

METHODS OF BAKING (STRAIGHT-DOUGH PROCESS).

In order to maintain the necessary temperature conditions the different ingredients were warmed to 35° C. before being incorporated in the dough; this was thoroughly mixed and kneaded, weighed, and allowed to ferment for a specified length of time in a fermentation-chamber kept also exactly at 35° C. Here the dough was allowed to rise to a maximum height, when the amount of rise and the time taken were noted, and the dough again weighed. It was then immediately put into the oven, which was kept at 220° C.; the loaf was baked at that temperature for thirty-five minutes. With each series of loaves—only six of which could be baked at a time—a commercial “baker’s” flour was included for purposes of comparison and for standardization of the various series.* On being taken from the oven each loaf was removed at once from its tin, weighed, and cooled as quickly as possible. After standing for one hour the volume of each loaf was measured.

To produce bread of good quality from the point of view of size, uniformity of texture, &c., the dough (in other words, the gluten) must be elastic—that is, it must expand or “rise.” The volume of a loaf is a measure of this elasticity, and, it follows, of its quality. Having baked the loaf and measured its volume, other things (colour, &c.) being equal, a practical measure of quality or strength is obtained.

In each case exactly the same amounts of each ingredient were used for the tests, and each dough received exactly the same treatment, except that (a) the amount of water added was suited to the requirements of the flour as shown by the absorption-of-water figure, and (b) the fermentation period was varied to allow a maximum expansion to be reached in each case; in the case of weaker flours this period was generally longer than with stronger samples.

BAKING-TESTS.

It will be remembered that in the second article of this series it was said that the amount of protein present was probably the best single measure of the strength of a flour. A series of loaves containing high to low amounts of protein, and illustrating this statement, is shown in Fig. 1. It is at once apparent that here No. 2 is easily the best as regards volume, and that the value of the others is in descending order of protein content. No. 1 is from the commercial flour baked with each series. The largest loaf is from a sample of Velvet grown at Middlemarch, Upper Taieri, on the borders of the arid district of Central Otago. The other samples are included only in order to illustrate the influence of protein content on loaf-volume, and, not being representative of their particular varieties, their names are not given.

From a consideration of protein content it was said in the same article that “P 467, a sample of White Tuscan, contained a moderate amount of protein”—that is, its strength also would be expected to be moderate only; also that “the samples of Victor gave generally very good yields of flour, but in 1922 appeared in most cases to be lacking in strength. P 322 was a sample above the average for the variety.”

* This sample of good average commercial “baker’s” flour was obtained from a local warehouse. It was assumed, if this sample gave the same loaf-volume each time, that the necessary conditions were maintained during each baking with the requisite degree of accuracy.