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LXVII. *On the Effects of Fumigations of Oxymuriatic Acid in neutralizing the pernicious Vapours which exhale from Burying-places . By M. GIRARD, Engineer, Director of the Water-Works at Paris†.*

WHEN in 1784 the bodies were dug up which had been buried in the Cemetery *des Innocens* at Paris, those only were disturbed which lay three or four feet below the surface, but there were pits of more ancient formation lower down, the bodies in which were not yet consumed. An opening was made to the very bottom of one of these lower pits, in which the solid mason-work which supports the lower basin of the fountain of the Innocents was built. From this pit a most fetid smell was exhaled, which would have infected the whole neighbourhood if the apparatus of M. Guyton had not been resorted to. This apparatus was composed of four earthen pots, in which were mixed in the requisite proportions, sulphuric acid, oxide of manganese, and muriate of soda. The mixture was renewed every morning when the workmen began their labours, and every night when they left off, by which means the pots were left all night in the pit. Not only were the inhabitants thereby preserved from all annoyance, but none of the workmen, of whom there were one hundred, experienced the slightest accident, although the work was executed in the months of June, July, and August 1809.

In the beginning of the year 1812, the churchyard of the village of Claye, through which the canal of the Ourcq passes, was opened; and in consequence of the same pre-

* *Annales de Chimie*, tome lxxviii. p. 281.

† The serious accidents produced by cadaverous emanations when burial-places are incautiously opened, are too well known. Dr. Hagenot has published some shocking instances, and no place has been more remarkable in this respect than the churchyard of the Innocents. It appears that during the latter years of its existence as a burial-place, no less than 3000 bodies were annually deposited there. Ever since 1721, the inhabitants of the adjoining houses had called the attention of Government to the dangerous effects of this great focus of putrid infection; and in 1765 they succeeded in obtaining a decree of the Parliament of Paris, ordaining its suppression, and the removal of all places of sepulture beyond the barriers. Notwithstanding all this, in 1781, the reports made by order of the Police, and presented to the Academy of Sciences and to the *Société de Médecine*, proved that the insalubrity of the atmosphere had so increased as to occasion repeatedly in the vicinity diseases of a putrid character, and that animal food recently prepared speedily underwent a fetid alteration, and that the walls of the cellars were so impregnated as to cause pimples in the hands of those who touched them, accompanied by excoriations, &c. These effects were attempted to be removed by throwing quick-lime to the depth of six inches into the pits, but in a few days the deleterious gas burst forth again.—Note of the Editors of the *Ann. de Chimie*.

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caution being used, no accident happened, and the inhabitants were not in the least incommoded.

The same disinfecting apparatus has been employed in the works going on in the Rue Montmartre. The quarrying for the sewers and drains has been carried down to the pits which were dug in this part of Paris in the reigns of Charles VI. and Louis XIII. The filth with which these ancient cemeteries was filled, exhaled an infectious and insupportable odour; but the process of Guyton being speedily applied, no accident happened.

LXVIII. *On the Relations of Air to Heat, Cold, and Moisture, and the Means of ascertaining their reciprocal Action.* By J. LESLIE, Esq. F.R.S.E. Professor of Mathematics in the University of Edinburgh*.

“THE various phenomena of heat are most easily conceived by referring them to the operation of a peculiar fluid possessing extreme activity, and diffused through all bodies.” It constantly endeavours to maintain its equilibrium or equal diffusion among bodies, and its accumulation in any substance is generally marked by a corresponding expansion. The extent of this expansion in different bodies varies as they transmit heat more or less rapidly, or have divers conducting powers. Air is found, in like circumstances, to expand five times more than alcohol, 20 times more than mercury, 160 times more than platina, and even 580 times more than glass. The thermometer is an instrument contrived to measure its own expansions; but it can mark only the heat of its own bulb, as affected by external communication, and any further inferences drawn from its different indications are merely the result of some process of reasoning†.

“Heat combines with different substances in proportions widely varied, and depending in each on its peculiar and intimate structure. In general, it is more copious in liquids than in solids, and in the æriform fluids than in liquids. But still the allotment among the different bodies, appears to be as various as their distinctive properties. Under similar circumstances, hydrogen gas will hold or absorb ten times as much heat, as an equal mass of atmospheric air; water twice as much as olive oil, and three times as much

* Abstracted from “A View of Experiments and Instruments depending on the Relations of Air to Heat and Moisture.”

† See Tilloch's Essay on Caloric, Phil. Mag. vol. viii.