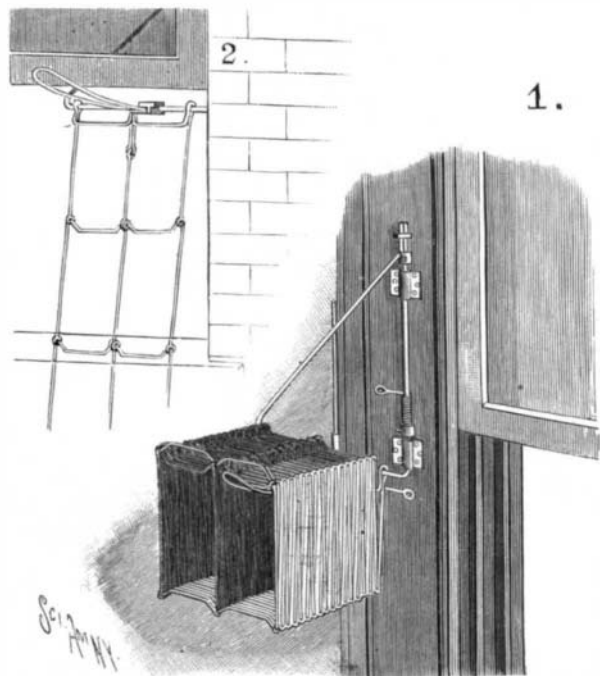


**A SELF-LAUNCHING FIRE-LADDER.**

Our illustrations picture a very ingenious and inexpensive fire-ladder, invented by Mr. Theron N. Parker, of 226 North Ninth Street, Brooklyn, New York city, which ladder is so arranged that by releasing a retaining device, it will be automatically thrown out of an open window into the street.

Held in bearings at the side of the window, well above the head of a person, is a bracket in the form of a right-angled triangle. The base of this triangular bracket carries a steel loop which supports the folded steel ladder, made in any desired length. In order to



THE LADDER FOLDED AND LAUNCHED.

reinforce the loop, and to hold it in substantially horizontal position, a vertical brace is employed, extending upwardly behind and in contact with the hypotenuse of the triangle. The vertical member of the triangular bracket, journaled in the bearings, is surrounded by a powerful coiled spring, the upper end of which is extended laterally to form a stop, which limits the inward motion of the bracket. A fastening device which can be released by a pull-cord, lever, or electric push-button is provided for the base of the bracket.

When the fastening device is released, the strong steel spring instantly swings the bracket through a semicircle to the open window, with such speed that the momentum acquired launches the fire-ladder into the street, so that it hangs as shown in our illustration.

Not the least interesting feature of this simple device is the construction of the ladder. It will be observed that side runs are employed, between which, rungs extend, having offset portions serving as footholds. So compact is this ladder, that a length equivalent to five stories can be packed in less than a cubic foot of space. The ladder is light; for it weighs but two pounds to the story. It is strong; for the severe tests to which it has been subjected have shown that it is capable of supporting a weight of one thousand pounds with perfect safety, and without any possibility of entangling. When the ladder is launched by means of the push-button or lever, a strong, trustworthy escape is formed for each floor in the line of the windows—an escape by which firemen, if necessary, can ascend to any floor. The bracket, it is evident, can be quickly placed in position on any window. †

THERE is a project for another subway in Boston, to connect under Washington Street with the present subway, and the one to East Boston, on which work was started a few weeks ago, has been laid aside for a year at least, says The Western Electrician. The matter has been the subject of many petitions and much remonstrance, and the committee on metropolitan affairs in the legislature voted to refer the bill to the next General Court.

**AN IMPROVED VALVE FOR STEAM RADIATORS.**

An invention has been patented by Mr. Timothy S. Martin, of Butte, Mont., which provides a simple valve mechanism particularly adapted for use on radiators through which exhaust steam is passed, and designed to reduce back pressure against the engine. Fig. 1 is a central sectional elevation of the invention with parts broken away. Fig. 2 is a perspective view, also with parts broken away.

