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**Disinfectants.**

The annual meeting of the Public Health Association was opened in Washington, Dec. 8th. President, Dr. James E. Reeves, of Wheeling, W. Va. Various addresses were made and papers read. The Committee on Disinfectants consisted of Drs. George M. Sternberg, U. S. A., Joseph H. Raymond, Brooklyn, Charles Smart, U. S. A., Victor C. Vaughn, Michigan, A. R. Leeds, New Jersey, W. H. Watkins, New Orleans, and George H. Rohe, Baltimore. Their report was presented. The following are their conclusions:

- 1. *Fire.* Complete destruction by burning.
- 2. *Steam under pressure.* 110° C. (230° F.) for ten minutes.
- 3. *Boiling in water* for one hour.\*
- 4. *Chloride of lime.* † A 4% solution.
- 5. *Mercuric chloride.* A solution of 1 : 500.

For the destruction of infectious material which owes its infecting power to the presence of micro-organisms *not containing spores*, the committee recommends:

- 1. *Fire.* Complete destruction by burning.
- 2. *Boiling water* half an hour.
- 3. *Dry heat.* 110° C. (230° Fahr.) for two hours.
- 4. *Chloride of lime.* † 1 to 4% solution.
- 5. *Solution of chlorinated soda.* ‡ 5 to 20% solution.
- 6. *Mercuric chloride.* A solution of 1 : 1,000 to 1 : 4,000.
- 7. *Sulphur dioxide.* Exposure for 12 hours to an atmosphere containing at least 4 volumes per cent of this gas, preferably in presence of moisture.§
- 8. *Carbolic acid.* 2 to 5% solution.
- 9. *Sulphate of copper.* 2 to 5% solution.
- 10. *Chloride of zinc.* 4 to 10% solution.

The committee would make the following recommendations with reference to the practical application of these agents for disinfecting purposes:

**FOR EXCRETA.**

- (a.) In the sick room:  
For spore-containing material:
  1. Chloride of lime in solution, 4%.
  2. Mercuric chloride in solution, 1 : 500. ||
- In the absence of spores:
  3. Carbolic acid in solution, 5%.

\* This temperature does not destroy the spores of *B. subtilis* in the time mentioned, but is effective for the destruction of the spores of the anthrax bacillus and of all known pathogenic organisms.

† Should contain at least 25 per cent of available chlorine.  
‡ Should contain at least 3 per cent of available chlorine.

§ This will require the combustion of between 3 and 4 pounds of sulphur for every 1,000 cubic feet of air space.

|| The addition of an equal quantity of potassium permanganate as a deodorant, and to give color to the solution, is to be recommended (*Standard Solution* No. 2).

- 4. Sulphate of copper in solution, 5%.
- 5. Chloride of zinc in solution, 10 %.
- (b.) In privy vaults:  
Mercuric chloride in solution, 1 : 500.\*
- (c.) For the disinfection and deodorization of the surface of masses of organic material in privy vaults, etc.:  
Chloride of lime in powder. †

**FOR CLOTHING, BEDDING, ETC.**

- (a.) Soiled underclothing, bed linen, etc.:
  1. Destruction by fire, if of little value.
  2. Boiling for at least half an hour.
  3. Immersion in a solution of mercuric chloride of the strength of 1 : 2,000 for four hours. ‡
  4. Immersion in a two per cent solution of carbolic acid for four hours.
- (b.) Outer garments of wool or silk, and similar articles, which would be injured by immersion in boiling water or in a disinfecting solution:
  1. Exposure to dry heat at a temperature of 110° C. (230° Fahr.) for two hours.
  2. Fumigation with sulphurous acid gas for at least twelve hours, the clothing being freely exposed, and the gas present in the disinfection chamber in the proportion of four volumes per cent.

- (c.) Mattresses and blankets soiled by the discharges of the sick:
  1. Destruction by fire.
  2. Exposure to superheated steam—25 pounds pressure—for one hour. (Mattresses to have the cover removed or freely opened.)
  3. Immersion in boiling water for one hour.
  4. Immersion in the blue solution (mercuric chloride and sulphate of copper), two fluid ounces to the gallon of water.

**FURNITURE AND ARTICLES OF WOOD, LEATHER, AND PORCELAIN. §**

- Washing several times repeated with:
- 1. Solution of mercuric chloride 1 : 1000. (The blue solution, four ounces to the gallon of water, may be used.)
  - 2. Solution of chloride of lime 1 per cent.
  - 3. Solution of carbolic acid, 2 per cent.

**FOR THE PERSON.**

- The hands and general surface of the body of attendants, of the sick, and of convalescents at the time of their discharge from hospital:
- 1. Solution of chlorinated soda diluted with nine parts of water (1 : 10).
  - 2. Carbolic acid, 2 per cent solution.
  - 3. Mercuric chloride, 1 : 1,000; recommended only for the hands, or for washing away infectious material from a limited area, not as a bath for the entire surface of the body.

**FOR THE DEAD.**

- Envelop the body in a sheet thoroughly saturated with:
- 1. Chloride of lime in solution, 4 per cent.
  - 2. Mercuric chloride in solution, 1 : 500.
  - 3. Carbolic acid in solution, 5 per cent.

**FOR THE SICK ROOM AND HOSPITAL WARDS.**

- (a.) While occupied, wash all surfaces with:
  1. Mercuric chloride in solution, 1 : 1000. (The blue solution containing sulphate of copper may be used.)
  2. Chloride of lime in solution, 1 per cent.
  3. Carbolic acid in solution, 2 per cent.
- (b.) When vacated:  
Fumigate with sulphur dioxide for 12 hours, burning 3 pounds of sulphur for every 1,000 cubic feet of air space in the room; then wash all surfaces with one of the above mentioned disinfecting solutions, and afterward with soap and hot water; finally throw open doors and windows, and ventilate freely.

