

we have now no difficulty whatever in separating that chlorine from the aluminium by a direct means. We have only to heat the chloride of aluminium in contact with sodium, and the thing is done at once. The sodium having a high affinity for the chlorine, combines with it, forming common salt, and the aluminium is set free in a metallic state. It is necessary to employ certain precautions—such, for example, as an atmosphere of hydrogen. Such is the manner in which aluminium is produced on the large scale at the present time."

#### Aerated Bread Bakery.\*

The making of bread by forcing carbonic acid gas into the dough, instead of generating it by fermentation in the dough itself, or by soda, ammonia, cream of tartar, or other chemicals, has been for several years practised; but in most cases there have been difficulties which baffled the ingenuity of the operators, and prevented commercial success. The quality of the bread was dependant on the quality of the flour to such an extent that good flour that had not the right proportion of gluten would not make good bread; and there were others causes, such as the presence of air instead of carbonic acid gas, which sometimes impaired the bread; and generally there was a peculiar flavor, which the people did not relish, though it was claimed that the novel flavor was the natural and pure flavor, and more agreeable than that of fermented bread, and that it was only suspicion and prejudice that hindered people from preferring it. It was not until the system of Dr. Daughlish was perfected that aerated bread was made entirely satisfactory to people of ordinary taste. In this process there is no hand labor. From the time the flour is emptied from the barrel into the machine until the bread is taken from the baking press, it is not touched by a hand. This must be appreciated by those who know that perspiration from the hands and arms, not to mention feet, more or less mingles with common bread; and that in many cases the perspiration is that of diseased persons, certainly offensive, and perhaps unwholesome.

The leading idea of the process is, to make a mixture of flour and water spongy without fermenting it or adulterating it with chemicals. This idea is accomplished as follows:—The flour is emptied from the barrels, and sifted by machinery. It is thence carried in a small car on a railway to the mixer, which is a strong air-tight vessel that can hold three barrels of flour; and being put into it, with a proper quantity of salt, the cover of the mixer is put on, air-tight. Water is then put into a vessel over the mixer; and the air in this water vessel and in the mixing vessel is then exhausted from them by the air-pump in the tank, which are driven by a steam engine, whose boiler is under the platform on which the pump-tank stands. When the air is exhausted, carbonic gas is let into the mixer and the water vessel, and is also forced into them by pumps, until it has a pressure of two atmospheres. The water is then admitted to the flour in the mixing vessel, and a kneading-fan in the mixing is set to work by the machinery; and in

from three to six minutes, according to the proportions of gluten in the flour, the mixing is completed. The dough is then ready to be made into loaves. In order that the apparatus above described may not be idle until the batch is molded into loaves, there is, under the mixer a receiver, into which the dough falls when a valve is opened. As soon as the dough has fallen into the receiver, the valve is closed, and the mixer is ready for another batch, which will be mixed while the previous batch is being molded. At this stage occurs an important part of the process, called "vesiculation" by which a proper texture is given to the dough, by compression of air, within each baking-pan before it receives the dough from the measuring valve. Attached to the receiver is an automatic apparatus, which receives compressed air from the column, so that there is always the required pressure in the vessel in which the dough is measured into the pans. Several pans being filled, the pressure in this vessel, is gradually lowered, so that the bread rises gently, and steadily, without bursting its gas cells, and losing its carbonic acid gas. When this part of the process is well arranged, the bread has an even, fine spongy texture, without large air-holes, or lumps insufficiently spongy, or "vesiculated."

The delivery door of this vesiculating chamber is close to the oven-door, and the pans in rows on boards as long as the oven mouth is wide, are drawn out of the vesicator and put into the oven. The oven has in it a revolving apparatus which carries in the pans, and delivers them when the baking is completed. The bread is then shaken from the pans into the baskets in which it is carried to the dealers or consumers, and the baker's hands never touch it or any of the materials of which it is made. In an hour, thirteen hundred and forty-four loaves are made from flour in the barrel; by the old process several hours are necessary to form the sponge, and more time in kneading, raising, and baking.

The company which owns the American patent for this process and machinery claim that their bread has the following advantages:—1st. It is better than the aerated bread formerly made, being free from all unpleasant flavor, more delicate, lighter, and softer. 2d. It is perfectly clean, being made solely by machinery. 3d. It is pure, being made from flour, water, and salt, without yeast, alum, saleratus, or other adulteration, the raising being by carbonic acid gas, obtained from molasses, grapes, fruit, etc. 4th. It is delicate in texture, and easily soluble in water, milk, and in the digestive fluid. Its flavor is agreeable, wholly free from the bitterness and sourness often found in fermented bread. 6th. It may be eaten fresh, even by invalids, without harm, and it may be kept for many days. 7th. It is recommended by eminent chemists and physicians, in Europe, and this country, for its digestibility and high nutritive quality. 8th. It is the cheapest bread ever made.

We have tasted this bread, and found its flavor as pleasant as that of any bread we have ever eaten, and far more pleasant than that of the bakers bread in this region. And we have seen testimonials in its favor, from eminent physicians and chemists, which convince us that there is nothing in the mere absence of yeast, and the effect

\* From the *American Artisan*, of May 9th, which also contains a large woodcut illustration of the Machinery and Bakery, with initial letters for reference. [ED. JOURNAL.]