

## Correspondence.

## Aerated Bread Still Made in this Country.

To the Editor of the SCIENTIFIC AMERICAN:

Referring to an article in your last number, page 359, on the subject of aerated bread, I beg to state that the process of bread making by this method was introduced by me, as the medical superintendent of both the State Hospitals for the Insane in New Jersey, at Trenton and Morris Plains, many years since—at the former thirty and the latter eighteen years ago, or when it was opened in 1876, and that it has been continued in both without interruption to this date. The number of inmates, sane and insane, now supplied with bread in the two institutions by this process is about 2,500. The bread is tender, light, sweet and, so to speak, mechanically clean, as the materials are not touched by the hands during the process.

The method used differs from the Daughlish system mentioned. Instead of charging the water for mixing the flour with carbonic acid gas, the latter is supplied by a force pump to the dough during the process of kneading, in the usual cast iron globular vessel.

Regarding the process, as I do, as the greatest improvement in the culinary art made during the century, it seems surprising that it is not in general use.

It is presumed that the two State hospitals mentioned are the only ones in the world in which aerated bread is made.

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Short Hills, N. J., December 8, 1894.

[FROM THE CHICAGO RECORD.]

## Progress of Compressed Air.

Railroad passengers are frequently surprised by the unexpected entrance into the cars of a group of chattering, bareheaded women. Those who do not recognize them as car cleaners and dusters wonder who they are and how they boarded the train. The women usually appear several blocks from the terminal station, and so proficient are they in the art of "flipping" a train that the engineers do not come to a full stop when they see their feather dusters and brooms beside the track, but reduce the speed somewhat and the women swing on as neatly as brakemen. When the last passenger has left the train, the women take possession of the cars. They are all healthy and muscular, quick with the broom and active with the feather duster and chamois skin, and by the time the cars are thrown on the cleaning switch they have the floors well cleaned of peanut shells, paper, and cigar stubs, and are ready for the seat cushions.

On some of the roads the women still carry the cushions outside of the car and beat the dust from them by whipping them with willow beaters. But compressed air has taken the place of the paddle on most of the roads. The hose which contains the compressed air is run into the car through a window or door, and the women, handling it as they would a garden hose sprinkling the grass, turn the jet of hissing air upon the plush cushions and the dust flies out. No whisk broom, willow paddle, leather strap, or beater can get at the dust as compressed air does. The jet searches every crack and cranny and drives the dust from the very wood itself. Sometimes the women turn the air upon the window casing, and in a jiffy it is clean of dust.

The man who makes air compressors cited this novel use of compressed air as another point in favor of the claim made by his craft that compressed air was just beginning to enter into the common everyday work of the world. He added that few persons knew the uses to which compressed air was put outside of stopping trains, drilling rock, and inflating bicycle tires.

"Electricians think that this is the electrical age," he said. "Well, perhaps it is, so far as lighting, telephoning, telegraphing, and welding goes, but when it comes to the transmission of power they are talking too much. They have worked and studied for years to make an electric rock drill which would take the place of the air drill, but they have not succeeded. They have tried to make an electric train brake which would bring a limited express train to a full stop sooner than the automatic air brakes will do it, but they are so far behind that they will never catch up. It will not be long before street cars will be running with compressed air as the motive power, and they will be safer, more easily controlled, will run as fast, will stop quicker, will wear longer and will be operated at less expense than the best electric system they can put on rails. With a good air compressor, air at any pressure can be stored up in a reservoir or steel tank, and can be taken to any point within reasonable distance as economically and with less waste than electricity can be sent by wire. The air compressor is a pump which is part of a stationary engine. The piston in the air chamber first sucks the air in, and then forces it through a pipe to the reservoir. Of course the more air one pumps into the reservoir, the greater pressure to the square inch one gets. The compressed air works like steam, except that it is cold and has not the expansive qualities of steam. But steam cannot be carried through pipes out of doors to any great dis-

tance, for it would lose its heat, would condense, and soon turn back to water.

