

veling clock, with its large bell, has had the last word to say of the hour of night, and is advantageously replacing all the clocks and night light arrangements that have been invented since centuries.—M. Planchon, in La Nature.

NEW CHEMIST'S WASH BOTTLE.

The wash bottle shown in the cuts represents one of a kind which I have used for three years, and it has proved so convenient, not only for hot water wash bottles, but also other wash bottles, that I think it will prove of interest to your chemical readers.

One cut represents the bottle complete; the other shows it in use, and also shows a large scale view of the valve. Its construction is obvious. The wire cross is a piece of rubber tubing. When the wire is depressed it squeezes the tubing against the wooden block on which it is mounted and thus closes it valve-fashion.

The middle finger controls the wire of the valve, allowing the free use of the first finger to direct the stream—a great improvement on other similar apparatus.

When the bottle is reversed, the middle finger also controls the stream issuing from the mouth tube—a very convenient feature.

After a short use of the bottle, one soon becomes accustomed to the mechanism, so that the mouth and hand work together. The air chamber ordinarily above the water is sufficient to eject the water for five or ten minutes, and with the hot water bottle it is only necessary to shake the water, and the steam liberated is ample to force the water from the top. Another great advantage is that one runs no risk of burning the mouth, as the valve prevents the steam returning until the mouth is removed.

GEO. C. JAMES, Chemist.

Inventions Reduce the Cost of Building.

The Real Estate Record commented some time ago upon the immense reduction that has been made within the last decade in the cost of building. Office buildings that cost \$1.50 per cubic foot, and even more, can be produced by modern methods for 30 or 40 cents a cubic foot. This reduction in cost is due in no slight measure to the employment of mechanical devices in building operations. The hod carrier, elevator, derrick, and other devices worked by steam, which have superseded the slow hand labor, are too well known to be mentioned. The employment of steam power in the mechanical operation of building has, however, by no means reached its limit. At the New York building, now erecting on the block front between Waverly Place and Washington Place, passers-by may see a steam stone crusher at work preparing material for the foundation. A few hands are able to do with precision an amount of work which formerly required a small regiment of men. On the line of the new Lexington Avenue cable road a cement stone mixer worked by steam is in operation, and attracts the attention of passers-by.

For Obesity.

Take no water or other fluid at any time, says the Medical Times and Register, except one cup of any desired hot drink, just before rising from the table. Use no liquids while eating. Avoid sugar, nuts, and pastry. Eat nothing between meals. Confine the diet to lean beef, mutton, chicken, turkey, fish, eggs, oysters, with one slice of stale bread well dipped, the bulk of the meal being of tomatoes, celery, spinach, turnips,

cabbage leaf, but not the fleshy mid-rib, and fresh or dried fruits, cooked without sugar, such as apples, peaches, plums, prunes, prunellas.

A little cheese is permissible; coffee, tea, skimmed milk or buttermilk after eating, as stated. Exercise should be taken, running being most effectual, before breakfast or before going to bed.

Healthfulness of Bicycling.

An interesting paper was read recently before the New York Academy of Medicine, on "The Influence of the Bicycle in Health and in Disease," and some very important statistics were presented. The paper warmly recommended the wheel as a means of

the well-known engine makers, Messrs. Robey & Co., Limited, of the Globe Works, Lincoln. The cylinders are placed side by side, with the fly wheel in the center. The diameter of the high pressure cylinder is 24 in., low pressure 40 in., and stroke 48 in.; and with a steam pressure of 100 lb. per square inch the engine will, when condensing, give off 900 indicated horse power. A condenser, of the injection type, worked by an extension of the low pressure piston rod through a rocking lever, is placed at the rear of the low pressure cylinder, and at a lower level; the air pumps are

single acting, two in number, each 23½ in. diameter. The main shaft is exceedingly massive, being 15½ in. diameter in the center, the main bearings being 12 in. diameter by 24 in. long, thus giving ample bearing surface.

