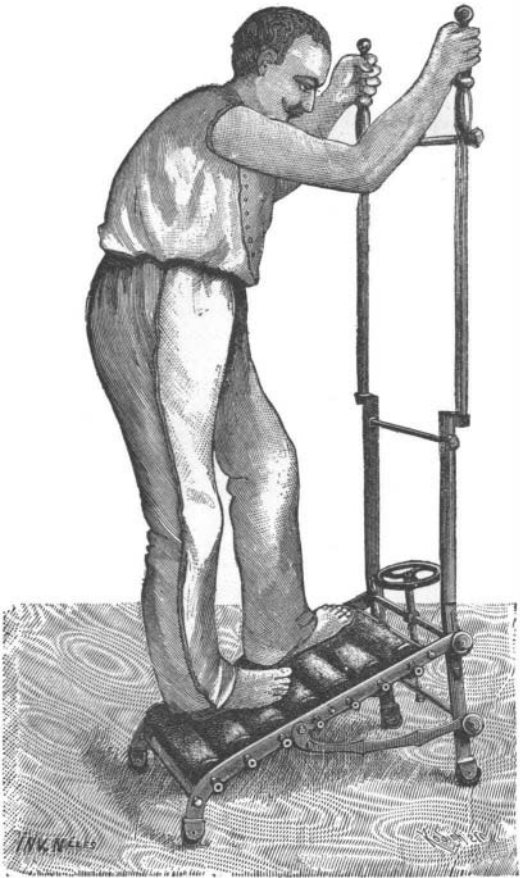


THE HYGIENIC TREADMILL.

Gymnastics are much in vogue at the present time, and the apparatus illustrated herewith is intended to assist in the development of muscular force in a similar manner to that obtained by walking or running, without the necessity of leaving the house and of being exposed to the inclemency of the weather. The apparatus illustrated also gives relief to those troubled with obesity, as exercise with it tends to a reduction in weight without the fatigue attendant upon going to and from places where more scientific treatment is administered.

It is composed of an inclined plane formed by a series of rollers kept in place by axles running in the side pieces, which, with the pieces at the end uniting them, form the principal part of the apparatus. The rollers and their mountings rise and fall in a groove in the upright support, which is composed of two uprights fastened together by cross pieces at several places. These upright pieces form the points of support for the persons making use of the apparatus. The



THE HYGIENIC TREADMILL.

rollers are made of wood covered with cloth over stuffing, or covered with rubber, which gives greater purchase for the feet. The method of working is very simple. The person desiring to exercise mounts the rollers, which are set in motion by the weight of the body. By their motion they tend to carry the feet to the lower portion of the apparatus. This can only be counteracted by a brisk movement of the limbs and feet, similar to walking or running, and must be kept

up continually, or the feet will be thrown off the apparatus. The amount of the exercise can be regulated by raising or lowering with the screw. The higher the top of the inclined plane, the more violent the exercise. The effect produced by the rapid motion of the limbs is to produce a sensation of heat over the entire body, equivalent to that obtained by running or a long walk.—*Les Inventions Nouvelles.*

ROD AND RING EXPERIMENT.

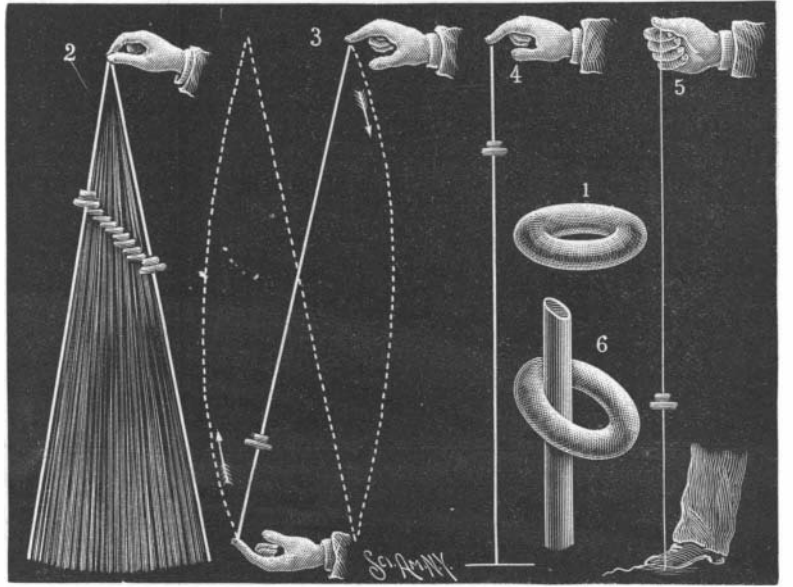
BY GEO. M. HOPKINS.

