Gas Tar as a Health Preservative.

The serious outbreak of cholera with which France has recently been visited has caused inquiry to be made as to the extent to which persons engaged in particular manufacturing operations enjoy immunity from or are rendered more susceptible to the attacks of epidemic disease. It has been known almost ever since the establishment of gas works that the exhalations arising in the various processes of gas manufacture, although, perhaps, not specially pleasing to the olfactory organs, are not detrimental to health, but are, on the contrary, highly beneficial in special forms of disease, such as whooping cough and croup. The extensive use, in throat ailments, of preparations in which some form of carbolic acid figures largely is a testimony to the value of this derivative of coal tar as a therapeutic agent. A recent issue of the *Journal des Usines a Gaz* contained an article in which particulars are given respecting certain investigations made by a Dr. Lemaire some years ago into the subject of the influence of coal tar and its derivatives upon the health of the workmen employed in the preparation of these substances. His inquiries were made chiefly in connection with the employes of the Paris Gas Company. He found that those whose duties did not necessitate a prolonged stay in the parts of the works where tar was to be found were liable to all kinds of ailments, and formed a considerable proportion of the number on the sick list; while among the workmen specially occupied with tar, only three were sick in the course of seven years. This result is all the more striking when the number of workmen in the service of the company at the period referred to is considered. There were altogether 20,553 men, of whom 764 were engaged in some occupation connected with tar.

Dr. Lemaire also cites the case of the Bayonne Gas Works, where the workmen had not only not been attacked by cholera during its prevalence, but generally enjoyed immunity from skin diseases. M. Bouley, a professor at the Veterinary School at Alfort, found, as long ago as 1860, that gas works employes escaped during cholera epidemics; and the communication of this fact to Dr. Lemaire caused him to institute his inquiries into the subject.

Whole Meal Bread.

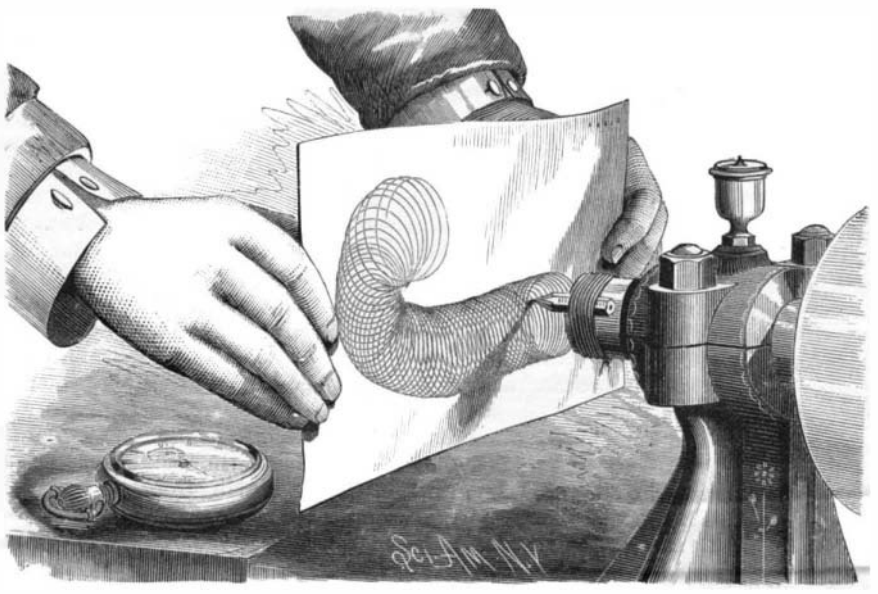
The late exhibition of breadstuffs at Humphrey's Hall, Knightsbridge, although it was not so largely attended as was expected, has been the means of reviving attention to the subject of whole meal, so strongly advocated by the Bread Reform League and by its indefatigable honorary secretary, Miss Yates. If the chemists alone had to decide the question of the relative values of whole meal and ordinary white bread, the public would have to wait a long time before it could obtain a satisfactory reply; for on this point chemists differ more than doctors. If we interpret the opinion of the profession of medicine correctly, there is a growing disposition in favor of the whole meal bread, on practical rather than on theoretical and chemical grounds. The bread which contains all the constituents of the wheat, except the outer, insoluble, and irritating portion of the seed, seems, when the appetite for it has been obtained, to be more satisfying and digestible than the white and fashionable product which is found on most tables, of rich and poor alike.

