

On fluctuations in the death rate, with a glance at the causes : having especial reference to the supposed influence of the cotton famine on recent mortality / by Daniel Noble.

Contributors

Noble, Daniel, 1810-1885.
Royal College of Surgeons of England

Publication/Creation

Manchester : Cave and Sever, printers, 1863.

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ON

FLUCTUATIONS IN THE DEATH RATE,

WITH

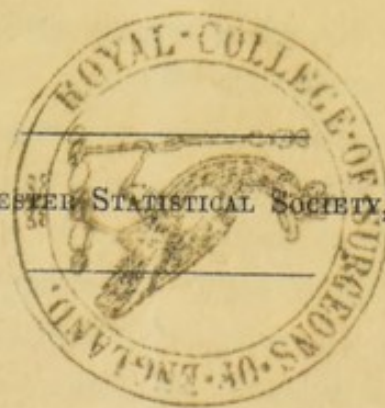
A GLANCE AT THE CAUSES,

HAVING ESPECIAL REFERENCE TO THE SUPPOSED INFLUENCE
OF THE COTTON FAMINE ON RECENT MORTALITY,

BY

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[Read before the MANCHESTER Statistical Society, October 26th, 1863.]

MANCHESTER:

CAVE AND SEVER, PRINTERS BY STEAM POWER, HUNT'S BANK.
1863.

MANCHESTER STATISTICAL SOCIETY.

Fluctuations in the Death Rate.

By DANIEL NOBLE, M.A., M.D.

[Read October 26th, 1863.]

WHILST in a given population, having a certain continued uniformity in its social condition, births take place with a degree of regularity from year to year, and even from quarter to quarter, the occurrence of deaths is subject to fluctuation from various causes; and these produce high and low rates of mortality in particular seasons, under circumstances seeming to show some sort of system, as it were, if the results afforded by a sufficiently extended series of years be regarded. And so, of course, it becomes important, before seeking to determine the special causes of an unwonted death rate at any time, that we should be acquainted with all that experience has revealed on the general question.

These remarks have been suggested by the fact that of late the disposition has been very generally manifested, to attribute every accidental elevation or depression in the death rate, occurring in any part of these districts of the cotton manufacture, to the distress which the diminished supplies of the raw material have caused to fall upon many of our working population. This disposition has found expression in various societies, and in the public press; and the most diverse theories have been invented, to explain supposed relations between an ascertained elevation, or depression, of the mortality in particular localities, and the reduced employment therein prevalent. If there has been a high death rate anywhere, in some particular quarter of the year, it has been suggested, or almost taken for granted, that the cause must be sought for in the distress; if, on the

contrary, the mortality has in any place been under an average, speculation has been set to work to account for the fact, by the present exceptional condition of the cotton trade. It is sometimes said—Mothers not being so extensively employed in the mills, have attended better to their children, and, in this way, many lives have most probably been saved; and again—The working classes have drunk less, from the necessity of the case, and so have had amongst them less disease and death. The idea was thrown out, at a recent Committee-meeting of the Manchester and Salford Sanitary Association, by one of its most intelligent members, that the death rate in the factory districts had possibly been lowered by a diminution of the cotton flue in the air,—a circumstance which, he conceived, might have lessened the amount of bronchitis, and so have reduced the mortality from one familiar cause of death.

And yet, notwithstanding the various hypotheses that have been constructed to explain facts supposed to be exceptional, I have a certain well-grounded conviction that, within the last two years, there has been nothing in the mortality of the cotton districts in any respect unusual, and assuredly nothing to establish a relation of cause and effect between it and the distress.

In order to make apparent this conclusion, I avail myself, by permission of the Registrar-General, of registers within the Manchester Registration District for a series of years. These will be found to typify, in some respects, those of the country at large; and, more generally, to represent the circumstances of the cotton districts, so far as related to my present design. I expect to show the operation of particular causes that seem constantly to affect the death rate, with something like the steadiness of ascertained law; and, at the same time, to point out the effect of certain disturbing influences, of which the conditions are somewhat indeterminate. After this more general view of the circumstances producing fluctuations in the death rate, I will more particularly examine recent mortality registers, to ascertain, if possible, whether ordinary causes do not sufficiently explain the several variations that have been observable within the last two or three years. And if the fact be so, it is of course quite gratuitous to seek for the explanation in some unwonted cause.

