THE

RATE OF MORTALITY

IN

MANCHESTER,

AND OTHER MANUFACTURING TOWNS,

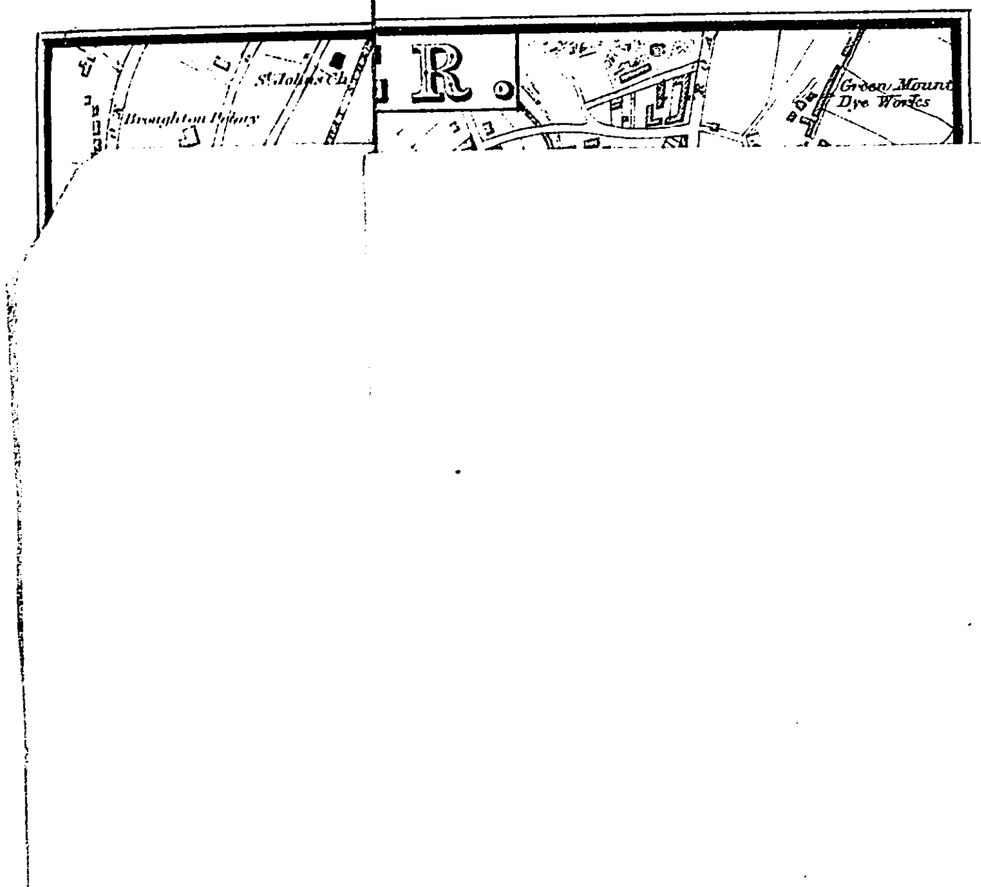
COMPARED WITH THAT OF CATHEDRAL AND COUNTY TOWNS.

BY

JAMES WHITEHEAD, M.D.

THIRD EDITION, ENLARGED.

LONDON:
JOHN CHURCHILL & SON, NEW BURLINGTON STREET.
MANCHESTER: A. IRELAND & CO., PALL MALL COURT.
1864.



1864.


MAP OF MANCHESTER.
St. John's Ch.
Broughton Priory
Methodist Chapel
Grove Terrace
Marlborough Place
The Temple
Mackland Place
Cheetham Vale
Green Mount Dye Works
CHEETHAM
Cheetwood
Stocks House
Stocks
Yew Tree Dye Works
Collyhurst
MILES PLATTING STA.
Fountain Place
Vauxhall Gardens
Engine Shed
Miles Pl
Lower Broughton
Strangeways
Broughton Bridge
R. C. Chapel
PEEL PARK
VICTORIA RAILWAY STATION
OLDHAM ROAD
MANCHESTER
OLDFIELD LANE STATION
BOLTON RAILWAY
ORDSALL LANE STATION
SHEFFIELD ST.
Chapel
Christ Ch.
ORD

The Blue Marks indicate the Rivers and Streams.

The Coloured Portions indicate the Districts, thus—1. St. George's. 2. Ancoats. 3. Market Street. 4. London Road. 5. Deansgate.

From the Author

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PREFACE.

For the purpose of ascertaining the rate of mortality of the several European populations, two methods, each differing more or less from the other in the results, have been employed, namely, by comparing the number of deaths, first, with the number of births; second, with the aggregate population. The first has been preferred by the French and other continental statisticians, the second by the English.

