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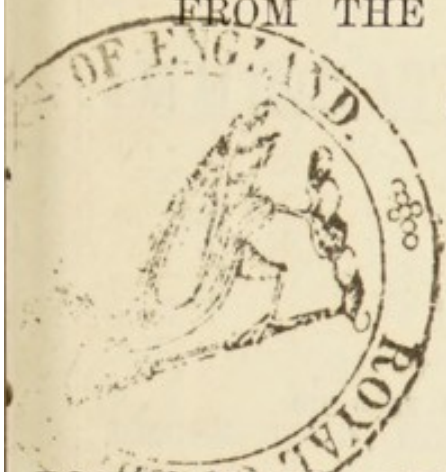


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Morgan

THE DANGER
OF
DETERIORATION OF RACE

FROM THE TOO RAPID INCREASE OF
GREAT CITIES.



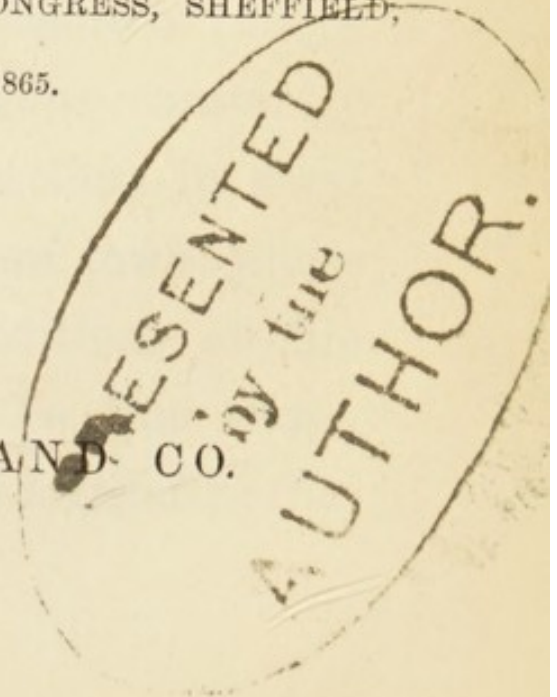
BY

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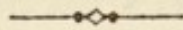
THE HISTORY OF THE
REVOLUTION OF 1688

BY
JAMES O'BRIEN

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IMMIGRATION TO LARGE TOWNS.



THOSE who have studied the distribution of the population of Great Britain during the last fifty years cannot fail to have observed an increasing tendency on the part of the labouring classes to mass together, and either to form new centres of industry or to swell the population of those already existing. The desire of raising themselves in the world keeps constantly urging vast numbers of the dwellers in rural districts to emigrate to the nearest town, where wages are higher and the conditions of life apparently more attractive. To this cause, more than to any other, is to be attributed that

extraordinary development of every branch of our manufacturing industry, which induces even the most distant nations to look to this country as to the great mart which, however varied their wants may be, can best supply them. In this national prosperity, in our successful competition with numerous rivals, and in the acquisition of immense wealth, we see much that is calculated to gratify our vanity as a people; yet at the same time arises a momentous question, 'May not nations, like individuals, curtail their day of power in the world's history, by overtaxing the physical and mental energies at their disposal, thus prematurely consuming that national life-blood on which permanent greatness mainly depends?' Among the many important subjects connected with this wide-spread migratory tendency, there is one which, to sanitary reformers, must needs prove peculiarly interesting. I refer to the influence which it is likely to exert on the public health. As Honorary Secretary of the Manchester and Salford Sanitary Association, I have had occasion to draw up weekly and quar-

terly reports on the health of Manchester; and at the same time, as Physician to the Hospital and Dispensary of Salford, I have had constant opportunities of gaining an insight into the physical condition and mode of life of that portion of our industrial poor who pass their days amid the restless turmoil of a city life. In this manner my mind has been led to the consideration of this question, and in the remarks which I am about to make, I shall have for the most part to record conclusions, not based on mere hearsay testimony, but the result of my own personal observation.

In the first place, then, in my professional intercourse with the poor, I have been much struck by the singular want of stamina which characterises them as a class, manifesting itself either in the gait, the bearing, the voice, or the frame. Instances in which the muscular system is fully developed or well-strung are remarkably rare. Few are men of that calibre from which we might expect either vigorous and healthy offspring, or arduous and sustained labour. Cases of deformity, accompanied by actual distortions,

are by no means uncommon, while minor physical defects, many of them denoting no trifling constitutional ailments, are deplorably frequent. The pulse, that faithful index of the heart, tells of a want of power in the great propelling organ. The most trivial exertion, no less than the slightest excitement, renders the variations in its beat unnatural and rapid. The irregularity of the circulation is further evinced by the coldness of the extremities, the attacks of vertigo, and the prominent and tortuous veins. The blanched lips and the colourless cheeks plainly indicate the impoverished state of the blood; while attacks of neuralgia, a quivering protruded tongue and dilated pupil, denote the absence of that well-balanced tension of the nervous system on which the easy and harmonious working of the frame so largely depends. In others, again, the teeth are no sooner developed than they begin to decay, enlarged glands protrude from the neck, the skin looks dry and parched, and the hair scanty and withered. Such is a faithful description of the great majority of the patients who solicit

medical advice at our hospitals and dispensaries. Additional confirmation of what I have stated will be found in the large number of military recruits who fail to come up to that standard of bodily fitness which the medical referees are instructed to insist upon. I have been informed by an officer specially associated with the superintendence of this service that in some of the manufacturing districts four out of every five men sent up by the sergeants for medical inspection are rejected on the ground of physical disqualification.

Let us next proceed to enquire into the causes of this degeneracy—and the extent to which it prevails; and, in so doing, let us specially consider how far it is to be ascribed to the influence of a city life. In my intercourse with the poorer classes, I have frequently interrogated them respecting their own birth-places, and those of their parents; and, in numerous instances, have been much struck by the difference in physical development between the indigenous population and those persons who have migrated into the town in adult life.