The Manchester Registration District includes, of the *city* of Manchester, only the so-called *township*, which is divided into the sub-districts of Ancoats, St. George's, Market-street, London-road, and Deansgate; the population of the whole having been returned by the census of 1841, as 163,667, by that of 1851, as 186,987, and by that of 1861, as 185,050. It will be noticed that a decrease of nearly 2,000 took place in the decade preceding the last census; a result attributable to the conversion of many dwelling houses in central situations into offices, warehouses, and other business places. Then the registration district at large comprises, in addition, the out-townships of Blackley, Harpurhey, Failsworth, Moston, Cheet-ham, Crumpsall, Newton, Bradford, Beswick, Prestwich, and Great and Little Heaton; the aggregate population of which amounted, in 1841, to 28,552, in 1851, to 41,448, and in 1861, to 58,575; constituting, for the whole area comprehended by the Manchester Registration District, a population in 1841, of 192,219, in 1851, of 228,435, and in 1861, of 243,625.

The following table shows the annual mortality, and the number of births corresponding, for each of the twenty years from 1841 to 1860 inclusive; and also the annual average for each quinquennial period within the two decades:—

Population.	Years.	No. of Births.	Annual Average of the 5 Years.	No. of Deaths.	Annual Average of the 5 Years.
192,219	1841	7,145	7,297	5,831	6,028
	1842	6,968		6,138	
	1843	6,986		6,252	
	1844	7,522		5,893	
	1845	7,865		6,026	
	1846	8,298	8,138	7,808	7,897
	1847	7,837		9,521	
	1848	7,487		7,255	
	1849	8,370		8,219	
	1850	8,700		6,681	
228,435	1851	9,118	9,283	7,020	7,711
	1852	9,380		7,961	
	1853	9,361		7,856	
	1854	9,397		7,799	
	1855	9,162		7,920	
	1856	9,080	8,992	6,926	7,217
	1857	9,077		7,547	
	1858	8,641		7,794	
	1859	9,081		7,012	
	1860	9,085		6,807	

The foregoing figures corroborate and illustrate the statement which I have made, that the death rate systematically fluctuates from year to year much more than the rate of birth; thus, it will be noticed that, with comparatively little oscillation, there is a progressive advance in the number of births, in some measure corresponding with the growing population; whilst a rise and fall to a considerable extent is observable in the annual mortality, which has but little correspondence with the rise or fall in the number of the living. It will be seen that, in no successive two or three years do the births vary in number more than a few hundreds, whilst, as regards the deaths, there is within the same period a range so wide as 3,500; for in 1845, only 6,026 deaths were registered, and in 1847, there were 9,521; and three years afterwards, in 1850, the mortality returns fell so low as 6,681. I shall have occasion, in the sequel, to revert more particularly to these facts and circumstances.

It may now be asked—Have we any positive knowledge, or consistent idea, respecting the causes that produce such fluctuations in the death rate as those just noticed? And I would observe, in reply, that we *have* a great deal of information that is calculated to elucidate this point.

The causes that increase the mortality of any given district will, I think, admit of a division into the ordinary and the extraordinary,—the former being comparatively simple and obvious, depending very much upon temperature, and the latter being somewhat occult in their nature, arising from what is called epidemic influence.

Severity and long duration of a summer's heat, and intensity of cold in a protracted winter, constitute the familiar causes of a high death rate in the respective seasons. Thus, a long summer of unusually high temperature always brings about a great deal of diarrhoea, dysentery, and other abdominal maladies; and, under such circumstances, deaths from these causes much exceed the average of the season; whilst a cold and wet summer is unattended with any large amount of such ailments, and the mortality therefrom is comparatively small. Then, again, a severe winter increases the number and the gravity of chest affections, and these, when in excess, proportionately add to the mortality. The valuable Reports

of the Registrar-General contain constant illustration and abundant verification of these facts and statements.

For particular exemplification, I will take the registered mortality of the Ancoats District for the years 1845 and 1846, as these two years, in immediate succession, strikingly contrasted with each other in the character of their respective seasons. And, moreover, they were years of very general prosperity, when there could arise no question of local distress as influencing sickness and mortality. I select the Ancoats District in preference to the others, because it is the most populous, and most likely, therefore, to give significant and conclusive averages. It contained, in 1841, 42,231 inhabitants; in 1851, 53,738; and in 1861, 55,982,—a population equal, at least, to the average of the factory towns in this part of England.