The relative value of these two schemes of computation for determining the sanitary condition of a community would appear to furnish matter for dispute; as English readers, unused to the first, are disposed to doubt its sufficiency for the purpose, preferring to rely rather upon that which has been adopted by the registrar-general of this country.

In the previous editions of this work, the continental method has, from a conviction of its greater accuracy, been used; and I am still of opinion, after carefully reconsidering the various circumstances calculated to affect the results in either case, that this will prove to be the more reliable of the two. As some of my friends, however, whose counsel I esteem, have kindly expressed misgivings on the subject, I have thought it expedient to explain, in a short preface to the present impression, my reasons for confiding in the original plan. Also, in order to exhibit the disparity between the one and the other method, it is purposed on this occasion to place

the issues of both in juxta-position, with an occasional comment by way of explanation when such shall appear to be called for.

In attempting to form an estimate of the relative healthfulness of different localities by means of either process, several agencies liable to vary the results should be taken into account; such, for instance, as the proportion of marriages to population, the ages at which the greatest number of marriages takes place, and the actual fecundity of the producing element, as shown by the average number of births per marriage annually, or for a given term of years; for these have a striking effect upon the death-rate and birth-rate per marriage in different communities compared with one another, although the relative proportions of births and deaths, whether high or low, furnish results equally uniform as to truthfulness in all. But that which has the effect of most disturbing the results as deduced by one of these processes, is the amount of floating population, which is both variable, and in some places large and capable of influencing the death-rate *per population* considerably, while it has but little effect upon the death-rate *per births*.

In any community where the marriage-rate is high as compared with that of any other similarly constituted body, the birth-rate will not only be higher actually in the former than the latter, but will be still higher than the disparity between the sums representing the respective marriage rates would seem to indicate. For, whenever marriages preponderate in a district as compared with the same occurrences in any other, it is found that the excess belongs chiefly to those which take place in early life, when the functional tone is the most robust and healthy—say, before the age of thirty years, and consequently embracing the period of life which is the most prolific of offspring. No two countries afford more

convenient contrasts in this respect than France and England; the disparity between the two being sufficiently striking to serve the purpose of illustration.

In the ten years ended 1860, the sum of marriages in France was 2,877,464 to a population of 37,382,225,* giving an annual percentage of ·769; while in England the total marriages in the ten years ended 1860 amounted to 1,601,731 to a population (in 1861) of 20,066,224, yielding a percentage of ·798—the excess being ·029 in favour of England.

But in France, marriage as a rule is not consummated so early in life as in England. Prudential motives, as alleged, induce men of all classes to delay this important step until, in accordance with the wise Malthusian principle, their means of subsistence shall have accumulated sufficiently to enable them to meet the exigencies of married life. In 1857 (the last year for which the *ages* at the time of marriage are stated), of 232,097 marriages, 69 per cent were contracted before the age of thirty years, and 31 per cent after that age; while in England, in 1860, of 106,285 marriages, the ages of both parties being ascertained, 79 per cent were contracted before, and 21 per cent after the age of thirty years. The respective results particularised are more conspicuously shown as follows:—

	Percentage of Marriages— Before the age of thirty years.	After the age of thirty years.
France	68·669	31·331
England	78·867	21·143

Consequently, about ten per cent more of English than of French marriages extend over the first half of the

* In educing these estimates it seemed desirable, in order to avoid confusion, to employ the sums representing the populations of the last year of the ten, instead of the average of the decennium, as these are unavoidably used in some of the processes which follow. The relations, however, will stand the same for the two peoples respectively.

child-bearing period—say from eighteen to thirty years. And seeing that the first half of married life is decidedly more fertile, in the reproductive sense, than the latter half, it follows that the average number of births per marriage will be considerably greater in one of these communities than in the other. And this is precisely what the results go to illustrate; for the percentage of births to marriages in England for the ten years ended 1860 was 4·254, while that for France in the same ten years was only 3·312, yielding an excess of natural increase of ·942 per cent on the side of England. But even this rate is below what actually takes place, for the death-rate per marriage being somewhat higher in France than in England—viz., 2·705 for the former and 2·657 for the latter; it results that, deducting the difference between the percentage of deaths and births per marriage in France (3·312—2·705) = ·607, from the same in England (4·254—2·675) = 1·579, the actual excess of natural increase in the latter country will be (1·579—·607) = ·972 per cent per decennium.

From the preceding results it is evident that the percentage death-rate as compared with births is widely different in the two countries, being for France $(\frac{2{\cdot}705\times100}{3{\cdot}312})$ 81·672, and for England $(\frac{2{\cdot}675\times100}{4{\cdot}254})$ 62·459. Hence, according to this mode of computation, the rate of mortality in France is above nineteen per cent higher than that of England, and this accords closely with the natural increase of the two populations respectively, as will be manifest by comparing the relative sums in the following statements, bearing upon the death-rate *per population*.