The radiator is constructed with the usual upright tubes connected with upper and lower horizontal circulating-tubes. At the end of the circulating-tubes, a valve casing is located, comprising two chambers, which can be connected with the steam-supply. A central apertured partition separates the chambers. The casing has also two outer chambers and two outer apertured partitions, one between each outer chamber and the adjacent chamber connected with the steam supply. A central valve is arranged to open and close the aperture in the central partition; and two lateral valves are arranged to close the apertures in the outer partitions. A cross-head connects the outer valves and has a screw-threaded aperture. A head connected with the central valve has an aperture with a screw-thread of a direction opposite to that of the cross-head, the two threaded apertures being aligned axially. A valve-operating shaft is mounted to turn in the casing, but is held against longitudinal movement, and is provided with screw-threads of opposite directions engaging the oppositely threaded apertures of the heads.

When the center valve is closed, the outer valves are opened (Fig. 1), so that the steam enters one of the circulating-pipes, passes through the outer chamber and open partitions to the radiator and returns through the other circulating pipe. If the center valve be opened by turning the shaft previously mentioned, the inlets to the radiator will be closed, and steam will not enter the radiator. It is evident that under these conditions the steam will not encounter a solid, closed valve, as in the customary construction, but will pass through the valve-casing and back to the boiler, thereby obviating the back pressure usually caused by cutting off the steam at the radiator.

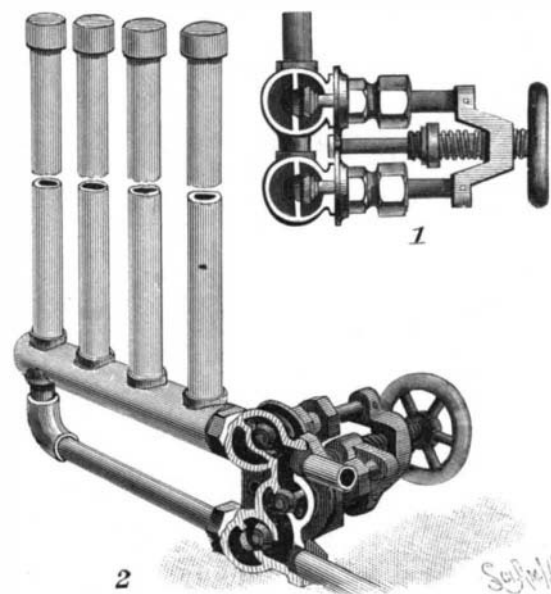
**EXAMINATION OF THE DRINKING WATER OF BROOKLYN, NEW YORK.**

The advances in sanitary science in the past few years are nowhere more marked than in water examination. The splendid work done by the Massachusetts State Board of Health has been followed by the installation of laboratories in most of our American cities for the examination of the water furnished by the municipality. It is naturally understood that departments of water supply should be responsible for the quality, as well as the quantity, of water furnished. This demands a constant knowledge of the sanitary condition of the water supply, which can be attained only by frequent analyses and inspection.

The water supply of Brooklyn is complicated, and

peculiar conditions of a chemical and biological laboratory. In the SUPPLEMENT for the current week there is a very full paper upon the Mount Prospect laboratory, presented by Mr. Whipple before the Brooklyn Engineers' Club. It deals with the collection of samples and with the work carried on, and to this article we refer our readers who desire more extended information on the subject.