The power is transmitted by means of a fly wheel, 18 ft. diameter, grooved for fourteen ropes, 1¼ in. diameter, and the rim is built up of ten segments, the latter being carried by ten arms, which are fastened in the central boss by double cotters. The main feature, however, in this engine is the trip valve gear, which is Richardson and Rowland's patent, and works with a smoothness and precision which leaves nothing to be desired. The inlet valves on the high pressure cylinder are of the double beat type, and are actuated by trip levers, which again receive their motion from a cross shaft driven from the main shaft of the engine by cut gear-

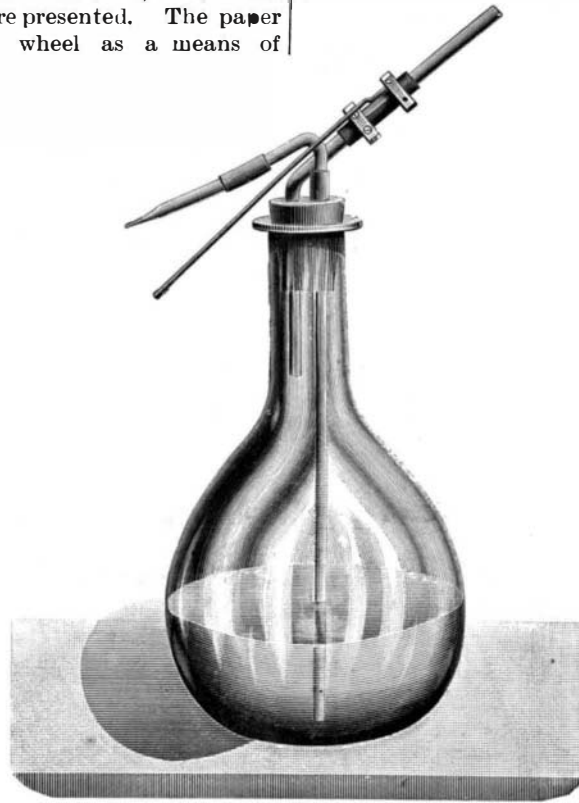
ing. The trippers which lift the valve are coupled to the governor, which by means of a simple motion adjusts the cut-off from zero to ¾, by sliding the tripper into longer or shorter communication with the tripping lever. This arrangement has been found in numerous examples to be most effective, and controls the speed of the engine within less than one per cent on ordinary variations in load. The exhaust valves are underneath the cylinders and have large openings with a very small movement, thus giving a free exhaust, and draining the cylinders effectually. A large receiver is situated between the two cylinders, into which the high pressure exhausts; here it is reheated by means of a live steam coil, and enters the low pressure cylinder at a slightly enhanced pressure.

The economy of steam consumption in this type of engine has been proved to be very considerable, and with the engine illustrated the consumption has been brought to the lowest practicable point. As a proof of the accurate balancing of all parts, the engine was erected on a temporary foundation of timber and moulding boxes, at a height of 10 ft. from the ground level, and on this slight foundation run at the full speed of 75 revolutions per minute, with scarcely any perceptible vibration. The engine is for driving a large mill in Russia, and has been specially designed to render transport easier, the girder bed being made in two halves, and bolted securely together, and a foot placed in the center, whereby absolute rigidity is obtained. The fly wheel has been turned dead true, a result seldom obtained with equal accuracy with so large a wheel. We are indebted to the Engineer, London, for our cut and the above particulars.

MORTUARY tables show that the average duration of the life of women, in European countries, is something less than that of men. Notwithstanding this fact, of the list of centenarians collected by the British Association a fraction over two-thirds were women.



WASH BOTTLE IN USE, WITH VIEW OF VALVE.