In France, for the ten years ended 1860, the death-rate per population was 2·323 per cent; in England, for the ten years ended 1860, it was 2·098 per cent; yielding a difference of ·225 per cent per ~~decennium~~ annum in favour of England.

The population of France in 1860 amounted to 37,383,225, having experienced an actual increase in ten years of 1,599,727, being at the rate of 4·47 per cent.

The population of England in 1861 was 20,066,224, having increased in ten years to the amount of 2,138,615, being at the rate of 11·93 per cent.

In the same decennium the number of births in France was 9,535,933, and the number of deaths 8,685,310, giving an amount of natural increase of 850,623.

In England during the decennium the number of births was 6,471,650, and the number of deaths 4,210,715, yielding an amount of natural increase represented by 2,260,935.

Now, as the *actual* increase of population in France in ten years amounted, as above shown, to 1,599,727, while the *natural* increase (*i. e.* by births) was only 850,623, it follows that the remaining 749,104 must consist of an addition from without—that is, of strangers to the soil; and, as in England the *actual* increase of population in ten years was only 2,138,615, while the *natural* increase amounted to 2,260,935, it equally ensues that 122,320 must have left the country during the time specified. So that the percentage of deaths *per population* is a fictitious estimate in both countries.

For, if the 749,104 strangers be deducted from the population of France, the death-rate per population will be 2·379 instead of 2·323; and if the 122,320 absentees be added to the English population, the death-rate will be reduced from 2·098 to 2·085, yielding a percentage excess of deaths for France over England of ·294 instead of ·225.

A still more striking instance of the fallacy of the death-rate estimate *per population* is the following:—The inhabitants of New York amounted in 1840 to 312,710, and in 1850 to 515,547, having, in the space of ten years, experienced an

increase of 202,837, or more than sixty-four per cent. No one will believe that this augmentation was due to natural increase—that is to say, to an excess of births over deaths, for that would necessitate 18·5 births per marriage in ten years, or 1·85 (*i. e.* nearly two) births per marriage per annum. Or, instead of this enormity, the death-rate must have been less than one-half per cent (*i. e.* ·44 per cent per annum), which, it may be safely affirmed, is not true of any population in the world.

All newly colonised countries are subject to the same kind of irregularity, varying in extent according to the amount of floating population introduced. After the English mode of computation, therefore, the rate of mortality of a new colony, whose increase of population is so largely influenced by the influx of healthy adults, chiefly males, will always appear lower than it really is, or than a comparison of its deaths with births would represent it to be; while that of the countries which have furnished the emigrants will appear greater, although it may be lower in reality.

There is no reason to doubt that similar fluctuations are to a certain extent constantly taking place in the several component communities of every civilised nation of the present day, and that they are witnessed among the towns and districts of Great Britain not less extensively than elsewhere.

In any population consisting of a preponderance of young families, the death-rate *per population* will always appear high in comparison with that of any other population where the opposite conditions prevail. But it does not hence follow that the causes of disease or of death are more potent in the first than in the second. The results may be mainly influenced by displacements, and by the ages and circumstances of those

engaged in the interchange. The most notable instances of local translation of families observable in this kingdom, are presented by the manufacturing as compared with the non-manufacturing districts. It is notorious that many of the families of manufacturing towns, at or about the middle period of life, are yearly retiring from business and from the vicinity of the field of their successes, to spend the rest of their lives in tranquillity in localities beyond the precincts of their early activity, It is also known that the rising generation of both sexes in these and similarly constituted communities are systematically removed for educational purposes to seminaries elsewhere. The displacement thus effected is a process of lessening on the one hand and of accumulation on the other, without any equivalent interchange. There is no compensation by a similar movement hitherward. And the individuals engaged in this loss on one side, and gain on the other, consist of the most healthy elements of the population—hale people of middle life in affluent circumstances, and of young people of both sexes who have surmounted the vicissitudes of childhood, amongst both of whom the death-rate is at the lowest. The immediate consequence is, that the census estimate of many of the small agricultural and cathedral towns, containing these migrants, will be represented by sums compared with which the rate of mortality per population, which in all places is influenced most largely by events which occur among the young producing families, commonly permanent residents, will appear to be very low, while that of the districts whence the said floating element has issued is just in the opposite condition.

It is true the manufacturing towns and districts are not without their immigrants; but these consist chiefly of young, often recently married couples, seeking a means of subsistence

for themselves and offspring; and their presence goes mainly to magnify the mortuary results *per population*, though not so *per births*.

Thus, the populations of manufacturing districts are made up much more largely of the producing classes than are those of the agricultural districts and county towns; for, besides the greater influx of necessitous families, those who retire on their gains often leave behind them a producing progeny to pursue the path delineated for them by their predecessors; and the industrial element in such communities is always comparatively large, as well as young; so that both the births and also the early deaths are more numerous here than elsewhere.

