PROTEIN AND GLIADIN IN 'FIVE ROSES' AND 'STRONG BAKERS' FLOURS.

Designation of Samples.	Protein (N×5·7.)	Gliadin (N×5·7.)	Percentage of Protein in the form of Gliadin.
Five Roses	10·32	4·56	44·2
Strong Bakers	9·92	4·62	46·6

Wet and Dry Gluten.—With respect to these determinations, it may be said that they indicate, approximately, at any rate from the practical standpoint, the relative values of the flours for bread-making purposes, though the character as well as the amount of the gluten is a most important factor in this consideration.

It is generally admitted that the bread yield is dependent largely upon the so-called 'strength' of the flour—that is, the power to absorb and retain water—(a quality that is directly related to the gluten-content). The 'capacity for producing a well risen loaf' which will retain its moisture and elasticity under a crisp crust is rather due to the nature or physical character of the gluten.

The estimation of the gluten is a mechanical rather than a chemical process, and hence the data obtained are in a measure dependent upon the method adopted. We may, therefore, give in outline the process used:

Ten grammes of flour are placed in a porcelain dish, moistened with a sufficient quantity of water and carefully kneaded into a ball. Care is exercised that each particle of the flour has become thoroughly moistened and that none adheres to the sides of the dish. The ball of dough is then allowed to stand for one hour at the end of which time it is transferred to the palm of the hand and there carefully kneaded while a small stream of water is allowed to play on it. The starch is thereby completely eliminated and the operation considered finished when no more turbidity is noticed in the wash water. The ball of gluten having been freed from starch is placed in the porcelain dish, covered with distilled water and allowed to stand for one hour. It is then pressed between the palms of the hands in order to exclude as much water as possible and immediately weighed in a flat bottom platinum dish. The weight obtained multiplied by ten is recorded as wet gluten.

The dish is immediately placed in a water-oven and dried at a temperature approximating 98° C. for forty hours and re-weighed. From this weight the percentage of dry gluten is easily calculated.

Authors usually recommend drying for a period of twenty hours only. It was found, however, that an additional period of twenty hours produced a decrease in weight, thus indicating that the ball of gluten was not completely dry. Periods of desiccation longer than forty hours did not result in any appreciable decrease.

With the exception of No. 2 Feed, the data present great uniformity, including a very close agreement among the flours of the series in bread-making capacity. Mr. A. T. Charron, Assistant Chemist, who made these estimations reports that, with the exception of the gluten from No. 2 Feed, all were firm, elastic and resilient and evidently of excellent quality. The gluten from No. 2 Feed was not soft, flabby and sticky as is usually the case with poor flours, but rather of a pulverulent character, showing lack of cohesion and acting as if there were a deficiency of gliadin. It is of peculiar interest to note, therefore, that it is this sample and this sample only which shows an exceptionally low proportion of protein in the form of gliadin.

Acidity.—The first seven grades have given practically the same figures. These are quite normal for flours from sound wheats, showing that no heating or fermentation of the grain or flour had occurred. In the case of No. 2 Feed there is a well marked rise and it is also of interest to note slightly increased percentages in Feed and No. 5 Frosted