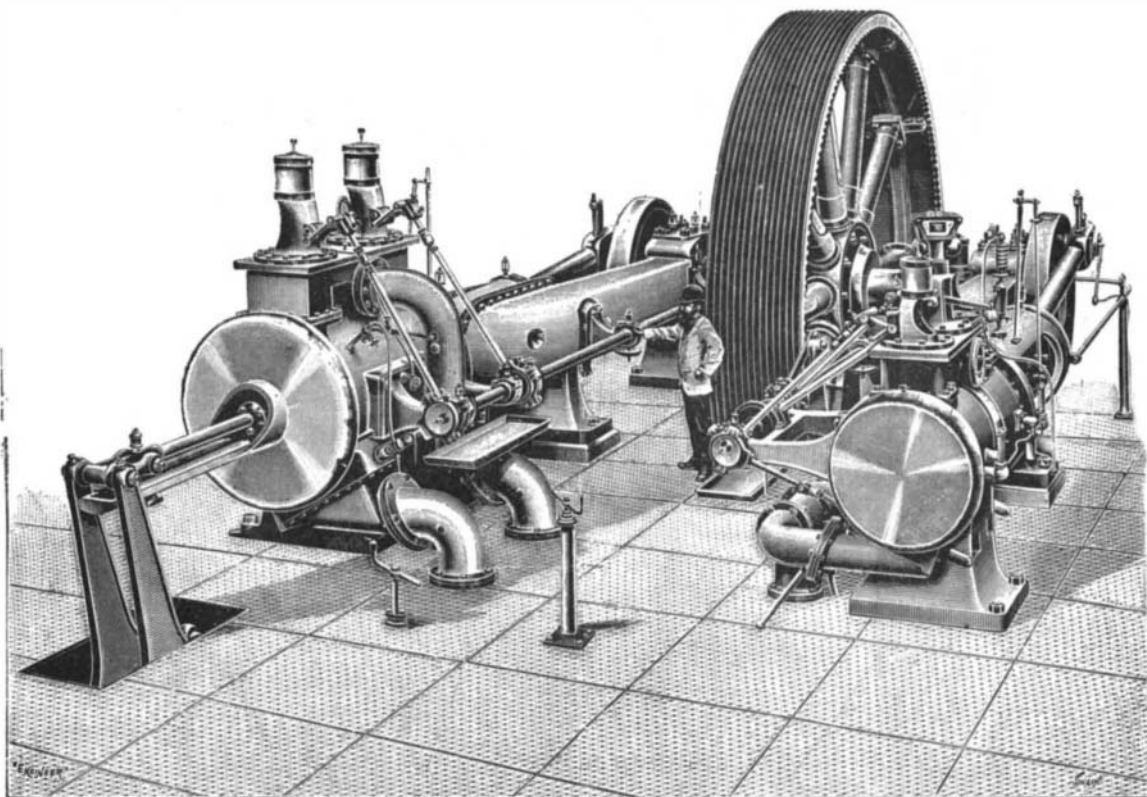


NEW WASH BOTTLE.

healthful exercise. The conclusions were based upon examinations of a number of men who had used the wheel constantly for periods varying from five to fifteen years. During this time each of these riders had ridden more than 5,000 miles and less than 30,000 miles. It was found that the average chest expansion of these riders was 1.4-7 inches. The chest of the average man expands only one inch. In the strength and general condition of the heart the bicyclists had a similar advantage, and a considerably increased lung power was also observed. There was also noticeable an harmonious development of all the muscles, and in no case was any deformation of the spinal column or other part to be found. The criticism that the continued use of the wheel merely develops the muscles of the legs at the expense of other parts was not found to be true in any of these cases. The writer of the paper, however, condemned long distance racing as injurious, and offered a general caution against excessive and exhaustive feats of bicycle riding.

NINE HUNDRED HORSE POWER COMPOUND ENGINE.

The engine here illustrated is a fine specimen of modern engineering, and has been manufactured by



NINE HUNDRED HORSE POWER COMPOUND ENGINE.