It seems evident, therefore, that to form a judgment of the sanitary condition of the manufacturing districts by a comparison of deaths to population, can lead only to erroneous results; while the death-rate, formed by comparison with births, representing as it does the events appertaining to the permanent inhabitants, cannot be far wrong. Such kind of estimate will at least have the merit of being uniform for all populations.

For the sake of further illustration, contrast the city and county of Canterbury with the town and union of Howden, in East Yorkshire, as being similarly circumstanced in two essential points, namely, in number of inhabitants and the absence of cotton manufactories, though differing geographically and socially. The population of Canterbury amounted in 1851 to 14,100, and in 1861 to 16,643, having experienced an *actual* increase in the space of ten years of 2,543 persons, equal to eighteen per cent. But its *natural* increase (*i. e.* by births in excess of deaths) was only 463—the total number of births being 3,980, and the total deaths 3,517; so that 2,080 of this augmentation must have consisted of importations—strangers to the place.

The population of Howden, in 1851, amounted to 14,436, and ten years later (1861) to 15,001, having experienced an *actual* increase during ten years of only 565, at the rate of four per cent, while its *natural* increase (*i.e.* by excess of births) was 2,418—the total number of births being 5,740, and the total deaths 3,322. Here, therefore, is observed a kind of movement very different from that which affected Canterbury; for while the population of Canterbury received an accession from without of 2,080 persons, Howden experienced an exodus of its natives, amounting to 1,853. These remarkable results may be better comprehended by a glance at the following arrangement:—

	Population 1851.	Population 1861.	Actual Increase.	Natural Increase.
Canterbury . . .	14,100	16,643	2,543	463
Howden	14,436	15,001	565	2,418

Further: In Canterbury the percentage of marriages, per population, in the same decennium was ·930, the percentage of births per marriage 2·571, and the percentage of deaths per marriage 2·272.

In Howden, the percentage of marriages during the same term of years was ·829, that of births per marriage 3·826, and that of deaths per marriage 2·214. These respective issues stand as follows:—

	Percentage of— Marriages to Population.	Births per Marriage.	Deaths per Marriage.
Canterbury .	·930	2·571	2·272
Howden. . .	·829	3·826	2·214

Thus, although the marriage-rate at Howden is ·101 per cent lower than at Canterbury, the birth-rate per marriage is 1·255 per cent more, while the death-rate stands at ·058 less.

The population of Howden, therefore, in regard to its sanitary status, is much more favourably circumstanced than that of Canterbury, seeing that out of 5,740 children born in that community in ten years, 2,418 (more than 42 per cent) were safely reared through the casualties and destructive maladies of early life to maturity; while of 3,980 born in Canterbury, only 463 (less than 12 per cent) were saved. Yet the rate of mortality per population, according to the registrar-general's figures, is in favour of Canterbury, as appears below:—

	Death-rate per population.
Canterbury	$\left(\frac{352 \times 100}{16,643}\right) = 2{\cdot}115$ per cent.
Howden.	$\left(\frac{332 \times 100}{15,001}\right) = 2{\cdot}214$ „

But this is a false representation manifestly. For if the 1,853 of the native inhabitants who left Howden during the ten years specified be added to the population of 1861; and if the 2,080 immigrants to Canterbury in the same decennium be deducted from its population of 1861—elevating the one and reducing the other each to its natural growth, their respective death-rates would be reversed, as below:—

	Death-rate per population.
Canterbury	$\left(\frac{352 \times 100}{14,563}\right) =$ 2·415
Howden	$\left(\frac{332 \times 100}{16,854}\right) =$ 1·971

These last given results, which undoubtedly represent the true state of the case on each side, hold about the same relation to each other as do those obtained by a comparison of deaths with births, as follows. The figures employed are the whole numbers for the ten years:—

	Deaths.
Canterbury . .	$\left(\frac{3,517 \times 100}{3,980}\right) = 88{\cdot}367$ to 100 births.
Howden . . .	$\left(\frac{3,322 \times 100}{5,749}\right) = 57{\cdot}875$ „

Moreover, the character and circumstances of the people engaged in these movements will doubtless have an important significance. What class of migrants would, it may be asked, be most likely to select Canterbury as a place of residence? Not, certainly, young, necessitous families in quest of employment. More probably they who resort thither consist chiefly of those retiring from active life, in search of society and repose. On the contrary. The emigrants from Howden and similar towns, as is well known, are principally the grown-up children of native residents, fitted by education for a pursuit, and sent forth to make a position for themselves elsewhere. In the first case the healthy element is augmented, and in the other diminished, by the change.