

### HINTS ON THE USE OF DISINFECTANTS.

The *Manufacturer and Builder*, in an article on this subject, affords the following useful information:

It is a safe rule to follow, not to use a disinfectant of whose composition you are ignorant. The commonest disinfectants are, sulphur, the hypochlorites, carbolic acid and its compounds, and metallic salts, chiefly those of iron and zinc. This enumeration, while it is not by any means complete, is nevertheless sufficiently so for all practical purposes, since those that are not included in this classification are either of questionable value or too expensive for general use.

Stated in the most general way, there are three different conditions under which disinfectants are required: (1) The purification of an infected atmosphere; (2) the purification of sewers, gutters, cess-pools, water-pipes, water-closets, and similar places where putrescible matter may accumulate in quantities; and (3) the disinfection of clothing, bedding, utensils, etc., used in and about the sick chamber.

The purification of an infected atmosphere, as of a ship, house, hospital, etc., can be effectually accomplished only by the use of some disinfectant that shall give off some gaseous element that may pervade the entire space and penetrate into every nook and corner. For this duty, a volatile agent is called for, and the first three substances named in our list are the most generally employed—namely, sulphur, hypochlorite, of lime (commonly called chloride of lime) and carbolic acid.

In every such case, the entire space or apartment should be effectually closed against the escape of the purifying agent, and the atmosphere should be thoroughly saturated with it for at least twenty-four hours. The sulphur should be burned in open vessels, the chloride of lime acidified with dilute sulphuric acid, and the carbolic left standing about in vessels open to the air. When the thorough impregnation of the atmosphere has been effected, it will be advisable to thoroughly scrub the wood-work with a one or two per cent. solution of one of the metallic salts, preferably the chloride of zinc. Of the three disinfectants named above, sulphur and chloride of lime are to be preferred as more certain in their action, since carbolic acid of commerce is notoriously unreliable in quality, and the very pungent and persistent odor that even a trifling quantity of it leaves behind, is apt to create a false sense of security.

The purification of sewers, gutters, kitchen sinks, drain-pipes, water-closets, etc., is best accomplished by means of the metallic disinfectants, of which the best known and the most effective are the salts of zinc and iron; and as the best known representatives of this class of compounds we may name chloride of zinc (Burnett's Fluid, also known by the trade name of No. 1 Disinfectant), and sulphate of iron (copperas). The action of these compounds is not very unlike, as they act on the sulphur and ammonia compounds to which the offensive odor of decomposing animal and vegetable refuse is to be chiefly ascribed, and bind them in the form of solid and inodorous combinations and also act on the albuminous constituents of such refuse to coagulate them, and thus hinder their further decomposition. Of the two disinfectants named as best adapted for this form of disinfection, green vitriol has been and is most commonly used, because of its cheapness; but the zinc salts is much more prompt and effective, and if its price could be brought low enough to enable it to compete with that of copperas, it should be preferred to the latter. (Of late, it may be added in this connection, there have been decided advances made in the production of cheap zinc salts, by patent processes for utilizing certain wasted products of the galvanizing works; and it is affirmed that zinc salts (chloride or sulphate) can now be supplied at prices considerably below those that have hitherto ruled. We should add here that neither carbolic acid nor chloride of lime can be used to good purposes to any large accumulation of offensive matter—as, for example, in sewers, gutters, cesspools, water-closets, etc., for the following reasons: The quantity of carbolic acid required for the task of purification would be so great as to place its use out of the question on the score of expense. And the action of the chloride of lime will be speedily checked by the alkaline character of such bodies of decomposing refuse.

For the disinfection of the sick chamber, the bed linen, towels, and necessaries there in use, zinc salts are greatly to be preferred to any others. The chlorid of lime and carbolic acid are undesirable by reason of their disagreeable and irritating odor, while the zinc salts is odorless. A sheet or towel suspended in the room, and from time to time dampened by immersion in a dilute solution of this kind will be generally found sufficient to keep the atmosphere of the room quite free from disagreeable odors, by reason of the air currents which the evaporation of the

moisture establishes, bringing the air of the chamber in contact with the disinfectant.

The rules prescribed last summer by the National Board of Health, and of which we give below a brief summary, will be found to agree substantially with the suggestions contained in the foregoing. The National Board recommends for fumigation (that is, the purification of an infected atmosphere), roll sulphur: for cesspools, sewers, etc., sulphate of iron, (copperas); and for clothing, bed linen, etc., zinc salts.

Dr. J. Lane Natter, of the British Army Medical Department, who has made a most careful and thorough experimental study of the comparative value and merits of the disinfecting fluids and powders most widely known and used, has reached substantially the same results.

**SHEFFIELD WATER FOR TEMPERING STEEL.**—A curious example, which illustrates to what extent prejudice may influence the "skilled workman," was lately brought to light in the case of a number of Sheffield cutlers, who were imported into this country by an English manufacturing firm, who proposed to make Sheffield razors in the states. The cutlers having, somehow got the notion that American water would not suit for hardening, they actually had tanks specially built for the purpose of storing a supply of Sheffield water, and carried it across the Atlantic. Here we follow a correspondent of the *London Trade Journal*: "The day came when the water was exhausted, and recourse was had to the native element. Then it was found that the rumour was no fiction. The American water would not harden razor-blades, nor even give the polish necessary for the secondary sorts." The result of this unfortunate state of affairs, the *Journal* adds, was the return of the wanderers, and saving Sheffield from the fear of seeing one of her oldest industries transplanted to the States.

We remember seeing a mention, at the time, of the fact that a lot of Sheffield cutlers had brought their native water with them, but looked upon the statement as too absurd for serious belief. But the verification of the fact removes all doubt. For ignorant prejudice and bull-headed stupidity, the Sheffield cutlers deserve the champion belt. The time was not long ago, one of our exchanges remarks in taking note of this fact, when English blacksmiths in this country could work with nothing but English steel; and when given anything which they suspected to be American steel, they were sure to spoil it, and were vehement in their assurance that it could not be worked successfully. This lasted until employers found out that American steel could be worked as well as any other, if it only had English marks on it; and when the blacksmiths found they had to choose between American steel or looking for another place, the change in the quality of the home-made product was surprising.

The notion of the Sheffield cutlers is, of course, the most arrant nonsense, and could only have had its origin in ignorance and prejudices. We are surprised, however, to find the *London Trade Journal* take it up without comment. Tempering steel and making Burton ale are two very different operations.

**MICROSCOPIC TESTS.**—Mr. B. G. West has succeeded in tracing on glass the curves called after Lisagou. He has traced these in lines of 55,000 to the inch, and finds that they are much better for testing the power of a microscope than straight lines. Aside from their great beauty, and the necessity of skilful illumination to see them well, the intersection of some lines and the gradual approximation of others arising from the variation in the figures, where every degree of the sharpness of a curve is obtainable, from a line returning almost upon itself at an exceedingly acute angle, to curves so flat as to present in parts virtually the appearance of parallel straight lines—all this, combined with a knowledge up to a certain point of the nature of all lines cut in glass, make these rulings more instructive perhaps than the markings on diatom valves, in regard to which there is as much question. A curious feature of some of these figures is that though all the lines would seem to be in the same plane, it sometimes happens that an alteration of focus is requisite to bring out the transverse lines. The same fact has been noticed in observing the transverse markings of the diatomææ.

**HOW BIRDS SING.**—It seems difficult to account for so small a creature as a bird making tones as loud in singing, as an animal 1,000 times its size. But it has been discovered that in birds the lungs have several openings communicating with corresponding air bags or cells, which fill the whole cavity of the body from the neck downwards, and into which the air passes and repasses.