"Cleaning cushions by compressed air is one way of using it that few people know of. Visitors to the sanitary canal are always interested in the rock drills which bore the holes for the dynamite cartridges, and almost everybody knows that the brakes of passenger trains are operated by compressed air.

"I know a machine shop where there is not a belt, a piece of shafting, or an electric wire, for all the machinery, from a little emery wheel to a twenty-ton crane, is operated by compressed air. The shop is traversed by large pipes from the air reservoir, and from these main pipes smaller pipes lead down to the machines. Each machine, whether drill, planer, shears, lathe, bending rolls, milling machine, punch, drop hammer, press, or cold saw, has its own motor or engine, and the mere turning of a valve starts or stops the machine.

"A pneumatic clock system has lately been installed in the new Criminal Court building in Chicago. Pneumatic clocks are not new, for they have been used in Paris for twenty-five years. Now over 10,000 clocks are operated and regulated from the central clock by compressed air.

"The pneumatic clock system installed in Paris twenty-five years ago was the beginning of the compressed air central power system, which supplies over 10,000 horse power to users in the French capital. It is used there for all purposes, from running clocks to operating dynamos for electric lights. The central station furnishes air at a pressure of seventy-five pounds to the square inch. It is sent around the city under the streets in pipes, and is sold to customers by meter, just as gas is.

"The solution of the smoke problem in Chicago is easy. Put a central power station where the smoke will bother no one, and from this station send electricity, high pressure water, or compressed air to the business center and to the stock yards. The cheapest power that can be used in this way is compressed air. Elevators, printing presses, wood and iron working machinery, and, in fact, anything operated by steam can be operated by compressed air. Some day we shall have pipes for compressed air under the pavements of Chicago streets, and there will be no smoke if the tugboats and locomotives can be subdued."

Asphalt used for street paving is refined by compressed air. In its original shape, just as it comes from Trinidad, asphalt is too soft for street paving and is not homogeneous. To refine it the asphalt is boiled in kettles for three or four days, and while the heat is on it must be constantly stirred. Pipes with numerous holes are placed in the bottom of the kettle, and while the asphalt is boiling, compressed air is forced through the pipes, and, escaping through the holes, it agitates the thick, black stuff. At first the air comes to the surface in big bubbles, and the asphalt slobbers all over the inside of the kettle, but at the end of three days the asphalt has become so thin that the air makes it boil in little bubbles, and it is then drawn off in barrels, where it cools hard and even.

In France they make a sort of silk from wood pulp by the aid of compressed air. The wood pulp is put through a chemical process which changes it to a sticky substance like gelatine. It is then placed in a closed tank and compressed air is introduced. The air first presses the substance through a filter and then into a smaller tank which is under the large one. This tank is in a horizontal position, and from it spring hundreds of glass pipes, in each of which the hole is about the size of a silk fiber. The wood pulp is forced through these tiny holes and comes out in the shape of threads so fine that six of them are required to make a thread strong enough for weaving.

Compressed air was the paint brush which placed the color on the World's Fair buildings, and which to-day is painting railroad bridges and corrugated iron plates for buildings. The compressed air not only draws the paint from the tubs to the place where it is to be used, but by atomizing the paint, sprays it over a large surface and drives it into the wood. In the big shipyards of Cramp & Sons Philadelphia, where government armored cruisers are built, all the calking of warships is done by compressed air, and one compressed air calking machine does the work of four men. This calker can strike 1,000 blows a minute.

The same tool in a modified form is used by stone cutters for dressing or carving granite. The little engine which does the work is in the handle of the tool, which is about as large as a chisel handle. The air is brought for the tool by a small rubber pipe, which is so flexible that it can be handled easily and at any angle. A piston and spring shove the tool in and out, and it can be so regulated that the most delicate work can be done with it.

Many of the dump cars on the sanitary canal are dumped by compressed air. A pipe leads from the locomotive which hauls the cars from the working in the canal to the dump or spoil bank, and when the train of cars is in the proper place the engineer turns a valve, the compressed air shoves out the piston in the air cylinder under the cars, and the dirt is dumped.