It is believed, too, that for children the whole meal is the best for sustaining growth and for building up the skeleton strongly and in perfect form. The supply of whole meal bread is now much facilitated by the improvements that have been introduced in the decorticated or granulated flour, to which Lady John Manners has called public attention in her late paper on Wheat Meal Bread. In the decorticated whole meal the extreme outer coating of the wheat grain is, by a special process of abrading, to the perfection of which Dr. Morfit has rendered able service, cleverly removed. After the abrading process is completed the whole of the grain is reduced to a fine flour, in which there is retained all the substances that are nutritious and digestible. Considering the fact that the whole meal bread, when it is properly manufactured, is easily assimilated, we are lead to the conclusion that it must be more nutritious generally than other bread, in which starch predominates. But we do not wish to be dogmatic, and would prefer, before pronouncing a strong opinion, to hear what medical men from their unlimited field of observation have to say. It is for this reason we direct attention to a topic which must soon be very widely discussed among all sections of the community.—*Lancet.*

A SIMPLE MODE OF ASCERTAINING THE REVOLUTIONS OF A SHAFT.

To the Editor of the Scientific American:

Noticing a revolution counter in one of your recent numbers, I send you an automatic record of 582 revolutions per minute made by a process less generally known than it should be.



SIMPLE MODE OF ASCERTAINING THE REVOLUTIONS OF A SHAFT.

A lead pencil is tied to the end of a shaft so as to revolve in a circle of convenient size. A piece of paper is lightly held against the end of the pencil, which, if the paper is held still, traces a circle upon it; but if the paper is moved backward and forward, the pencil traces a series of loops intersecting each other. It is easy to count them, and thus to determine the number of revolutions made while the paper touches the pencil.

I inclose a record, which, having been in position ten seconds, shows that the velocity was 582 revolutions per minute.

M. C. MEIGS.

Washington, D. C., December 20, 1884.

[The accompanying engraving clearly shows how the pencil is fastened to the shaft and the position in which the paper is held.]

A VERY good artificial stone is made by using one part of Portland cement and three parts clean, sharp sand.

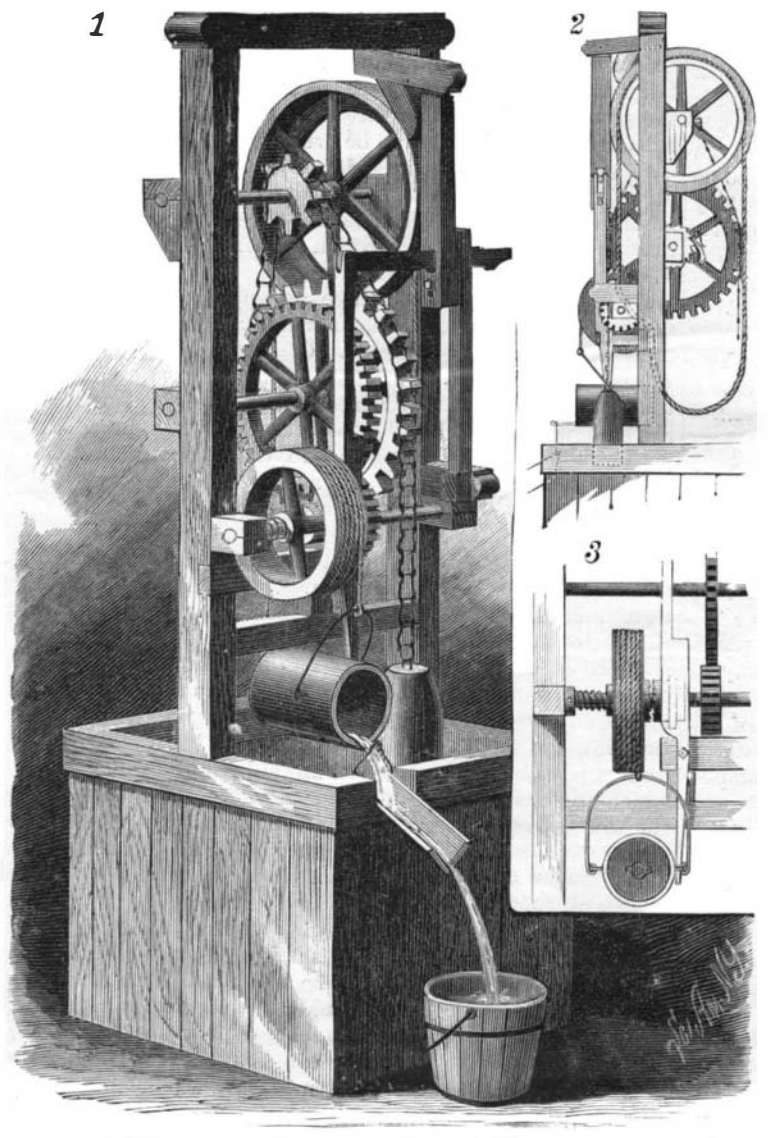
Milldams.