It has further appeared that—as a rule—this deterioration has, to some extent, been proportioned to the length of time which has elapsed since my patients, or their ancestors, became exposed to the lowering influences of a city life and indoor employment. I cannot help thinking that the extent to which these influences are undermining the vitality of the nation is not in general brought forward in so strong a light as the facts bearing on the question undoubtedly warrant. In examining it under a few of its aspects, it is in the first place necessary to show clearly the extent to which the tide of emigration is constantly flowing from rural districts to populous centres. This I have endeavoured to set forth in the accompanying table (see Appendix, table 1, page 53); it tells, at a glance, the composition of the four chief cities in England—London, Manchester, Liverpool, and Birmingham; the number of persons over and under twenty years of age, and the proportion of them, which, at the taking of the last census, was described as either exogenous or indigenous, is tabulated

and compared. What then are the results? First, as regards London: of the population under 20, 74 per cent. were born within the boundaries of the capital; the remainder were composed of immigrants, supplemented, though to an inconsiderable extent, by foreigners. On turning to adults, however (those who had attained the age of 20 and upwards), the proportion of aliens proved far more considerable, amounting to 53 per cent., while the natives did not exceed 46 per cent. In Manchester—the second city on my list—84 per cent. of the young were born in the county of Lancaster, but only 50 in every 100 adults. Lastly, of the grown-up population in Liverpool, no fewer than 62 per cent. were born out of the county, and afterwards settled in the town. Two important facts are directly deducible from this table; first, the extent to which our large cities are recruited by emigration, and secondly, that the great majority of the in-comers are men and women in the prime of life. Let us next turn to enquire into the sources from which this extensive alien population is derived;

and first, as regards that portion of it which is settled in London. Whence came those 864,000 grown-up men and women, on whose lives and labour the prosperity and greatness of the empire city so largely depend? The majority of them certainly did not migrate there from the great centres of industry, where their constitutions might have suffered from long hours of confinement—men of this class constitute but a small item in the alien element of the population of London. That such is the case, may be gathered from the statistics contained in my second table (see Appendix, table 2, page 54), which specifies the particular counties in which these aliens were born. We there learn that the immigrants, as a rule, are natives of the healthiest agricultural counties in England. The population of the country is divided in this table into two parts, according to the prevailing form of employment. The counties in which a large proportion of the adult population is engaged in industrial pursuits, either in connection with our manufactures, in any of their varied departments,

or in the working of mines, are classed together as the industrial counties, while the remainder constitute the agricultural. In the latter, for the most part labour is prosecuted under an open sky, while the lungs are filled with pure air; in the former, the vitiated atmosphere of confined workshops, and the return home to a narrow street, prove more trying accompaniments to a life of toil. The following thirteen counties are classed as industrial: Cheshire, Cornwall, Cumberland, Derbyshire, Durham, Lancashire, Leicester, Monmouth, Northumberland, Nottingham, Stafford, Warwick, and York. They contained in 1861 a population of 8,795,513. In the remaining 27 counties and Wales, which may be looked upon as agricultural, 8,466,722 persons were returned: thus, so far as numbers are concerned, the difference between the two divisions is inconsiderable.

My object, in thus separating the population into two classes, is, to indicate more plainly the sources from which our great cities are recruited, and the drain they maintain upon the very best

blood in the country. With a view of arriving at more exact conclusions, I have first calculated the number of adults each county supplied to the capital, and then deducted from this total the immigrant Londoners they received in return. The two last columns give the balance in favour of the metropolis; in the first, expressed in the actual numbers; in the second, in the rate of per centage. On examining the result, it appears that while the agricultural counties contributed 444,890 to this balance, the industrial did not supply more than 53,495, making together, in round numbers, half a million full-grown men and women. Over and above these English settlers, 92,819 Irish, and 30,226 Scotch, took up their abode in the great city. Hence it appears that at the reckoning of the last census there resided in London about 600,000 persons for whom no equivalent was returned to the counties which fostered them in their youth. Inasmuch as the great majority of these immigrants were natives of the healthier division of the English counties, they may be looked upon in the mass as picked lives, and,

consequently, peculiarly valuable members of any community they might select as their dwelling-place. We may readily imagine that these persons contributed, in no small degree, to maintain that comparatively favourable standard of health which has long characterised the metropolitan returns. Calculations based on the foregoing statistics, and others bearing on the same subject, have led me to the conclusion that, if London is to continue to maintain that rate of increase, and that proportion of adult citizens, which has marked her growth during the last fifteen years, she will require, in addition to the natural increase of her own population, the yearly influx of about 18,000 persons, three out of every four being represented by adults. If we estimate the natural increase of population in the country generally, at about 10 in every 1,000 living, we see readily, that in order to produce these 18,000 persons, the whole available resources of a vast country nursery, peopled by nearly two millions, must be called into requisition.

Let us next proceed to inquire into the

exogenous portion of the three remaining great cities referred to in my table (see Appendix, table 3, page 56). In Manchester (including under that term the extreme parliamentary limits of the town) the adult population amounted, in 1861, to 258,441. Of this number, 128,946, or about one half, were born out of the county of Lancaster. To this total the industrial counties contributed 52,697, while the agricultural were represented by only 16,425. Of the remainder, Ireland furnished 43,556, Scotland and Wales about 6,000 each, and London 3,879. In Liverpool, the adult population was reckoned at 157,772, of whom about 80,000 were Irish, 17,600 Welsh, and 13,835 Scotch. The English industrial counties added 29,260, while only 11,359 came from the agricultural. We gather from these tables that the sources from which the exogenous portions of the two great cities of Lancashire are derived are, in many respects, less satisfactory than those which supply the capital. Few, comparatively, of their inhabitants are natives of the English agricultural counties,

and those who are acquainted with the class of immigrants who flock into Liverpool from the other side of the Channel, are well aware that the majority of them constitute but sorry specimens of the Irish peasant. The foreign element which enters into the composition of Birmingham corresponds more nearly with that of London than either Manchester or Liverpool. For, of the 57,088 incoming settlers, 29,893 were born in the more healthy division of the English counties. In the foregoing figures we see plainly how large a proportion of the adult population of our great cities pass their early years under conditions more favourable to health, than those inseparable from crowded dwellings and indoor employment; very many, we can imagine, after having safely surmounted the diseases and dangers incidental to childhood, just at the time when their constitutions are established, voluntarily selecting a town as their future home. That their prospects of after-life are more favourable than those of the indigenous population among whom they are come to reside, will readily be conceded; and,

if granted, how, we may ask, is it possible to form a correct estimate of the comparative value of life in town and country districts, by calculating the rate of mortality in every 1,000 of the population? The country is robbed of a large portion of its productive population; men and women, in the prime of their strength, when their chances of life are the most promising, emigrate to the town; and then a comparison is instituted between the places they have deserted and those to which they have removed. The result of all such calculations must needs be fallaciously favourable to the towns.* To avoid this source of error (at least, in so far as it can be avoided), it will be necessary to confine our enquiries to that portion of the population which is least liable to be affected by immigration—in other words, to the

* In a valuable paper by Messrs. A. Ransome and W. Royston, published in the Annual Report of the Manchester and Salford Sanitary Association for the year 1863, they show that it is by calculating the mortality of that portion of the population which is unaffected by migration, that we obtain the fairest standard for comparing towns one with another, and so ranging them in the scale of health.

young. Few, comparatively, leave their homes under fifteen years of age, consequently, up to this period of life, the population of any particular place may be looked upon as tolerably stationary. In my fourth table (see Appendix, table 4, page 58) will be found the value of life, in the different counties, under fifteen. It is calculated, from the returns of the Registrar-General for the years 1860 and 1861, and relates to the agricultural counties, and likewise to the four chief cities. The former year proved favourable to health, the latter was characterised by a considerable amount of sickness. On comparing this table with the results arrived at in the annual reports for the two years where the death-rate is calculated on every 1,000 living, the difference will be found sufficiently striking. In the four great cities, instead of amounting to 26·1, it is expressed by 40·7. It was highest in Liverpool, where the average rate for the two years was 48·5; in Manchester, 42·5; in Birmingham, 39; and in London, 33. In Wiltshire it did not exceed 18; and in Berkshire, Dorsetshire, and West-

moreland, it was 18·5. As, however, according to this method of life valuation, the conditions of health were peculiarly favourable in these four counties, we shall probably obtain both a wider and a truer standard of comparison by taking the average death-rate under fifteen in the twenty-seven agricultural counties, and Wales. In the year 1860 this rate was represented by 21·4; in 1861, by 22·4; the average for the two years being 21·9. It has been already stated, that in the four chief cities it was 40·7. It would thus appear that the prospects of life are nearly twice as favourable to the dwellers in rural districts as to their brethren in the towns.