A curious result of the combination of the force of gravity and of centrifugal force is illustrated in the annexed sketch. The experiment here illustrated is very simple, requiring for its execution only a rubber umbrella ring and a small rod or smooth string. The ring is placed over the rod and twirled. It keeps up its rotation while slowly descending, and it will persist in maintaining its motion when the rod is swung like a pendulum as shown in Fig. 2. By dextrously turning the rod end for end before the ring completes its excursion, the operation will be reversed and the ring will again travel downward. When the rod is held vertically, as in Fig. 4, the best results are secured. A smooth string answers a very good purpose when strained in the manner shown in Fig. 5, *i. e.*, with the upper end of the string grasped firmly by the hand while the lower end is held to the floor by pressure of the foot.

This experiment is capable of some modification; for example, a pure rubber tube may be substituted for the string, or, with a rod inserted in it, it may be substituted for the rod, and a light metal ring may be used instead of the rubber ring.

The explanation of the behavior of the rubber ring will be readily understood by reference to Fig. 6, from which it will be seen that the line of contact between the ring and the rod is oblique; in fact, it corresponds to a portion of the spiral described by the ring in its passage down the rod. The friction due to the pressure resulting from centrifugal force prevents the ring from making a direct line of descent, while its inclined position compels it to take a spiral course down the rod.

The ring rolls by internal contact with the rod, but, to make one revolution on its own axis, it must roll around the rod nearly as many times as the diameter of the rod is contained in the internal diameter of the ring.



ROD AND RING EXPERIMENT.

yet so impure that its continued use deteriorates the health and vitality, so that its victims succumb readily to such germs when they do attack. And though the proclaimed "cholera-strassen" be rigorously closed, and their occupants compelled to find other quarters, this is but a drop in the cup, for there are too many such equally unhealthy "strassen" to make it possible for all to be closed without further and most dangerously overcrowding the poor streets into which their evicted tenants must pour.

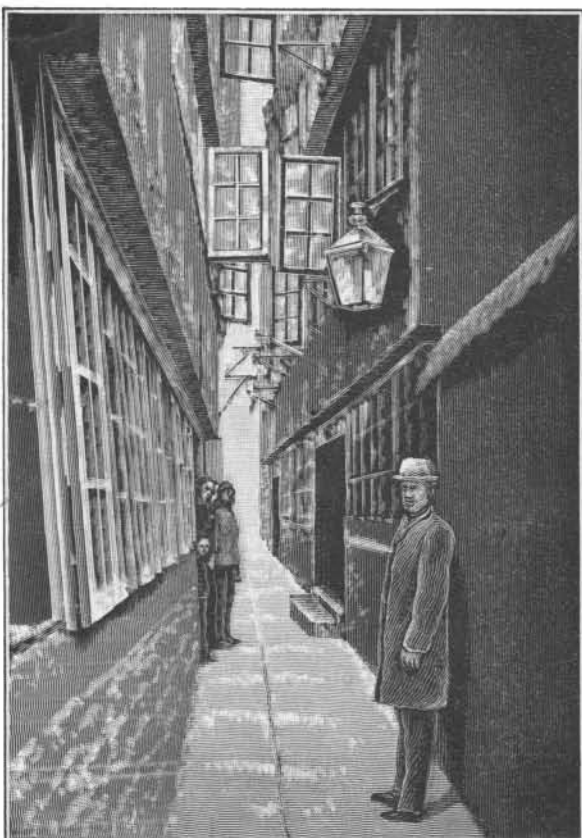
During the winter building operations must be practically at a standstill, and the spring will be upon us almost before there has been time even to make plans of the new houses which are to rise upon the ruins of the old. Many thousands of persons must, therefore, continue to occupy tenement houses so closely crowded together that one can almost touch hands from the windows of opposite houses; with doorways so low that a man must bend his body to enter; while upon the narrow, ill-paved footway more or less of the refuse of the overfilled houses is thrown.