In the slaughter houses in the stock yards the cattle are jerked up from the floor by compressed air after they have been killed, and in the rolling mills steel rails are lifted from the cooling beds in the same way.

Acids, which would eat up a pump before the engineer could shut off a valve, are raised from vats to the shipping room in factories by compressed air. Sewage which is below the grade of sewers is forced up to the proper level by compressed air. Impure water is cleaned, gold and silver are dug from mines, letters are copied in the letter press, elevator signal bells are rung, furnace grates are shaken, sewing machines and jeweler's lathes are run, crude oil is atomized under steam boilers, railroad switches are thrown and railroad gates opened, passenger and freight elevators are lifted, grain is cleaned, the pressure of natural gas is increased, letters and packages are carried, and a hundred other things, of which nothing is ever said, are done by compressed air. And every week something new is found for it to do.

## The Secret of Long Life.

M. Barthelemy Saint-Hilaire, the famous French scholar and politician, who recently entered on his ninetyeth year full of physical and intellectual vigor, has been telling the inevitable interviewer how it is his days have been so long in the land. It is, we are told, the effect of strict adherence to the old precept "early to bed and early to rise," with steady work during waking hours. Every grand old man seems to have a secret of his own. Mr. Gladstone, we believe, attributes his longevity to his habit of taking a daily walk in all weathers, and to his giving thirty-two bites to every morsel of food. Oliver Wendell Holmes pinned his faith on equability of temperature. The late Major Knox Holmes swore by the tricycle, which, in the end, was the cause of his death. Dr. P. H. Van der Weyde, an American octogenarian, not long ago offered himself "as an example of the benign influence of the study and practice of music."

Some aged persons give the credit of their long lives to abstinence from tobacco, alcohol, meat, or what not; others to their indulgence in all these things. One old lady, of whom we read not long ago as having reached the age 120 or thereabout, maintained that single blessedness is the real elixir vitæ, and she ascribed the death of a brother at the tender age of ninety to the fact that he had committed matrimony in early life. M. Ferdinand de Lesseps believed in horseriding. Mr. James Payn complains that in his boyhood he "got a little bored with too much horse." The Grand Francais seems to think that one can hardly have "too much horse." In a letter recently published, M. De Lesseps delivered himself on the subject as follows: "I shall always be deeply grateful to Larine, my riding master, who from my earliest years made me share his keen passion for horses, and I am still convinced that daily horse exercise has in a large measure been the means of enabling me to reach my eighty-fourth year in perfect health." Carlyle was also a great rider almost to the end of his long life, and he not only rode, but, we believe, groomed his horse himself. On the whole, it must be concluded that the real secret of longevity is a sound constitution prudently husbanded. The only general rules that can be laid down are those set forth by Adam in "As You Like It:"

"Though I look old, yet I am strong and lusty;  
For in my youth I never did apply  
Hot and rebellious liquors in my blood,  
Nor did not with unbashful forehead woo  
The means of weakness and debility;  
Therefore my age is as a lusty winter,  
Frosty but kindly."

That is the whole secret of long life. Shakespeare knew it as well as any one, yet he died at fifty-two.—British Medical Journal.

## The Northmost Mine.

The northmost mine in the world, known as the "Omaliik" mine, is situated on Fish River, in the extreme northwestern part of Alaska, near Golovin Bay. This point is one thousand miles northwest of Sitka, the latitude being 65° north, longitude 164° west. The ore, which is found in rich veins, is galena, consisting of 75 per cent of lead and carrying 143 ounces of silver to the ton. On account of its extreme northern position, it is, of course, impossible to work the mine during the winter season. The work is carried on by a picked body of men, who make the trip in an especially chartered ship every spring, and return early in the autumn. The provision and mining equipment must, of course, be carried by the mining party, since the mine is far from the borders of civilization. The party report that the Esquimaux are a peaceable people, and are very quick to learn the ways of the Americans. In many cases they are employed about the mine with very satisfactory results. It has been the experience of this party that the climate in Alaska is not so severe as is generally supposed. The summers are warm and pleasant. All of the party are enthusiastic over the immense resources of Alaska, and prophesy a bright future for the country.