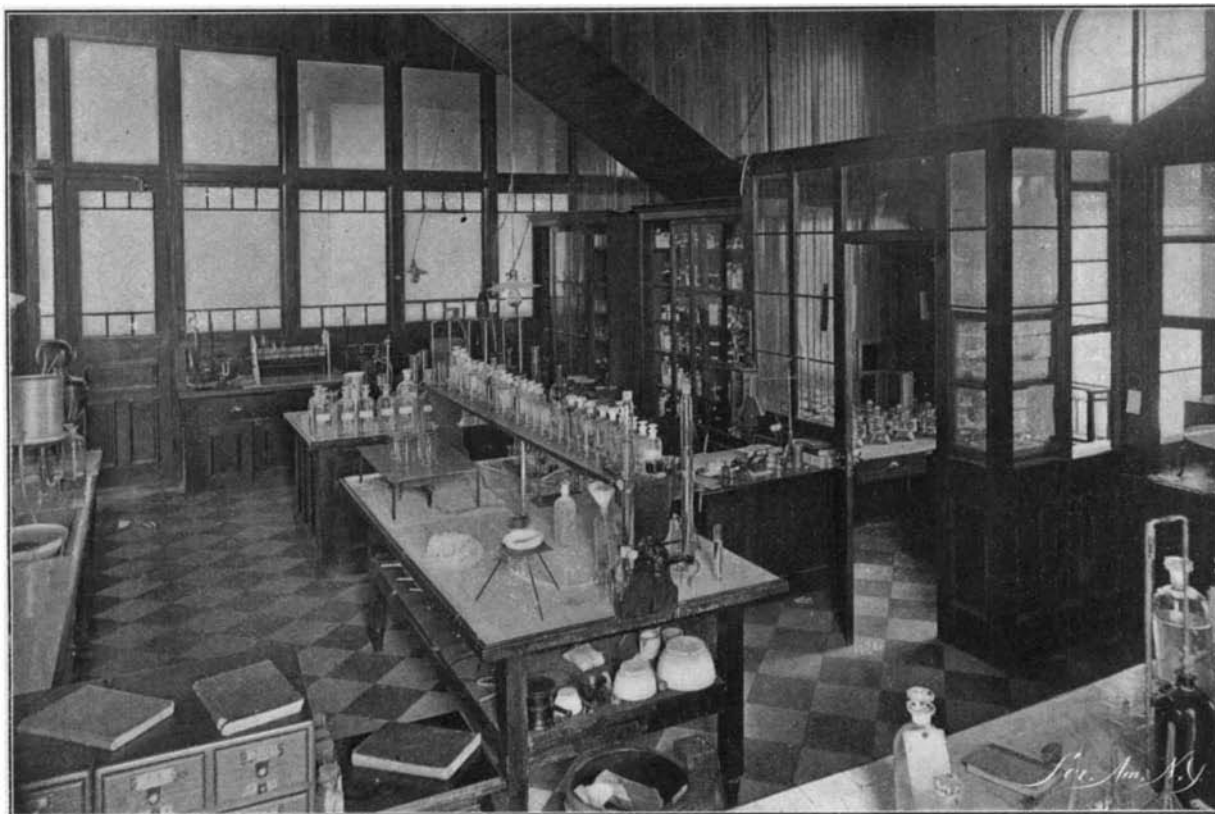
The laboratory occupies the upper portion of the building and is divided into three rooms. One room is known as the general laboratory, the second the biological laboratory, and the third the chemical laboratory. In the basement is a physical laboratory, store-room, etc., and there is a sub-basement suitable for bacteriological work during hot weather. The labora-



THE MARTIN RADIATOR VALVE.

tories are equipped with the latest apparatus known to science, including ice chests for the storage of culture media, incubators, sterilizers, balances, desiccators, steam baths, stills for ammonia distillation, Sedgwick-Rafter filters, a combustion furnace, a Mahler bomb-calorimeter, etc. The laboratory force consists of one biologist and director, one chemist, one assistant chemist and three assistants. The routine work consists of the regular examination of the samples of water received from all parts of the watershed and distribution system, i. e., from the driven wells, streams, ponds, aqueducts, reservoirs, etc. The complicated and varied character of the water supply requires the examination of an unusually large number of samples, and it is safe to say that no water supply in this country is examined more thoroughly and minutely than that of Brooklyn.

The regular routine includes the bacteriological examination of three samples of water from the



THE CHEMICAL LABORATORY OF THE MOUNT PROSPECT LABORATORY FOR THE BIOLOGICAL AND CHEMICAL ANALYSIS OF BROOKLYN'S DRINKING WATER.

the need of a laboratory was apparent to the Department of Water Supply for several years. In 1897, Mr. George C. Whipple, Associate Member of the American Society of Civil Engineers and author of several works upon sanitary water supply and examination, was appointed biologist and director. The old gate-house on the Mount Prospect reservoir was found to have ample accommodations, and it was remodeled to meet the

examination of three samples of water from the Ridgewood pumping station and from a tap in the city collected daily; a complete physical, chemical and biological examination of nine samples from the distribution system collected weekly; the physical, biological and partial chemical examination of twenty-four samples from the supply ponds collected weekly, with complete chemical analyses monthly; the complete examination of nineteen samples from driven wells collected monthly; and the complete examination of twenty-one samples from the private water supply companies of Brooklyn and from the water supply of the Borough of Queens collected quarterly. Many extra samples are taken at various times and places as occasion requires.

The samples of water from the watershed are collected in the forenoon during the early part of each week, and are sent to the laboratory by express. The samples are collected in large bottles for chemical analyses, and in small sterilized bottles for bacteriological examination. The bottles for the bacteria samples hold two ounces, and they are sterilized each time before use. The stoppers are covered with pieces of tin-foil, and each bottle is then placed in a screw-capped