The science of public health, like other branches of knowledge, may be as much benefited by the removal of errors which stand in the way of its progress as by direct discovery; and it is with this conviction that I send for publication the result of an examination into a portion of the Registrar-General’s very valuable Weekly Returns of Deaths in London. Whilst a number of eminent authors have for a long period attributed the generality of epidemic or zymotic diseases to special poisons passing in some way from one patient to another, an active section of the profession has attributed the greater number of these diseases to a variety of general causes, and in particular has asserted that they were occasioned, or greatly aggravated, by offensive gases proceeding from putrefying materials, even though these materials did not proceed in any way from sick persons.

An opportunity is now afforded of examining this question on, as I believe, a larger scale than previously. For the last eighteen months the Weekly Returns of the Registrar-General have contained the occupations of males aged 20 years and upwards whose deaths have been registered, and at the end of each quarter of a year the aggregate results have been given in a table. The causes of death are not contained in the table; but the diseases which offensive trades are presumed to promote are such as would increase the mortality, and in fact the mortality of persons in any occupation is the best criterion of its salubrity. The entire number of males aged 20 years and upwards in the metropolis at the last census was 632,545, and the number of deaths in this division of the population, in the year and a half just expired, was 22,889, being at the rate of 241 per annum in 10,000. The number of persons aged 20 years and upwards working and dealing in animal substances was 40,004 in 1851, and the number of deaths in the last eighteen months, 1,120, being at the rate of 201 per annum in 10,000, or five-sixths as many as in the entire male population of 20 years and upwards. The greater number of persons working and dealing in animal substances are, however, occupied amongst silk, wool, and hair, which are in no way offensive; and I therefore thought it desirable to separate those trades which I believe to be really offensive, and I have included in the accompanying table all such occupations in which any death has occurred during the last six quarters. These occupations include 6,943 persons, of whom 214 died, being at the rate of only 205 per annum in 10,000, which is greatly below the mortality of the whole male population of 20 years and upwards. There are some offensive trades in which no death occurred during the last eighteen months. If these trades had been included in the table, the mortality would have been shown to be lower than it appears. Butchers, poulterers, and fishmongers have sometimes been considered to follow offensive trades; but although these persons may occasionally, by a neglect of their duty and interest, be exposed to offensive gases, their proper occupations cannot be considered offensive, and I have therefore not included them in the table.

The Registrar-General has very properly remarked that ‘As the persons engaged in various callings are distributed in different proportions through several periods of life, and as the rate of mortality depends on age, an analysis of the ages of the living and dying must be made before deductions regarding the comparative salubrity of professions can be drawn with safety.’ In comparing the mortality of a single occupation, or any group of occupations, with that of the whole population, however, one acts as if all the persons in these occupations had entered them before the age of 20; and therefore any fallacy from the above cause tells against the occupations examined, and not in their favour. For instance, according to the figures in the above table, the expectancy of life for the whole male population of London, at the age of 20 years is 41 years, or, in other words, the average duration of life in those persons would be over 61 years; whilst in the persons engaged in the offensive trades enumerated in the above table, the expectancy of life at 20 would be over 48½ years, and the average duration of life over 68½ years; but if some persons enter these trades later in life than 20 years, then the expectancy of life at 20 is greater, and the average duration of life is greater in those who have arrived at 20. The mortality amongst