But it is possible that objections may be raised to the results obtained by this method of reckoning. They may be looked upon as conveying an overdrawn estimate of the deleterious influences incidental to a city life. It may be urged that the period of childhood is peculiarly susceptible to these influences, and that, provided only these years of probation be favourably passed, the constitution will then adapt itself to surrounding circumstances, and the

prospects of after life be as favourable as in the country. Now, admitting, for the sake of argument, that this is true—that the adult's chances of life are equally promising whether his days be passed in the city or in the country, it would still appear that were any particular town reduced to depend upon its own native population, unsupplemented by immigration from any quarter, that difference in the relative value of life which we have shown to exist at 15, would still be maintained, at whatever later age a death-rate might be calculated.

There is yet another way in which the steady drain upon the resources of the agricultural counties may be rendered apparent. In the annual report of the Registrar-General for 1860, the natural and actual increase of population in the course of the ten years from 1851 to 1861 are tabulated in parallel columns. From this table (see Appendix, table 5, page 60) we learn the extent to which the births exceeded the deaths during that time, and likewise the proportion of this surplus population which was retained in the several counties. In other

words, we are taught indirectly to what extent either emigration or immigration were respectively carried. To take an example: In Herefordshire the births during the ten years exceeded the deaths by 22,159. Accordingly, that number expresses the natural increase of population, and had this county retained all its inhabitants, the census of 1861 would have exhibited an exact agreement between the actual and natural increase. So far, however, was this from being the case, that the former did not exceed 3,490. Hence 18,669 persons must have emigrated from the county. Now, the bulk of these emigrants would be men and women in the vigour of life, while the 22,159 arrivals were exclusively young. It will be admitted, therefore, that the actual increase expressed by 3,490 was at best but a sorry equivalent for the 18,669 more valuable lives which were lost to the county. In considering the effect of emigration, it is important to remember that a given number of emigrants really represent a far greater loss of productive power to the community at large than an equal number of the

fellow-villagers they leave behind them. It is not easy to estimate the comparative value of the stationary and nomad elements in the population of the country ; but, from what we have stated, respecting the proportion of adults among the exogenous settlers in our four great cities, no less than from other statistics bearing on the same question, we are probably justified in assuming that two emigrants represent as much physical and productive vigour as any three members of the community they leave behind them. If this be true, we can readily understand that any county which merely remains stationary or retains but a small proportion of its up-growing population, does actually experience a decided diminution in its strength.

From the foregoing remarks it will readily be admitted that natural increase of population cannot be appealed to as any test of the comparative value of life in different places. This increase will, as a rule, be greater in urban than in rural districts. There are reasons for this. In the first place, marriages are more

numerous in the towns. Young men, at an earlier age, earn such a livelihood as appears to justify them in contracting matrimony. Another reason, not sufficiently taken into account in dealing with this question, will be found in the far larger proportion of adults of a marriageable age who are settled in the towns. This will be seen in my sixth table (see Appendix, table 6, page 61); the percentage of persons of the productive age (15 to 45) in the four great towns is there calculated at 49. In the agricultural counties, taken collectively, it did not exceed 42·5. In one of the counties—Suffolk—it was as low as 40 per cent.; and in several others 41 per cent. It would thus appear that there are, in the towns, about 13 per cent. more persons of a marriageable age than are to be found among the rural districts; and consequently we should anticipate that the natural increase of population would prove (at least to this extent) in favor of the towns, even though no additional inducements existed to early marriages. In this table, likewise, we obtain further confirmation of all that

has been urged respecting the lowering influence of a city life, for it shows that, notwithstanding the strength derived from the fresh blood of the immigrants, the later periods of life, spent in the city, are still unduly curtailed. Thus, in the agricultural division of the country, 20·7 in every 100 living attain the age of 45; whereas, in the four great cities this proportion is reduced to 17·5.

In the next table (see Appendix, table 7, page 63), the marriage and birth-rates for the years 1860 and 1861 (in the four cities) are compared with those in the agricultural counties. It shows unmistakably, that natural increase of population is materially influenced by different conditions of life. We find, for example, that in Manchester the average number of marriages was (in the years 1860 and 1861) 18·5 in every 1,000 of the population, whereas there are some counties (such as Hertford) in which the rate did not exceed 5·8. On the assumption that the fecundity of the population would bear a certain fixed ratio to the number of marriages, we should anticipate a propor-

tionably wide difference in the birth-rate of the two places. Such however is not the case—for in Manchester the average number of births was 37·5; in Hertford, 30·5. In other words, while the marriages in the city were nearly fourfold more numerous than in the agricultural county, the births there only exceeded the latter by about one-sixth. In Manchester there were but two children to every married couple; in Hertford, five.

The question I am discussing, bearing as it does on the effects of a city life, is the more important, from the manner in which our large towns are steadily, and with increasing strides, gaining upon the country districts, year by year absorbing a larger share of the population. At the end of the 17th century, the dwellers in the former were estimated at 1,400,000, and those in the latter at 4,100,000. In 1861—according to the Registrar-General, the number of persons living in populous towns amounted to 10,930,841, and those in small towns and country districts to 9,134,386. We thus see that the proportion of the population still

distributed over the more open districts of the country has, during the last 150 years, decreased from 74 per cent. to 44. But it is comparatively lately that the encroachments of the large towns have become excessive. For while, in the ten years from 1851 to 1861, small towns and country districts increased at the rate of only 3·9 per cent., our populous cities added nearly 17 to every 100 of their population.

