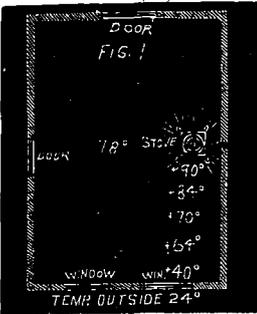
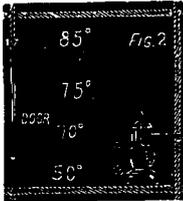


Fig. 3. shows an every-day occurrence among thousands, yes, millions of people. A child three or four years old, from playing near a stove or on a nurse's lap, in a temperature of 70° or 80°, perhaps in a sweat, goes to a window and stands, without any change of clothing or protection, for half an hour or more, in a temperature anywhere from 30° to 55°. How such a



thing can occur without resulting in croup or pneumonia must be marvellous to any one who studies the subject even casually.

In many instances there is a small crack or opening



either under the sash or at the side, and almost always at the junction of the upper and lower sash, where a stream of air is passing into the room nearly as cold as the outside air, though it be below zero. Cold air at a high speed striking a child directly on the bare throat



or breast can seldom fail to produce some dreadful disease.

On a very cold day, in some of the wooden houses inhabited by poor people with many children and little time to look after them, children may often be found sitting on the floor in a temperature of 38°, or standing with nose against a window pane at 20°, when the mother is washing or ironing in 65°. These people generally have but one fire in the house, and that in a cook-stove, which cannot heat the floor at all, while cold drafts come from every other room, and especially from the stairway. In churches and theaters the galleries will be 85° to 90° when the floor is 70°; then the opening of a door or window is very injurious, and going out into the air at 10° or 20° also causes a dangerous strain on the system.

In view of the principle already given, it seems to me that this is a striking state of affairs, and perhaps no

principles of hygiene are so grossly violated as these. No wonder that the death list in Philadelphia alone in a single year reaches the dreadful sum of 1,000 from pneumonia, and about 400 from croup (preventible diseases in most cases). It is also somewhat remarkable that the subject has not before been written up in medical works. The thermometry of hygiene and the sick room is a fruitful field for cultivation.

By reference to the cuts, it may be seen that it is easy to be exposed in five seconds to a change of 40°, a circumstance that can never occur out of doors. In open air the temperature is nearly the same from head to foot, and changes much more slowly than in the house. A child gets off the bed and sits on the floor—a change of 10°, it may be 20°; or it goes to the window, possibly to scratch in the beautiful frost-work on the glass—a change sometimes of 40°. This explains why people take cold more frequently in the house than they do out of doors. In fact, I do not believe that people will take cold by habitually going out if they exercise and are properly clothed.

THE TORONTO PLUMBING BY-LAW.

THE By-Law passed by the Toronto City Council for the regulating of plumbers who desire to carry on business within the city, and which has now been in successful operation for the period of one year, reads as follows:

(1). Upon and immediately after the passage of this By-law, in every ensuing year, there shall be taken out by every person desiring to carry on business or trade as a Plumber within the limits of the City of Toronto, a license, for which license the person, or persons in the case of a partnership firm, shall pay at the time of taking out such license the sum of one dollar; and no person shall receive such license who shall not have attained the age of twenty-one years and have a place of business within the City of Toronto, and who shall not furnish the City Engineer and the Medical Health Officer of the City of Toronto with satisfactory evidence of his responsibility and skill to ply his trade in accordance with the terms and conditions, rules and regulations contained in this By-law and in any other By-laws in force from time to time in the City of Toronto respecting plumbing, drainage, sanitary matters, and the Toronto Water Works; and no license shall be granted to any Plumber except upon the certificate of approval of the City Engineer and Medical Health Officer, save as hereunder provided.

(2). Every person desiring such license shall file with the General Inspector of Licenses a petition in writing, giving the name of the firm, if he shall be one of a firm, and each member thereof, together with the place of business, asking to become a licensed Plumber, and said petition shall be accompanied by a bond signed by two or more sureties to be approved of by the Chairman of the Local Board of Health, conditioned in the sum of one thousand dollars, that he or they will conform to all the conditions and requirements of the said Corporation and of the By-laws of the said City for his government or in default thereof will submit to such penalties as are or may be prescribed, by the Council for the government of Plumbers.

(3). Any change of the firm or location of the business must be promptly reported to the General Inspector of Licenses, and the license shall be kept in a conspicuous place at the place of business.

(4). When two or more persons are co-partners, licenses shall be issued in the name of the firm or co-partnership, and no license shall be transferable.

(5). Any Plumber, or firm of Plumbers, who shall be guilty of violation of any of the provisions of this By-law shall forfeit his license and shall be subject to the penalty of the By-law, hereinafter set forth.