On one occasion, during my stay in Hamburg, observing a quiet, orderly crowd in one of the main streets, I stood to see its cause. I found it arose from the fact of a number of work people, who, returning from some manufactory, were filing into the narrow street in which they dwelt. This was so constructed that the passage to it ran under part of a tall building

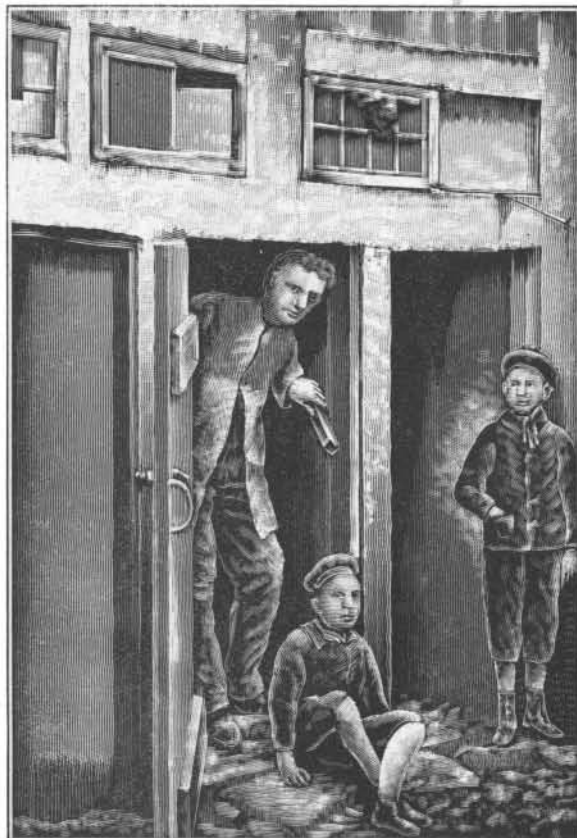
SOME OF THE "CHOLERA STREETS" IN HAMBURG.

BY ANNESLEY KENEALY.

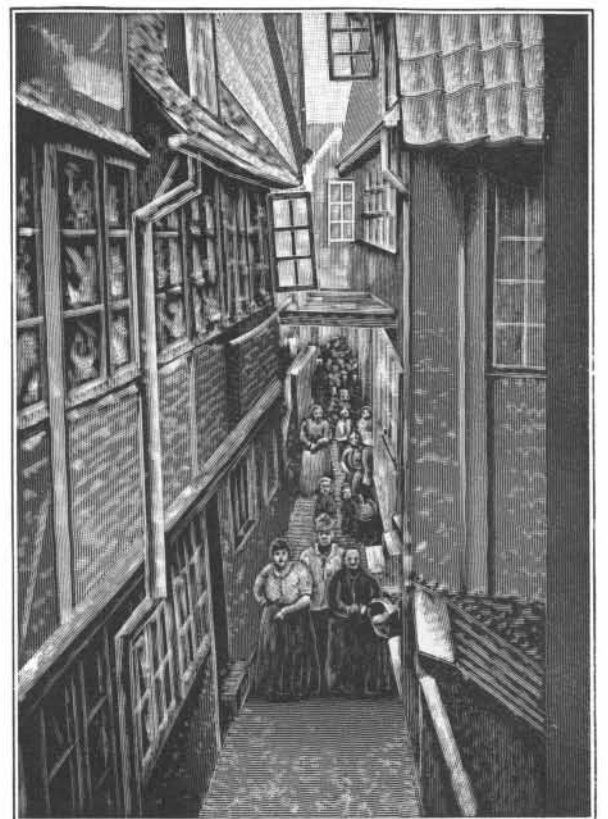
It was believed in Hamburg during the "terror reign" of the recent epidemic that the coming spring will see a revival of some, at least, of its horrors—that, with the bursting of the new year's buds, the seeds of disease, also having lain dormant during the winter months, will rise again into existence and more or less



No. 22 STEINSTRASSE.



No. 36 ALTST. NEUSTRASSE.
SOME OF THE STREETS IN HAMBURG.



No. 22 NIEDERNSTRASSE.