Let us next turn to consider some of the more prominent causes of enervation, which seem peculiarly associated with a residence in the city, and render life there a constant season of danger and temptation. Three of them—vitiating air, constitutional syphilis, and the abuse of alcohol—I am disposed to look upon as the most distinctive, and at the same time, the most fatal. In varying proportions, whether combined or alone, these may be looked upon as the fruitful parents of that grim array of blighting diseases, which under the Protean form of scrofula, prove such apt reapers in the harvest of death. The first indeed would appear well-nigh inseparably connected with the con-

gregation of vast numbers within the boundaries of a crowded city; while the two last, though originating in the vicious courses of individuals, are not confined in their consequences to the guilty sufferers, but are passed on to the offspring, and thus become, year by year, more generally diffused among the great mass of the people. In the stealthy and frequently unseen manner in which they are all followed by more or less serious effects, a certain similarity may be traced between them. It is for this reason, that the ravages they commit are comparatively rarely assigned by the registers of death to their true origin, but are generally attributed to diseases which merely set the last seal to a life of misery. I propose now to consider briefly a few points connected with these three great causes of city degeneracy—and, with a view of arriving at more accurate conclusions, will take them separately in the order in which they occur. And first, as regards Vitiated Air. What are the atmospheric conditions under which life is passed in our crowded cities? How far do they differ from those

which prevail in the surrounding districts of open country? It is to be lamented that so little attention has been devoted to this subject. In the weekly returns of the Registrar-General, we obtain no information respecting the nature of the climatic changes by which the capital is affected. The meteorological observations appended to these returns are taken at Greenwich Observatory under conditions widely differing from those surrounding the population domiciled in St. Giles'. During the prevalence of many winds the air at Greenwich blows as fresh and as pure as though the Observatory were situated in the very centre of the country, far removed from the disturbing influences of smoke and fog. But though the statistics bearing on this question are scanty, they are still amply sufficient to prove that the air in the centre of our populous cities is not such air as the country can boast of. It differs in temperature, and it differs likewise in chemical composition.

The meteorological returns of the Manchester and Salford Sanitary Association supply infor-

mation on the subject of temperature. The observations which it publishes are taken both at the Royal Infirmary (in the centre of Manchester) and at several suburban and outlying stations. On comparing results, it appears that the range of temperature recorded at the former is very much narrower than at any of the latter. Thus, during the months of November, December, January, and February, the mean and lowest readings at the central station are considerably higher than in the surrounding districts. On the other hand, in May, June, July, and August, the latter are considerably warmer. The contrast between the two sets of observations is remarkable, and in proportion as the state of the temperature inclines more to one or other extreme, either on the side of heat or cold, so is the difference greater than in more moderate weather. In the following readings a few of these differences are pointed out. On the ten coldest days observed in the course of the last four years, the mean of the lowest thermometric readings at Old Trafford (one of the suburban stations) was 15·2. At the Infirmary

on the same days it was 23·7, or 8·5 degrees higher. Again, in the four summer months of last year, the mean of the highest observations at the former station was 73·9, at the latter 68·4; exhibiting a difference of 5½ degrees. These stations are separated by an interval of little more than two miles. It is difficult to estimate the significance that ought to be attached to such differences of temperature. Their true importance probably lies in the fact that they are certainly due to artificial production. Such an atmosphere, therefore, must be largely contaminated by organic and chemical impurities. A murky mass hangs like a shroud over the city—a dismal list of noxious gases is so intimately diffused throughout the air that neither can the earth's heat radiate into space nor the warm beams of the summer's sun thoroughly dissipate the suspended canopy. We have already observed that these atmospheric differences are not confined to temperature alone, but extend likewise to chemical composition. A remarkable proof of this is afforded in the absence of ozone in some of our cities.

The most experienced meteorologists have failed to detect this substance in the centre of Manchester. In the immediate neighbourhood—on the very confines of the city—it has been obtained in considerable quantities. My own observations in this matter entirely confirm the experience of others. In this simple fact we possess evidence of an important change, for, though we understand little regarding the effects of ozone on the human system, the preponderance of testimony is certainly in favour of these effects being invigorating and tonic. We know, for instance, that in many places in which the proportion of ozone in the atmosphere is unusually large, there likewise the health of the people is peculiarly favourable. Such is the case in the western isles of Scotland, where the quantity of ozone is the highest recorded.

In a valuable paper on the air of towns, Dr. Angus Smith refers to the acidity of the atmosphere—another proof of chemical impurity. In his earlier observations on the rain, he appears to have alluded to its alkaline reaction. This opinion was based on experiments con-

ducted in the open country. 'Of late years,' he observes, 'I have found no alkaline rain in any portion of what is actually the town. The amount of acidity is such as to colour blue litmus paper at once—one drop falling on the litmus at once colours it. One may by this very simple means obtain a very clear idea of the extent to which the air is deteriorated by smoke from coals containing sulphur.' In another place, in referring to the organic impurities diffused through the atmosphere, Dr. Smith remarks that 'we have in different air, breathed by people in the same county, a substance, the amount of which in one case is 22 times greater than in the other, and in air breathed by people in the same town a difference which is as 9 to 22;' and he further observes 'that in the district in which the highest numbers were obtained, there were in 1855 4·5 deaths in the hundred, while the average is 2·2.'

Let us next turn to consider the second great cause of enervation which prevails among the masses of our populous cities—Constitutional

Syphilis. It is not easy to estimate the extent to which this baneful and contaminating disorder is generally disseminated. On this question we learn little from registers of mortality. Actual death comparatively rarely results either from the directly contracted or inherited form, and even when it does, its true origin is often ascribed to some more innocent cause, less calculated to wound the feelings of surviving relatives. But though registers are silent, we may learn much from disease returns. In the tables of the Manchester and Salford Sanitary Association a column is devoted to this affection. We there learn that in the course of the two years, 1863 and 1864, 3,217 new cases of constitutional syphilis were observed in that portion of the public practice of Manchester from which the returns of the Association are derived. About 800 more were relieved at the Lock Hospital. In addition to these cases, all duly certified, and amounting in the aggregate to upwards of 4,000, no fewer than 7,388 patients were returned as having suffered from various forms of skin disease. From what I have seen

of these unclassified cases, and from the difficulty frequently felt in deciding on their origin, I believe I am justified in assigning a considerable proportion of them (probably as many as one-fourth) to syphilitic contagion. If these statistics are deserving of credit, it would appear that in the course of only two years, about 6,000 of the poorer inhabitants of Manchester suffered from well-marked symptoms of syphilitic infection; and numerous as the cases were, it must be remembered that they were exclusively confined to those seen in public practice, and therefore constituted but a small proportion of those which occurred among the remaining classes of the population. Moreover, the cases attended by the medical officers to the many sick and benefit societies find no place in these returns. If we consider the abiding consequences too often associated with this disease, and the insidious manner in which it is liable to be passed on to the offspring, leaving an impress on the constitution which even several generations cannot wholly erase, we shall see good grounds for

believing that, wherever the blood of the community is extensively contaminated by this poison, there likewise fears may be entertained respecting the future vigour of the race.

The third great cause to which I have ascribed a threatened deterioration of the public health will be found in alcoholic excess. I refer more especially to the cases in which parents (and particularly the mother) become addicted to the habit of spirit-drinking. It is here that the offspring is liable to suffer, for as the nervous temperament of the weaker sex is more susceptible than that of the male, so is any undue stimulus apt to be followed by more abiding exhaustion. There are grounds for believing likewise that the subjects of intemperance whose employment is sedentary and confined fare worse than their brethren in the country. Exercise, and labour under an open sky, prove the best correctives to alcoholic indulgence; hence, probably, the city mechanic succumbs more readily, and at an earlier age, to his intemperate habits than the agricultural labourer. In the latter class, likewise, intoxi-

cation among women is comparatively rare. As a general rule, they lack the means of indulging in this kind of excess. Very different are the opportunities of the industrial operative. Young girls at an early age earn wages which, while they enable them to dispense with parental support, render them at the same time independent of parental authority.