A decision by the United States Supreme Court, in a case which was carried from New Hampshire, has just been rendered, which will interest all men who have anything to do with water power in general, or with milldams in particular. Many of the States have laws which authorize persons to maintain milldams on streams which are not navigable, the dam being erected upon property owned by the persons, upon condition that they shall pay to the owners of the land which may be overflowed such damages as may be assessed. In the case in question, the claim was made that the effect of such a law was to deprive the owners of overflowed land of their property and the uses of it without due process of law, and hence that the statute was in violation of the Fourteenth Amendment to the Federal Constitution. In the opinion rendered January 5, by Justice Gray, of the United States Supreme Court, he sustained the validity of the New Hampshire act, and this may properly be regarded as a test case, and very probably it will result in upholding the milldam laws in other States.

M. JABLOCHKOFF announces another battery of great scientific interest. A small rod of sodium weighing about 8 grammes is squeezed into contact with an amalgamated copper wire, and flattened. It is wrapped in tissue paper and then damped with three wooden pegs against a plate of very porous carbon. This completes the element. The moisture of the air settles on the oxidized surface of the sodium. It works without any other liquid. The E. M. F. is 2·5 volts, but the resistance is as great as 25 ohms.

WEIGHT POWER MACHINE.

The engraving represents a machine for utilizing weights as a power for lifting water or for other purposes. Journaled in brackets on the uprights of the frame is a shaft carrying a wheel, on one side of which is formed a grooved pulley over which passes an endless rope, and a sprocket wheel over which extends a chain having a heavy weight at one end. The chain also passes over part of a sprocket wheel loosely mounted on its shaft, and provided with a pawl engaging with a ratchet wheel rigidly mounted on the shaft. On this shaft is a cog wheel that engages with a pinion on the lowest shaft, on which is loosely mounted a drum having a spiral groove in which winds a rope to whose free end is suspended a bucket. The drum has a clutch hub to engage with a clutch sleeve that turns with, and slides on, the shaft. A lever, connected with the sleeve, is pivoted to a cross beam, and has its upper end pivoted to a bar sliding transversely; the lower end of the lever is so placed that the bucket will act on it. (This construction is shown plainly in Figs. 2 and 3.) In the bottom of the bucket is a valve, opening upward, and on its top edge is a hook arranged so as to catch on a wire bail at the end of the spout. A brake shoe is so placed as to bear against the face of the wheel on the upper shaft; the arrangement of the levers for operating this brake is shown in Figs. 1 and 2.



VANDERCOOK, SMITH & BAKER'S WEIGHT POWER MACHINE.

The weight is raised by turning the upper shaft by means of the endless rope. The bucket being at the bottom of the well, the clutch collars are disengaged and the brake lowered to rest upon the pulley, thus preventing the pulley from revolving, and stopping the entire machine. When the machine is to be operated, the lower lever is moved so that the clutch collars will engage, and as the same movement releases the brake the weight descends, the drum revolves, and the bucket is raised. When it arrives at the top, the hook catches on the bail and the bucket is swung to horizontal position, permitting the water to flow into the spout. As the bucket swings up, its bail acts on the lower end of the lever, and moves it in a direction contrary to that in which it was moved to start the machine; the brake then prevents the further descent of the weight. The bucket descends immediately after it has been emptied, a spring, coiled by the unwinding of the rope, regulating the speed. The weight can be so adjusted that by raising it once several buckets of water can be raised before it becomes necessary to again wind up the weight.

This invention has been patented by Messrs. M. Vandercook, W. P. Smith, and H. M. Baker, and particulars can be had by addressing Mr. W. P. Smith, of Manton, Mich.