ON A MODE OF GENERATING SULPHUROUS ACID FOR USE AS A DISINFECTANT, &c.

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FROM the remotest time, burning sulphur has been employed to fumigate and purify infected air, and to destroy fermentative and putrefactive action. There is no agent more powerful in its effects than this. Unlike chlorine, it not only acts as a disinfectant or destroyer of disease-germs and of the results of putrefaction, but it is also a powerful preservative agent, and, like carbolic acid, is a preventive of chemical changes in dead organic matter of every kind.

Although the value of sulphurous acid is thoroughly understood, its use is necessarily limited by the difficulty which exists in the way of producing it in a form in which it can be readily applied. The ordinary method of generating it by burning sulphur is cumbrous and very uncertain, owing to the difficulty of keeping up the combustion; there are also many situations in which the process cannot be carried on at all, and under the best circumstances it is inconvenient and but little under control. The evolution of the gas from its solution in water is scarcely more convenient, while it is much less effective; indeed, it may be said that there is no ready, convenient, and easily controllable way of producing this valuable agent in use at present; and this is the more remarkable when it is considered what a ready and simple means we really have at hand for this purpose.

Most of the readers of THE LANCET are no doubt familiar, at least theoretically, with the substance called bisulphide of carbon. This is a compound of one atom of carbon with two atoms of sulphur (C_2S_2); it is a dense, mobile liquid, heavier than water, and intensely inflammable, burning in the air like spirit of wine. During combustion the constituents of the bisulphide combine with the oxygen of the air, producing sulphurous and carbonic acid gases; but as 100 parts contain, by weight, as much as 84 parts of sulphur, which will give, in burning, 168 parts of sulphurous acid, it will be seen that the volume of this gas from a given quantity of bisulphide greatly exceeds that of the carbonic acid, and is comparatively very large. Suppose the above quantities to be in grains: as 100 cubic inches of sulphurous acid weigh 68.5 grains, the 168 grains will measure upwards of 245 cubic inches, or about one-seventh of a cubic foot, which is the volume of sulphurous acid obtainable from 100 grains of bisulphide.

The bisulphide of carbon can be burned in a common spirit lamp, and in that case the products are sulphurous acid and carbonic acid only, in relative proportion to the atomic composition of the bisulphide, as I have stated; but by a modification of the method of burning, the amount of sulphurous acid produced in a given time can be regulated to any desired extent.

It is a property of the bisulphide of carbon to dissolve in fat oils and hydrocarbon liquids, such as petroleum; so by mixing it with any one of these liquids and burning the mixture in a properly constructed oil or petroleum lamp, sulphurous acid will be generated with the other usual products of the combustion of such materials, and in proportion to the quantity of bisulphide present in the mixture of combustible liquids: any proportionate quantity of sulphurous acid can in this way be thrown into an atmosphere, and the action may be continued for any length of time.

As the sulphurous gas is generated *pari passu* during the combustion of the bisulphide, it diffuses itself in the air, which in a short time will become completely impregnated with it. In a room containing about 1300 cubic feet of air it was found that by burning 280 grains of the bisulphide the atmosphere was so far charged with sulphurous acid that it was impossible to remain in the room for more than a few seconds. In five minutes after the lamp was lighted litmus paper began to be reddened at some distance from it; in ten minutes the air had become very oppressive, and the litmus paper was reddened in the extreme corners of the room; in fifteen minutes the air was so charged with

the gas that it could scarcely be breathed, and in twenty minutes it was unbearable. In that time, as I have said, 280 grains of bisulphide were consumed in a simple single-wick lamp.

Sulphurous acid generated in this manner can be applied with facility to the disinfection of any place or object. In the case of rooms in which infectious or contagious disease has prevailed, it is only necessary to light the lamp and allow it to burn until the atmosphere has become impregnated with the gas to any desired extent, and then to remove or extinguish it just like a common spirit-lamp. In the simple form of apparatus which I suggest for this purpose, the lamp is enclosed in a metal case, about three inches in diameter and eight or nine inches high, furnished with holes near the bottom for the admission of air, and others in the top for the emission of the sulphurous gas.* This can be conveniently moved about, and placed, while the lamp is burning, in almost any locality. Receptacles for infected clothing, or the clothes or linen used in connexion with disease, or carriages which have conveyed fever or other patients, can be thoroughly purified without difficulty and with very little trouble. For the disinfection of ships, too, the lamp is particularly suitable, as it can be carried into the remotest part of a ship and burned without the least danger, and with the certainty of effecting its object completely.

It must be observed that the bisulphide of carbon is extremely volatile, having its boiling point as low as $110^{\circ} F.$; it is therefore necessary that the lamp in which it is burned should be furnished with a well-fitting screw-cap, to prevent the liquid from evaporating, and at the same time to keep its peculiar odour from escaping. This odour is often very nauseous, but the bisulphide is now manufactured by Messrs. C. Price and Co., of Thames-street, so pure, that it possesses very little smell, and can be used without the least inconvenience.

Printing-house-square.

A Mirror

OR

HOSPITAL PRACTICE,

BRITISH AND FOREIGN.

Nulla autem est alia pro certo noscendi via, nisi quamplurimas et morborum et dissectionum historias, tum aliorum, tum proprias collectas habere, et inter se comparare.—MORGAGNI *De Sed. et Caus. Morb.*, lib. iv. Proœmium.

UNIVERSITY COLLEGE HOSPITAL.

SARCOMA OF THE HARD PALATE; REMOVAL; RECOVERY.

(Under the care of Mr. CHRISTOPHER HEATH.)

PRIMARY tumours of the hard palate are not very common, and are mostly of an amyloid character. In his work on the Diseases of the Jaws, Mr. Heath refers to some cases of the kind, and also to some of epithelioma. We may note that the case of sarcoma of the palate reported in the "Mirror" of THE LANCET of April 15th, 1876, is still living, and that the patient has been able to dispense with his tracheal tube. The notes of the following case were taken by Mr. A. P. Gould, surgical registrar.

S. E.—, aged forty-eight, was admitted on August 29th, 1876. She stated that she had noticed a small lump on the hard palate since childhood, but it gave her no inconvenience until about two years ago, when it began to enlarge, and from this time it steadily grew, and soon began to interfere with her articulation. Her health had, however, always been good. There was no history of tumour in the family. The tumour filled up the hollow in the hard palate, being more attached to the left side, where the mucous membrane was continued directly over it, than on the right, where a probe could be passed between the tumour and the palate. It was about the size of a horse-chestnut, slightly lobed on the surface, elastic, but not fluctuating; the mucous membrane over it was not adherent to it, and was normal in appearance. The tumour moved

* This apparatus is made by Messrs. How and Co., of St. Bride's-street, Ludgate-circus.