I have now touched upon the three great causes which my intercourse with the working classes has forced upon my mind as contributing in varying degrees to that lowered standard of the public health which I have spoken of under the ominous title of 'deterioration of race.' Though not wholly absent from the open districts of the country, their bad effects are there counteracted by more wholesome influences, which prevent their being handed down as an abiding legacy to the offspring. Thus, though it is a notorious fact that the cottages of our agricultural labourers are frequently crowded to excess,—though whole families are promiscuously huddled into a single chamber,—

nevertheless these people, as a class, grow robust, and they do so in a great measure because the air outside their dwellings, that air which they inhale, when the play of the lungs is exalted by labour, is fresh, pure, and invigorating. With the mechanic and operative the case is different. During his hours of labour and his season of repose, within doors no less than without, he breathes constantly an adulterated atmosphere.

There is one class of our industrial population to whom in-door employment, in connection with bad air, proves peculiarly trying. I refer to the married women. All experience shows that the maternal duties cannot be efficiently carried out, either towards the husband or offspring, so long as the mother of a family is separated from her home from morning till night. In the manufacturing districts the women frequently continue at full work till immediately before the birth of their children, and return to their employment as soon as convalescence is fairly established. As the wages are regulated by the work done, the

incitement to exertion is necessarily great. In this manner the infants are neglected, and their rearing entrusted to persons little interested in their welfare. Nor are the injurious consequences confined to the children alone. In many cases they speedily react on the health of the mothers, for, under such circumstances, by a well-established physiological law, the births will frequently succeed each other with unnatural rapidity, and by unduly taxing, prematurely undermine, constitutional vigour. The remarks I have made on the lower tone observable in our industrial classes appear to derive some confirmation from what has been spoken of as 'the altered type of disease.' Is it not possible that, in the course of the last fifty years, the persons who are the subjects of disease rather than the diseases themselves, have undergone a change? In dealing with this question we must never forget that the experience of the great leaders of medical opinion is derived almost exclusively from that field of practice which is seen among the wards of a city hospital; and certain it is, that among patients of this

class the treatment and remedies at one time in vogue are now justly condemned. But is such a change in the practice of medicine equally called for in those favoured districts of the country where the people still retain primeval vigour, and no signs of decay have as yet assailed the human form? I believe not. While residing for some years in one of the western islands of Scotland, I enjoyed peculiar opportunities of observing life passed under conditions singularly favourable to the rearing of a robust and hardy race of men. Those conditions differ in almost every particular from the more stirring existence of the city mechanic. The natives of these islands are exposed to all the vicissitudes of the weather; their diet is simple, though nourishing; their houses, however deficient in cleanliness, are thoroughly ventilated; and the air, tempered in its passage over the gulf-stream, derives new and invigorating properties from the vapours of the Atlantic. These differences were strikingly reflected in the prevailing diseases, and might best be read in the more sthenic character of the inflammatory class.

Pneumonia, croup, and various other maladies, ran their course so rapidly, and accompanied by such intensely distressing and urgent symptoms that I was reluctantly forced to suspend my faith in restorative medicine and the lessons acquired in a London hospital, and to adopt boldly the three great remedies handed down from the past,—depletion, antimony, and mercury. Among the vigorous and hardy, attacks of sickness are generally rare, but they are decided and acute. Among the enervated and ailing they are abiding and chronic.

In the foregoing pages, after endeavouring to show that vast numbers of the people of this country pass their lives from their cradles to their graves under conditions incompatible with high physical vigour, I have proceeded to glance at a few of the more prominent causes on which they appear to depend. The practical question still remains,—what steps can be taken to prolong the duration and brighten the prospects of a city life?

In considering this question, we are reluctantly forced to admit that, much as sanitary

improvements may accomplish, they still never can render a populous town as favourable a dwelling-place as a country village. The system of drainage may be complete, but even the most perfect sewers traversed by water largely charged with noxious gases will absorb, and in certain states of the atmosphere will give out exhalations, detrimental to health. So too long rows of coal-consuming chimneys will adulterate the air with the products of their combustion. Valuable as are the measures calculated to mitigate these evils, disappointment will follow if we expect entirely to remove them.

With this caution I will proceed to offer some suggestions on measures calculated to remedy a few of the evils I have specified. Not that these particular measures are, in any respect, more important than many others to which the labours of our great sanitary reformers have so zealously and profitably been directed; but because their utility has not as yet been fully appreciated, nor steps taken to carry them into effect. Such are, in the first place, more accurate observations

respecting atmospheric changes taken in the midst of densely populated districts. I believe such observations would clearly prove, that if a population is to be maintained in a state of vigour, there are certain limits—both in respect to the contiguity of dwellings to each other, and the crowding of their occupants—which, be the counteracting influences what they may, cannot with impunity be transgressed. There are districts in Manchester and even populous districts, in which the death-rate is invariably far more favourable than in others which immediately adjoin. I refer especially to Broughton and Chorlton. The chief causes (so far as I have been able to discover) of this comparative immunity are to be traced to a less condensed and more prosperous population, straighter, wider and lower streets, and a general absence of that labyrinthiform arrangement of courts and alleys, which fever and dysentery so continually haunt. In these quarters of the town the lower strata of the atmosphere are not permitted to stagnate, while the streets, which in many cases intersect each other at right angles, are swept and purified

by the passing winds. Now if it be true that an efficient system of street ventilation is followed by such favourable results, should we not be emboldened to open up those densely populated districts which at present constitute such unfailing nurseries of disease; and to regulate, even by stringent measures, the height and width of all streets which may hereafter be constructed? An important mode of relieving the extreme pressure which now weighs upon our great cities, a pressure which the clearances we have advocated might still further increase, would be found in the establishment of an efficient system of emigration. In considering this question, however, we must never forget that the interests of the mother-country, and those of the colonies are directly opposed in respect to the class of persons whom it would be desirable to select. It is to the advantage of the colony to obtain men and women of high physical vigour—in the very pride of their strength. These, however, are the very persons whom the mother-country can least afford to part with. To them she looks as to those on

whose thews and sinews she must rely to fight her battles, and to increase her wealth. It is to her interest on the contrary to send out her used-up town population, those most enervated by the trying ordeal of a city life ; and who, so long as they remain at home among the associates and temptations which led to their ruin, may be looked upon as fallen wellnigh beyond the hope of return—nothing would be more calculated to infuse fresh blood into the veins of such persons as these, and to give them a fresh start in the battle of life than the invigorating change of a sea-voyage, and the more healthy influences of a new world. The beneficial effects of emigration were strikingly manifested at the time when famine pressed heavily on certain portions of the highlands of Scotland. During that season of distress, the landlords, in many cases, assisted their tenants to emigrate, while several of the colonies voted large sums of money towards the expenses of those who might be willing to select their shores as a future home. As might readily be anticipated, the agents of the latter

sent out a far more valuable class of persons than those selected by the proprietors of the soil. It was soon found, however, that the improvement among the inferior emigrants was decided and rapid, and such is the marvellous elasticity of the human frame, that even in the case of the most abject outcasts of our great cities we might anticipate with confidence a change for the better, a change which would in time render them a valuable acquisition to the colonies which might receive them. Would not the relief funds of a Union be more profitably expended in encouraging emigration in persons of this class, and in giving them assistance of a permanent character than in pensioning them at home, and thus making them the slavish recipients of pauper charity?