(6). All licensed Plumbers shall be held responsible for all acts of their agents or employees done by virtue of their said license. No license shall be granted for a greater period than one year or the unexpired portion thereof. All licenses shall expire on the last day of December of each year, unless sooner revoked.

(7). The following Rules and Regulations shall be observed in the construction of the drains, soil pipes and plumbing of all houses and buildings within the limits of the City of Toronto:

RULE 1.—It shall not be lawful to construct or extend any drain for the reception of sewage or waste water under or into any hotel, tenement house or dwelling house, or to connect the same with any public or other sewer, drain or cesspool, unless the said drain shall in its plan and construction conform to the following requirements: First—All the drains and plumbing fixtures of every house or other buildings shall be provided with sufficient traps and vents to prevent gas from the sewer drain or waste pipes from escaping into any

apartment, and each such fixture shall have its own trap with sufficient vent. (b.) The outlets of above mentioned soil pipe and inlet pipe shall be so situated that from neither of them shall gas be liable to pass into any window, chimney or other opening into any other house or other habitation. (c.) No refrigerator waste shall be allowed to connect with any drain. Second—Between the said trap and the foot of the soil pipe there shall be connected with the main house drain, at or near the point where it leaves the house, an inlet pipe for the admission of fresh air, and the soil pipe within the building shall be continued above the roof, and left open so that the whole of the inside drainage may be thoroughly and constantly ventilated.

RULE 2.—Before proceeding to construct any portion of the drainage system of a hotel, tenement, warehouse, dwelling house or other building, the owner, or his agent, constructing the same shall file in the office of the City Engineer a plan thereof, showing the whole drainage system from its connection with the common sewer or cesspool to its terminus in the building, together with the specification and sizes of all branches, taps, ventilating pipes and fixtures.

RULE 3.—All plans must be legibly drawn in ink on heavy white paper or on tracing linen.

RULE 4.—The size of the paper or linen must be 12½ inches by 15 inches, and the drawing so made as to leave not less than one inch margin outside thereof.

RULE 5.—One vertical drawing will be sufficient for a building when it can be made to show all the work. If the work is intricate and cannot be shown by one drawing, two or more must be furnished.

RULE 6.—One plan will be sufficient to show the work of any number of houses, if built alike at one time and situate together. Upon the plan the street numbers of the houses of which the said plan represents the plumbing arrangements must be marked.

RULE 7.—Every plan must be accompanied by a clear description thereof, or abstract of the specifications in a blank form, prescribed and supplied for this purpose showing size, kind and weight of pipes, and kind of traps, closets and fixtures to be used.

No lead pipes shall weigh less than the following:

FOR WATER WORKS.	
¾ inch internal diameter,	4 lbs. per lineal yard.
½ " " " "	6 " " "
¾ " " " "	8 " " "
1 " " " "	10 " " "
1 " " " "	13 " " "

LEAD WASTE OR VENT PIPES.

LEAD WASTE OR VENT PIPES.	
1 inch diameter,	6 lbs. per yard.
1½ " " "	7 " " "
1½ " " "	8 " " "
2 " " "	10½ " " "
2½ " " "	13½ " " "
3 " " "	16½ " " "
4 " " "	24 " " "

No iron pipe shall weigh less than the following:

IRON PIPES, WEIGHT PER LENGTH OF 5 FEET.

IRON PIPES, WEIGHT PER LENGTH OF 5 FEET.	
6 inch diameter,	100 lbs.
5 " " "	85 " "
4 " " "	45 " "
3 " " "	30 " "
2 " " "	20 " "

RULE 9.—A duplicate on tracing linen of each plan as approved must be furnished for the use of the Inspectors before the first inspection. Tracing paper will not be accepted.

RULE 10.—Plans and specifications shall be approved of or rejected within ten days from the time of filing.

RULE 11.—If, upon inspection of said plan, the City Engineer, Medical Health Officer, or other official or officials appointed by the Council for the purpose, shall find that the same does not conform with the rules and requirements laid down or to be laid down by him or them in respect to plumbing and drainage, either by this or any other By-law, or with the By-laws of the said City of Toronto, he or they shall not issue any permit for the construction of such building or its drainage, and it shall be unlawful to construct such building and the drains connected therewith or connect the same with any sewer. All regulations and By-laws referred to in this rule shall be printed by the Department, and a copy supplied to any ratepayer applying for the same.

RULE 12.—The City Engineer must be notified when any work is ready for inspection, and all work must be left uncovered and convenient for examination until inspected and approved of. The inspection shall be made within three days after the notification shall have been given to the City Engineer who shall apply either the ether, peppermint, water or smoke test, and record the result of such inspection in his office.

RULE 13.—After a plan has once been approved, no