

marsh gas, 15.899 of carbonic acid, 10.187 of nitrogen, 0.081 of sulphuretted hydrogen. When atmospheric air is freely admitted, Dr. Letheby appears to think that the chief gases are carbonic acid and nitrogen. When oxidation is impeded, however, marsh gas may be formed in abundance. According to Dr. Letheby's observations, the gases evolved in the London (Eng.) sewers in 1866, were frequently fired by the candles of the sewer men, and were found to contain 88.45 per cent. of marsh gas; the formation of which he thinks was favored by the carbolic acid used in the sewers. Dr. Angus Smith's experiments are confirmatory of those of Dr. Letheby's. In London sewers of good construction, at the present time, the air is much purer. Sewer air (in some sewers in Reddington), examined by Dr. Russell, contained 20.7 parts per volume of oxygen, (very nearly as much as ordinary atmospheric air) 78.79 parts of nitrogen, and .51 parts of carbonic acid, per 100 parts. There was no sulphuretted hydrogen and but very little ammonia. On the other hand again, Parent-Duchatelet found the air of a choked sewer in Paris to contain only 13.79 per cent. of oxygen, and 2.99 per cent. of sulphuretted hydrogen. The old Parisian sewers (in 1829), in numerous analyses, contained not less than 17.4 per cent. of oxygen, 3.4 per cent. of carbonic acid, and 1.25 per cent. of sulphuretted hydrogen.

THE FOETED ORGANIC MATTERS OR VAPORS in sewage are however of much greater importance than the gases. The exact composition of these substances has not been determined, but they are carbo-ammoniacal,—compounds of carbon and ammonia. Milk and meat soon taint, and fungi grow rapidly, in air containing such effluvia. Sometimes these foetid substances are present in large proportion. Dr. Angus Smith found, for example, that the air of a house into which sewer air had found its way, destroyed twenty times as much potassiam permanganate as the same quantity of pure air. And again, 62 feet of the air of a cess-pool destroyed as much of the permanganate as 176,000 cubic feet of pure air.

THE EFFLUVIA FROM PRIVY VAULTS, and especially from the impervious cemented pits, is similar in composition to the effluvia from sewers. On account of the stagnant condition of the excreta, the air from these pest-places is highly impure, containing a large proportion of poisonous gases and organic vapors. It may be compared to that of obstructed or badly ventilated sewers; and it is