There is another direction likewise in which much might be done to curtail the catalogue of city diseases: I refer to the establishment of effective measures to check the spreading of infection. In investigating the outbreaks of several epidemics, I have been much struck by the manner in which diseases of this class

radiate from centres—frequently, at first, from a single centre; after a while from many. This is especially true of typhus-fever. Scarlet-fever is another disease very largely attributable to direct contagion; but, though this is a fact very generally admitted, we neglect some of the most obvious precautions to check its diffusion! In the course of the last two years this variety of fever has carried off, in Manchester alone, about 2,500 persons, while the total number of cases cannot have fallen short of 20,000. If we consider how numerous are the instances in which the after-consequences of this disease are both abiding and serious, we are well entitled to insist upon the extent of the evil; and yet, were special institutions for the reception of such cases established in various quarters of our populous cities, it is impossible to doubt that many valuable lives might have been saved, and a vast amount of sickness entirely avoided. The same remarks apply to small-pox. In a late report on the health of Manchester, I have estimated the number of persons who were

attacked by this disease in that city and Salford (in the course of the last two years) at about 6,000. If we consider that small-pox and scarlet-fever are affections of that class to which persons are only subjected once during their lifetime, we are forced to admit that the foregoing estimates are certainly striking; but, though striking, I am disposed to believe that, compared with other great cities, they would not be found singular, were such statistics as Manchester possesses available for enquiry. My experience in analysing the disease-returns of the Manchester and Salford Sanitary Association convinces me that, if we would enlarge our acquaintance with many interesting problems connected with the public health, we must no longer confine our enquiries to the registration of deaths, but extend them to returns of disease. Such statistics have, for several years, been successfully collected by the Manchester and Salford Sanitary Association; no fewer than twenty-eight members of the medical profession, connected with the poor-law unions, the hospitals, the workhouses, and gaols, unite

in furnishing weekly returns respecting the number and nature of the new cases of disease which may come under their own personal observation. In addition to these tabulated statistics, they frequently specify the particular houses infected by contagious diseases, the causes which appear to excite them, and other interesting points bearing on the public health. A return, with a summary drawn up by the honorary secretary, is published at the end of the week, and inserted in the daily papers. In this manner, the very first outbreak of an epidemic, and the quarter in which it may appear, are speedily noted; while the amount of sickness which prevails among a population of nearly half-a-million may be read at a glance. On the intensity which some of the more formidable diseases assume during different epidemics, and on the localities they select as their most congenial haunts, much interesting information is accumulating in these returns; the more interesting, from the little attention these questions have hitherto received. They are valuable, likewise, as

enabling us to compare the sanitary shortcomings of different places. To take an example: disease-returns for a metropolitan district, corresponding to those of the Sanitary Association, were collected and tabulated by the late Dr. R. D. Thomson; on comparing the two sets of observations, it has been found that the law of diffusion which characterises the distribution of some of the more ordinary maladies in London and in Manchester differs materially. Thus, while diarrhœa is invariably more general in the metropolitan parish of Marylebone, bronchitis, and kindred affections of the chest, predominate in the North. The impurity of the water distributed by the metropolitan companies, as compared with the Manchester supply, points to this important necessary of life as the probable cause of alimentary disturbance; while the bronchial irritation with which Manchester is affected seems referable either to more trying climatic influences, or to the more extensive contamination of the air by the products of combustion.

To sum up the foregoing suggestions, we may say that on some subjects accurate and more general observations are urgently called for; such as those relating to the composition and temperature of the atmosphere, not taken in airy suburbs, but in centres of industry, where men and women are congregated together. So likewise in addition to what the registers tell us respecting the result of every man's last illness, we require to know the nature and extent of the invaliding which precedes it; and such information we can only obtain from disease returns. So, too, if we would set a check on those maladies which are truly preventible, we should organise special wards for the reception of all sufferers from contagious diseases, and retain our patients until convalescence is established. We must likewise supply more accommodation at our Lock hospitals, and adopt stringent measures for preventing the class of patients who attend from becoming a general source of infection. The employment of married women also, more particularly when they are the mothers of young children, should

in every way be discouraged. Schemes of emigration, specially calculated for the relief of the mother country, should be brought into operation. Settlements along the railways should be established for the working classes, with special cheap trains at early hours in the morning and at breaking-up time in the evening. Cellar dwellings should be closed up, courts and alleys cleared out, and the sites which they occupied left open to serve the double purpose of air-shafts and play-grounds; streets also should be widened, factories and workshops, instead of being piled up in the centre of our towns, should be scattered over the country in airy and healthy localities. If these suggestions are in any degree practicable, and if the importance I have attached to them is not overdrawn, it will be admitted that they can neither be too often nor too urgently pressed on those who have the power of enforcing them.

APPENDIX.

APPENDIX.

TABLE I.

Showing the Number of Immigrants, under and over 20 years of age, in the Four great Cities.

	Total Population		Natives		Immigrants		Native Percentage		Immigrant Percentage	
	Under 20	Over 20	Under 20	Over 20	Under 20	Over 20	Under 20	Over 20	Under 20	Over 20
London . . .	1,186,059	1,617,930	889,795	753,371	296,254	864,559	74	46	25	53
Manchester . . .	201,987	258,441	169,579	129,495	32,308	128,946	84	50	15	49
Liverpool . . .	193,268	250,670	154,091	92,898	39,177	157,772	79	37	20	62
Birmingham . . .	88,382	114,239	79,508	57,151	8,874	57,088	89	50	10	49
Total . . .	1,669,696	2,241,280	1,392,973	1,032,915	376,613	1,208,365	83	46	16	53

TABLE II.

Showing the exogenous Population of London.

INDUSTRIAL COUNTIES.

