

## GENERAL.

In connection with the whole question of experimental milling of wheat and testing of flours many pertinent questions might be asked. For instance:—

(1.) Does the yield of flour from the experimental mill correspond with the yield obtained when the wheat is milled on a commercial scale?

(2.) Does the flour obtained experimentally produce on baking a loaf of good colour, appearance, and palatability?

(3.) Do the wheats called "strong" and "medium strong" produce flours comparable with flours of a similar classification in other countries?

(4.) Are the baking-tests comparable with the results obtained by the baker?

(5.) Does the protein content of a flour bear any useful relationship to the loaf produced?

It is thought that these and other questions can now be satisfactorily answered, and they will be briefly discussed in the same order.

(1.) It has already been stated that the percentage of ash is an indication of the skill shown in milling. According to various authorities the amount of ash in a straight grade flour (such as is milled in this Laboratory) should be at least 0.48 per cent.; it is said in effect that if a flour contains less than this amount the flour has not been so thoroughly removed from the grain as when it contains more. On the other hand, if it contains more than 0.90 per cent. ash the wheat has been overmilled.

The whitest flour comes from the centre of the grain; the strongest and best (the most glutinous) is situated just beneath the covering, which in milling is separated as bran, &c. The miller concentrates on separating as perfectly as he can this better-quality flour from the bran, otherwise microscopic bran-particles will find their way into the flour-stream and reduce its quality, colour, &c. The bran of the wheat-berry is considerably richer in inorganic substances (compounds of calcium, magnesium, phosphorus, potassium, &c.) than the flour; if bran therefore finds its way into the flour the inorganic content of the latter becomes greater. In determining the ash, one determines the amount of these inorganic compounds present, and in this way obtains an indication of the purity of the flour. If the ash is too high, a part of the bran has probably found its way into the flour; if it is too low—since the whiter central portion contains not only less protein but also a smaller amount of inorganic compounds—not enough of the richer outer layer of flour has been removed from the bran.

It will be seen on reference to Table II, published in the preceding article, that none of the samples milled here exceeds the limits mentioned above. Further than this, the flour, if it had not been satisfactorily separated from the outer husk of the grain, would have been of a dirty colour, and this would have shown itself in producing a bread of a dirty and disagreeable colour. Looking at this question from still another point of view, duplicate and triplicate results of