the licensed-victuallers and beershop-keepers has been at the rate of 373 per annum in 10,000 during the last eighteen months; but part of this high mortality is undoubtedly due to the circumstance that a great number of persons do not enter these trades till they are advanced much beyond twenty years of age. All these facts tend to show that if the above table does not express accurately the mortality of persons engaged in offensive trades, it errs by making the mortality appear greater, and not less, than it really is. I am quite aware that, as time rolls on, the returns of the Registrar-General will afford a greater body of facts regarding offensive occupations; but, during the six quarters that have already elapsed since these returns were commenced, the results have been pretty uniform, and are, in my opinion, sufficiently important to be commented on. The health of persons employed in any occupation is necessarily the best measure of the effects of any such occupation on the public health. As the gases given off from putrefying substances become diffused in the air, the quantity in a given space is inversely as the square of the distance from their source. Thus, a man working with his face one yard from offensive substances would breathe ten thousand times as much of the gases given off, as a person living a hundred yards from the spot. Currents of air would make a difference; but this would be the average proportion of the gases inhaled respectively by the two individuals. There are, moreover, so many causes which influence the health of a neighbourhood, that it would be almost impossible to judge from that alone of the effect of trades or occupations conducted in it. I of course attribute no benefit to offensive smells; and the reason why the persons employed in the callings I am treating of enjoy a greater longevity than the average, is probably because they are less exposed to privation and less addicted to intemperance than men following many other occupations, and because, as a general rule, they do not lead a sedentary in-door life. It is sometimes argued, that since the gases given off during putrefaction are capable of causing death when in a somewhat concentrated form, they must necessarily be injurious in the most minute quantity; but this by no means follows; for carbonic acid gas, which is a well-known poison when present in large quantity, is a natural constituent of the atmosphere; vapour of ammonia is sniffed without hesitation, and even sulphuretted hydrogen is absorbed, in considerable quantities, by the visitors at Harrogate and some other watering places.

Cholera has not been present during the eighteen months for which the mortality in different occupations has been published; but there are certain facts which bear on the alleged influence of offensive trades on this disease. A great number of skin yards, bone-boiling establishments, and other offensive factories are situated in that part of Lambeth which extends by the river side from Westminster-bridge to Vauxhall-bridge, and constitutes the sub-district called Lambeth Church, 1st part. This part of Lambeth contains also many of the other conditions which are supposed to, or which really, promote the prevalence of cholera. It is crowded with a poor
population, wherever the ground is not occupied with the factories above mentioned, and it lies by the riverside, at an elevation of only two feet above Trinity high-water mark, yet the deaths from cholera in 1854 were only 29 to each 10,000 inhabitants, whilst in London at large they were 45 in 10,000; in the sub-district of Kennington, 1st part, less densely inhabited, they were 126, and in Clapham 103 in 10,000, the latter being a genteel, thinly inhabited sub-district, at the elevation of 21 feet. Again, the sub-district of Saffron-hill, with the slaughter-houses, knackers’ yards, and catgut factories of Sharp’s-alley on its eastern boundary, and the Fleet-ditch, at that time uncovered, flowing through it, suffered in 1854 a mortality from cholera of only 5 in 10,000; being one-ninth of that of the metropolis generally, and one-twelfth of that of the Belgrave sub-district, where the mortality was 60 in 10,000. These circumstances might be thought to prove a little too much, were it not that the prevalence of cholera is influenced by a variety of circumstances, and in London very much by the nature of the water supply; for in the short but severe epidemic of 1854, the chief medium of its propagation in the metropolis was water, containing whatever passed down the sewers from previous patients. The sub-district of Bermondsey, called the Leather-market, which contains a number of factories for skin-dressing, suffered, in 1854, exactly the same high mortality as the other five sub-districts in the South division of London, which, like it, were supplied exclusively with the impure water of the Southwark and Vauxhall Company. The conclusion to be drawn from all these facts is, that the vicinity of offensive factories leaves the cholera to pursue the same course that it would do in their absence.

Sackville Street, July, 1856.

Commentary: Snow’s paper on ‘offensive trades’—with the benefit of 150 years of hindsight

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The paper by John Snow about ‘offensive trades’ is little known. Its re-publication is most worthwhile, because it is a good antidote: understanding this paper, and in particular understanding its background, is a good antidote against ‘potted histories’ of epidemiology that see Snow as a lone hero who saw ‘right’ while the rest of the world erred.

The general background of the cholera debate in the middle of the 19th century in Britain has been described extensively and insightfully in 2002 by George Davey Smith, in a paper in which he clearly shows the complexities of medical progress. Several persons held opinions like Snow, often equally well reasoned. William Budd was one among the more famous contemporary medical scientists who also ascribed cholera to contaminated water, with a reasoning that came close to Snow’s—which even led Snow to issue a kind of ‘priority claim’. Others did not think that contaminated water was the complete story, but nevertheless saw some important role for water in the transmission of the disease. One such author was John Sutherland, whose work originally appeared in an appendix of a larger report about cholera in 1848–49 and was reprinted in 2002 in the IJE, together with Davey Smith’s and other commentaries. Sutherland also published tables about the