	Adults	Emigrants to London	Immigrants from London	Balance in favour of London	Per- centage
Cornwall . . .	290,876	9,359	1,091	8,268	2·8
Stafford . . .	400,663	7,718	5,480	2,238	·05
Warwick . . .	305,673	14,491	7,428	7,063	2·2
Leicester . . .	132,587	5,900	1,291	4,609	3·4
Nottingham . . .	176,435	5,493	1,707	3,786	2·1
Derbyshire . . .	160,516	4,363	1,471	2,892	1·8
Cheshire . . .	256,628	3,046	2,633	413	·016
Lancaster . . .	1,346,203	13,886	12,659	1,227	·009
York . . .	1,089,531	21,582	8,654	12,928	1·1
Durham . . .	280,976	5,271	2,418	2,853	1·5
Northumberland	185,150	5,636	1,780	3,856	2·
Cumberland . . .	111,889	2,800	561	2,239	2·
Monmouth . . .	105,048	1,941	808	1,123	1·
Total . . .	4,842,175	101,486	47,981	53,495	1·4

TABLE II.—*continued.**Showing the exogenous Population of London.*

AGRICULTURAL COUNTIES.

	Adults	Emigrants to London	Immigrants from London	Balance in favour of London	Per- centage
Bedford . . .	73,516	8,134	1,568	6,566	8·
Berkshire . . .	112,169	22,889	4,297	17,592	15·
Buckingham . . .	78,534	17,027	2,671	17,356	18·
Cambridge . . .	96,739	13,817	1,682	12,135	12·
Devon . . .	229,539	37,828	6,006	31,822	13·
Dorset . . .	99,536	10,426	1,642	8,784	8·
Essex . . .	202,173	56,733	13,547	43,186	21·
Gloucester . . .	247,359	23,357	5,785	17,572	7·
Hants . . .	253,391	32,101	11,891	20,210	7·
Hereford . . .	60,469	5,556	981	4,575	7·
Herts . . .	94,653	23,811	3,979	19,932	21·
Huntingdon . . .	30,782	4,393	530	3,863	12·
Kent . . .	299,772	61,170	18,735	42,435	14·
Lincoln . . .	216,715	11,669	2,101	9,568	4·4
Middlesex . . .	103,800	23,418	14,330	9,088	8·
Norfolk . . .	236,840	35,556	3,215	32,341	13·
Northampton . . .	124,672	10,867	2,197	8,670	7·
Oxford . . .	92,673	14,731	2,215	12,516	13·
Rutland . . .	12,799	952	152	800	6·3
Sussex . . .	200,320	27,660	11,730	15,930	7·
Shropshire . . .	144,284	6,167	1,164	4,003	2·7
Somerset . . .	252,744	31,232	3,986	27,256	10·
Suffolk . . .	179,985	35,409	2,965	33,444	18·
Surrey . . .	155,577	32,606	17,144	15,462	10·
Westmoreland . . .	33,427	1,035	235	800	2·3
Worcester . . .	159,465	6,714	2,170	4,544	2·8
Wilts . . .	127,019	21,180	1,820	19,360	15·
South Wales . . .	375,026	6,784	2,561	4,223	1·1
North Wales . . .	228,186	3,921	944	2,977	1·3
Total . . .	4,522,164	587,143	142,243	444,890	9·1

TABLE III.

Showing the exogenous Population of Manchester, Liverpool, and Birmingham.

	Immigrants from the Industrial Counties	Immigrants from the Agricultural Counties	Immigrants from Ireland	Immigrants from Scotland	Immigrants from Wales	Immigrants from London
Liverpool . . .	29,260	11,359	79,035	13,835	17,680	4,707
Birmingham . .	16,875	29,893	8,312	824	1,052	3,196
Manchester . . .	52,697	16,425	43,556	6,449	6,257	3,879
Total	98,832	57,677	130,903	21,108	24,999	11,782

TABLE IV.

Showing the Death Rate in Persons under 15 in the Four great Cities.

	Number of Persons under 15		Deaths in Persons under 15 in		Death Rate per 1,000 under 15		Average for the Two Years		Death Rate per 1,000 living		Average for the Two Years	
	1860	1861	1860	1861	1860	1861	1860	1861	1860	1861	1860	1861
London . . .	926,904	32,646	30,208	32,646	32	34	22	23	22	23	22	23
Manchester . . .	83,038	3,946	3,230	3,946	38	47	28	30	28	30	29	29
Liverpool . . .	87,774	4,689	3,619	4,689	41	56	28	32	28	32	30	30
Birmingham . . .	67,533	2,849	2,401	2,849	35	43	22	24	22	24	23	23
Total . . .	1,165,249	44,130	39,458	44,130	36	45	25	27	25	27	26	26

TABLE IV.

Showing the Death Rate in Persons

Counties	Number of Persons under 15	Deaths in	
		1860	1861
Surrey . . .	92,363	1,919	1,971
Kent . . .	193,490	4,157	5,023
Sussex . . .	131,501	2,640	2,540
Hants . . .	159,564	3,225	2,990
Berks . . .	74,150	1,479	1,421
Middlesex . . .	66,755	1,464	1,404
Herts . . .	65,826	1,479	1,299
Buckingham . . .	54,819	1,201	1,489
Oxford . . .	62,268	1,289	1,278
Northampton . . .	84,349	2,263	2,271
Huntingdon . . .	22,417	497	586
Bedford . . .	52,518	1,366	1,247
Cambridge . . .	66,652	1,606	1,886
Essex . . .	142,355	2,886	3,916
Suffolk . . .	124,172	2,654	2,910
Norfolk . . .	150,262	3,885	4,361
Wilts . . .	86,230	1,664	1,492
Dorset . . .	64,920	1,317	1,132
Devon . . .	201,735	4,256	4,216
Somerset . . .	165,093	3,097	3,390
Gloucester . . .	153,158	3,269	3,861
Hereford . . .	36,155	655	734
Salop . . .	91,107	2,184	2,284
Worcester . . .	107,370	2,395	2,642
Rutland . . .	8,514	159	166
Lincoln . . .	147,346	3,444	3,619
Westmoreland . . .	21,683	431	394
South Wales . . .	234,360	6,548	6,430
North Wales . . .	147,104	3,543	3,383
Total . . .	3,008,236	66,972	70,335

*continued.**under 15 in the Agricultural Districts.*

Death Rate per 1,000 under 15		Average for the Two Years	Death Rate per 1,000 living		Average for the Two Years
1860	1861		1860	1861	
20·	21·	20·5	17·	17·	17·
21·	26·	23·5	18·	19·	18·5
20·	19·	19·5	18·	18·	18·
20·	18·	19·	19·	17·	18·
19·	18·	18·5	19·	18·	18·5
22·	21·	21·5	19·	19·	19·
24·	21·	22·5	19·	18·	18·5
21·	27·	24·	19·	20·	19·5
20·	20·	20·	19·	18·	18·5
26·	26·	26·	21·	21·	21·
22·	26·	24·	18·	20·	19·
26·	23·	24·5	20·	19·	19·5
24·	28·	26·	19·	21·	20·
20·	27·	23·5	18·	19·	18·5
21·	23·	22·	19·	20·	19·5
25·	29·	27·	21·	22·	21·5
19·	17·	18·	20·	17·	18·5
20·	17·	18·5	18·	16·	17·
21·	20·	20·5	19·	18·	18·5
18·	20·	19·	19·	19·	19·
20·	25·	22·5	19·	20·	19·
18·	20·	19·	19·	19·	19·
23·	25·	24·	21·	20·	20·5
22·	24·	23·	18·	18·	18·
18·	19·	18·5	19·	17·	18·
23·	24·	23·5	19·	19·	19·
19·	18·	18·5	19·	17·	18·
27·	27·	27·	21·	20·	20·5
24·	22·	23·	22·	20·	21·
21·4	22·4	21·9	19·1	18·9	19·

TABLE V.