**FOR MERCHANDISE AND THE MAILS. ||**

The disinfection of merchandise and of the mails will only be required under exceptional circumstances; free aeration will usually be sufficient. If disinfection seems necessary, fumigation with sulphur dioxide, as recommended for woolen clothing, etc., will be the only practicable method of accomplishing it.

**RAGS.**

- (a.) Rags which have been used for wiping away infectious discharges should at once be burned.
- (b.) Rags collected for the paper makers during the prevalence of an epidemic should be disinfected before they are compressed in bales, by:
  1. Exposure to superheated steam (25 pounds pressure) for ten minutes.
  2. Immersion in boiling water for half an hour.

\* A concentrated solution containing four ounces of mercuric chloride and one pound of cupric sulphate to the gallon of water is recommended as a *standard solution*. Eight ounces of this solution to the gallon of water will give a diluted solution for the disinfection of excreta, containing about 1 : 500 of mercuric chloride and 1 : 125 of cupric sulphate.

† For this purpose the chloride of lime may be diluted with plaster of Paris or with clean, well dried sand, in the proportion of one part to nine.

‡ The blue solution containing sulphate of copper, diluted by adding two ounces of the concentrated solution to a gallon of water, may be used for this purpose.

§ For articles of metal use Solution No. 3.

|| In order to secure penetration of the envelope by the sulphur dioxide, all mail matter should be perforated by a cutting stamp before fumigating.

(c.) Rags in bales can only be disinfected by injecting superheated steam (50 pounds pressure) into the interior of the bale. The apparatus used must insure the penetration of the steam to every portion of the bale.

**SHIPS.**

(a.) Infected ships at sea should be washed in every accessible place, and especially the localities occupied by the sick, with:

- 1. Solution of mercuric chloride 1 : 1,000 (the blue solution heretofore recommended may be used).
- 2. Solution of chloride of lime, 1 per cent.
- 3. Solution of carbolic acid, 2 per cent.

The bilge should be disinfected by the liberal use of a strong solution of mercuric chloride (the concentrated solution—"blue solution"—of this salt with cupric sulphate may be used).

(b.) Upon arrival at a quarantine station, an infected ship should at once be fumigated with sulphurous acid gas, using three pounds of sulphur for every 1,000 cubic feet of air space; the cargo should then be discharged on lighters; a liberal supply of the concentrated solution of mercuric chloride (4 ounces to the gallon) should be thrown into the bilge, and at the end of twenty-four hours the bilge water should be pumped out and replaced with pure sea water; this should be repeated. A second fumigation after the removal of the cargo is to be recommended; all accessible surfaces should be washed with one of the disinfecting solutions heretofore recommended, and subsequently with soap and hot water.

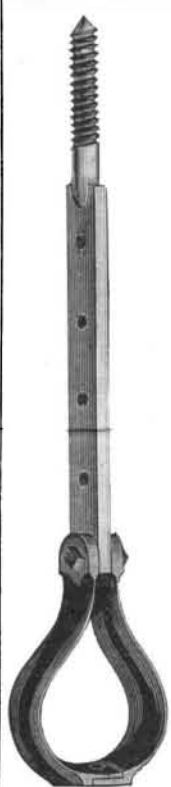
**BLAKE'S "IMPROVED 1864" PIPE HANGER.**

The annexed engraving presents a new and novel invention in the line of an adjustable pipe hanger.

The stirrup or ring is made in two parts, the lower end of one half having a pin fitting a corresponding hole in other half of ring. This is one of the essential features of the hanger, as it may be placed on or removed from the pipe when in position; the upper parts of each half of stirrup are held together by a bolt passing through and holding in position the lag screw, which is 13 inches long, and has on its flat portion a number of holes punched to allow for adjustment of pitch lines. To meet the many requirements of the trade, the manufacturers have added a number of combinations, including adjustable pieces and clamps for iron beams, also improved link pieces and lag screws, to suit cases where hangers are required of an extra length, the addition being made by ordinary gas pipe.

The use of this hanger, in place of the many crude and expensive blacksmith jobs and chain attachments so often resorted to, will prevent disastrous breakages of steam and water pipes, and will obviate the disagreeable knocking in steam pipes caused often by improper hanging and pitch lines.

Further information may be obtained from Messrs. Jenkins Bros., of 71 John Street, New York city, and 79 Kilby Street, Boston, Mass.



**Floating Suits.**

Buoyant clothing has been devised by a Londoner, and seems to be attracting some attention in that metropolis. Threads of cork are interwoven with cotton, silk, or woolen, machinery which slices the cork to the required thinness forming part of the invention. From these new materials clothes of ordinary appearance are constructed which bear up the wearer when committed unexpectedly to the water. The worth of the new fabrics was thoroughly tested by throwing three persons clothed in them from the end of a pier. They floated as easily as if incased in cork jackets. It is said that they remained in the water over an hour without discomfort. The possibilities of fireproof apparel are next in order.

**Mechanical Glass Blowing.**

Messrs. Appert have devised a process, in their factory at Clichy, in which they use air stored under great pressure, so as to dispense altogether with the necessity of blowing by the mouth. Glass blowers are peculiarly susceptible to various disorders, such as diseases of the lips and cheeks, and predisposition to tumors and rupture. These affections are the more serious because boys are often employed when the system is weakened by rapid growth. The high temperature and dry atmosphere increase the unfavorable hygienic conditions. The new process entirely suppresses blowing by boys, and, with rare exceptions, by adults also. The manufacture of glassware is thus ameliorated by rapidity of execution, as well as by the perfection and the large size of the pieces which are produced.