winter wheat contains a larger proportion of starch, from 70 to 74 per cent., and a smaller proportion of gluten, from 6 to 9 per cent. The proportion of fat is much the same in both classes of wheat. When a number of different sorts of wheat are grown side by side and under the same conditions, some will be found to contain a larger proportion of gluten, others a more abundant deposit of starch. In the better sorts of spring wheat, when grown in northern latitudes, where the summer season is short and the growth rapid, the proportion of gluten is usually increased, and under such conditions the grain improves in quality.

Chemical analyses of gluten have

shown that it consists of two different principles, known as gliadin and glutenin, and it is from the combination of these in the best proportion that the highest quality of gluten results. Hence, while the percentage of gluten may be regarded in a general way as indicating the quality of a wheat, a high percentage of this substance is not always a sure indication of the milling value of the sample. Both the percentage and quality must be had to produce a flour which will give to bread made from it that tenacity which results in a light, porous white loaf of the most highly esteemed character. The best spring wheats grown in the Canadian Northwest are noted for the high quality of gluten they contain and hence are in great demand.

At the Dominion Experimental Farms persistent efforts have been made from the outset to bring together from different countries the best and most promising sorts of wheat for trial, the qualities particularly sought being productiveness, earliness and strength of flour. These varieties have been grown side by side, under similar conditions, so that their relative value might be determined.

RED FIFE WHEAT

Among the spring wheats commonly grown at the time the Farms were established none was so highly or justly esteemed as the Red Fife, and the position it still holds is an eminent one. It is remarkable for its productiveness, for its high quality, and for its power of adapting itself to varying conditions of soil and climate. This wheat originated about sixty years ago, and in the *Canadian Agriculturist* for 1861 the following account of its origin is given:

"About the year 1842 Mr. David Fife, of the Township of Otonabee, Canada West, now Ontario, procured, through a friend in Glasgow, Scotland, a quantity of wheat which had been obtained from a cargo direct from Dantzic. As it came to hand just before spring seed time, and not knowing whether it was a fall or spring variety, Mr. Fife concluded to sow a part of it that spring and wait for the result. It proved to be a fall wheat, as it