Emigration and Immigration from 1851 to 1861.

Counties	Excess of Births over Deaths	Actual Increase or Decrease	Emigrants	Immigrants
Surrey . . .	26,323	70,743	—	44,420
Kent . . .	61,720	60,251	1,469	
Sussex . . .	40,853	27,232	13,621	
Hants . . .	47,287	54,608	—	7,321
Berks . . .	20,820	6,411	14,409	
Middlesex . . .	15,640	36,719	—	21,079
Herts . . .	22,159	3,490	18,669	
Bucks . . .	17,506	3,552	13,954	
Oxford . . .	19,731	986	18,745	
Northampton . . .	30,149	17,235	12,914	
Huntingdon . . .	8,349	- 1,182	9,531	
Bedford . . .	18,669	10,674	7,995	
Cambridge . . .	23,618	-10,209	33,827	
Essex . . .	42,802	35,575	7,227	
Suffolk . . .	40,993	- 727	41,720	
Norfolk . . .	43,962	- 6,350	50,312	
Wilts . . .	25,685	- 4,909	30,594	
Dorset . . .	21,267	5,098	16,169	
Devon . . .	56,534	20,074	36,470	
Somerset . . .	47,886	979	46,907	
Gloucester . . .	43,005	24,021	18,984	
Hereford . . .	8,915	7,676	1,239	
Salop . . .	24,727	10,905	14,822	
Worcester . . .	37,174	36,220	954	
Rutland . . .	3,040	- 793	3,833	
Leicester . . .	53,291	3,902	49,389	
Westmoreland . . .	8,794	2,559	6,235	
Total . . .	810,899	438,910 -24,170	469,989	72,820

TABLE VI.

Percentage of Productive and Unproductive Population.

Towns	Percentage of Unproductive Persons		Unproductive	Productive
	Under 15	Over 45		
London .	33·	17·	50·	49·
Manchester .	34·	16·	50·	49·
Liverpool .	32·	17·	49·	50·
Birmingham	31·	20·	51·	48·
Total .	32·5	17·5	50·	49·

TABLE VI.—*continued.**Percentage of Productive and Unproductive Population.*

Counties	Percentage of Unproductive Persons		Unproductive	Productive
	Under 15	Over 45		
Surrey . . .	34·	18·	52·	47·
Kent . . .	35·	20·	55·	44·
Sussex . . .	38·	18·	56·	43·
Hants . . .	34·	20·	54·	45·
Berks . . .	36·	21·	57·	42·
Middlesex . . .	36·	21·	56·	43·
Herts . . .	37·	20·	57·	42·
Bucks . . .	37·	21·	58·	41·
Oxford . . .	36·	21·	57·	42·
Northampton . . .	36·	20·	56·	43·
Huntingdon . . .	37·	21·	58·	41·
Bedford . . .	37·	19·	56·	43·
Cambridge . . .	36·	22·	58·	41·
Essex . . .	37·	20·	57·	42·
Suffolk . . .	37·	22·	59·	40·
Norfolk . . .	35·	23·	58·	41·
Wilts . . .	36·	22·	58·	41·
Dorset . . .	35·	22·	57·	42·
Devon . . .	34·	23·	57·	42·
Somerset . . .	36·	21·	57·	42·
Gloucester . . .	34·	21·	55·	44·
Hereford . . .	34·	20·	54·	45·
Salop . . .	35·	22·	57·	42·
Worcester . . .	36·	19·	55·	44·
Rutland . . .	37·	21·	58·	41·
Lincoln . . .	36·	21·	57·	42·
Westmoreland . . .	36·	20·	56·	43·
Total . . .	35·7	20·7	56·4	42·5

TABLE VII.

Marriage and Birth Rate to every Thousand living.

Towns	Marriage Rate		Average	Birth Rate		Average
	1860	1861		1860	1861	
London .	9·9	9·5	9·7	33·	34·	33·5
Manchester	19·	18·1	18·5	37·	38·	37·5
Liverpool .	15·	14·3	14·6	31·	32·	31·5
Birmingham	10·3	9·5	9·9	39·	40·	39·5
Total .	13·5	12·8	13·6	35·	36·	35·5

TABLE VII.—*continued.**Marriage and Birth Rate to every Thousand living.*

Counties	Marriage Rate		Average	Birth Rate		Average
	1860	1861		1860	1861	
Surrey . . .	6·2	6·	6·1	30·	30·	30·
Kent . . .	7·5	7·3	7·4	31·	32·	31·5
Sussex . . .	7·1	7·	7·	29·	30·	29·5
Hants . . .	8·1	8·	8·	31·	31·	31·
Berks . . .	6·9	6·9	6·9	30·	31·	30·5
Middlesex . .	5·1	5·	5·	30·	30·	30·
Herts . . .	5·9	5·7	5·8	31·	30·	30·5
Bucks . . .	7·1	7·2	7·1	33·	34·	33·5
Oxford . . .	7·	7·2	7·1	33·	33·	33·
Northampton .	8·4	7·1	7·7	36·	35·	35·5
Huntingdon . .	7·	6·6	6·8	33·	32·	32·5
Bedford . . .	7·9	7·6	7·7	33·	34·	33·5
Cambridge . .	6·9	6·3	6·6	33·	32·	32·5
Essex . . .	6·4	5·9	6·1	32·	32·	31·5
Suffolk . . .	6·9	6·8	6·8	32·	32·	32·
Norfolk . . .	7·4	7·4	7·4	31·	32·	31·5
Wilts . . .	6·9	6·7	6·8	31·	31·	31·
Dorset . . .	7·8	7·1	7·4	31·	31·	31·
Devon . . .	8·8	8·3	8·5	30·	31·	30·5
Somerset . . .	7·6	7·	7·3	30·	30·	30·
Gloucester . .	8·9	8·8	8·8	31·	32·	31·5
Hereford . . .	6·9	6·7	6·8	29·	31·	30·
Salop . . .	7·	7·	7·	31·	32·	31·5
Worcester . . .	8·7	8·3	8·5	34·	34·	34·
Rutland . . .	6·9	5·4	6·2	32·	30·	31·5
Lincoln . . .	7·4	7·	7·2	33·	33·	32·5
Westmoreland .	7·	6·7	6·8	32·	31·	31·5
Total . . .	7·1	6·9	7·	31·5	31·7	31·6