The winter of 1844-5, setting in with great severity early in December, had a great deal of frost, that continued with but little interruption until the latter end of March. The succeeding spring was comparatively mild and genial; but a low temperature characterised the summer and autumn, and mild weather prevailed at the end of the year. According to what has been stated, then, the mortality in the first quarter of the year should be discovered to have been greatly raised by excess of deaths from disorders of the respiratory organs,—from chest affections; whilst that of the three remaining quarters, of moderate and somewhat equable temperature throughout, should exhibit but a low measure, alike from such ailments and from such maladies as diarrhœa and the allied disorders. The following table exhibits the number of deaths registered for each quarter of the year in question, distinguishing the causes under the heads of “chest affections,” “diarrhœa and dysentery,” and “epidemic ailments,” by which latter phraseology I understand fever, small-pox, measles, scarlatina, hooping cough, and so on,—a class of diseases which are not determinate in their origin, and which are, in many respects, occult alike in their nature and in their course. Side by side I place the number of registered births for the respective quarters. It will thus be again seen how little fluctuating is the rate of birth compared with that of death :—

*Registered Births and Deaths in the Ancoats District in the
year 1845.*

Quarter.	Births.	Chest Affections.	Diarrhoea and Dysentery.	Epidemic Ailments.	Other Ailments.	Total.
First	501	.. 77	.. 4	.. 76	.. 252	.. 409
Second	523	.. 28	.. 0	.. 44	.. 202	.. 274
Third	485	.. 19	.. 22	.. 26	.. 199	.. 266
Fourth	481	.. 39	.. 13	.. 28	.. 205	.. 305
Total....	1,990	163	39	174	858	1,254

The results, it will be noticed, correspond with the expectation. Almost one-third of the deaths occurring within the year were registered in the first three months; the excess being mainly occasioned by chest diseases. But, besides the 77 directly registered as from these maladies, a very large proportion of the 76, arising from epidemic ailments, I find were from measles and hooping cough; and these diseases, when fatal, are so in most cases from supervention of inflammation in some portion of the respiratory apparatus,—inflammation which in such circumstances is largely brought about, or at least favoured, especially among the poor, by the prevalence of severe cold.

Now, in contrast with the year 1845, I proceed to the one next ensuing, 1846,—distinguished as it was for its remarkably mild winter, and for the almost tropical heat of its extended summer. A very high temperature set in early in June, and this was maintained, with but little abatement, to the end of September; then cold weather commenced, somewhat severely for the season, as well as prematurely; and the last three months of the year were mostly wintry, the temperature at times being very low indeed. According to the rule laid down, then, we must look for a low mortality in the first half of the year, and for a high one in the latter half; just the contrary of what obtained in the previous year, with differently characterised seasons. Moreover, the excess of deaths should be expected, in the third quarter, to have been chiefly from diarrhoea and dysentery, and in the last quarter to have been very much from chest affections. The actual state of facts is revealed by the following table, which may be well studied in comparison with the preceding one:—

*Registered Births and Deaths in the Ancoats District in the
year 1846.*

Quarter.	Births.	Chest Affections.	Diarrhœa and Dysentery.	Epidemic Ailments.	Other Diseases.	Total.
First	515	.. 49	.. 6	.. 43	.. 233	.. 331
Second	513	.. 56	.. 26	.. 36	.. 222	.. 340
Third	537	.. 28	.. 214	.. 56	.. 345	.. 643
Fourth	501	.. 88	.. 21	.. 116	.. 333	.. 558
Total....	2,066	221	267	251	1,133	1,872

The above figures admit of some further explanation. It will be seen that the last quarter of the year exhibits a very large mortality from "epidemic ailments;" these to a great extent were febrile maladies of the gastro-enteric type, registered very generally as "gastric fever," "typhoid fever," or under some equivalent phraseology. Such forms of fever result very often from previous disturbance of the alimentary canal, and must thus in some measure be regarded as amongst the products of great previous heat of atmosphere. And indeed the exhaustion of system left by this state of things, including very often some chronic derangement of the intestinal mucous membrane, rendered all diseases more than usually fatal in the last three months of 1846.

It should here be stated, that excessive seasonal mortality, whether occasioned by undue heat or cold, arises for the most part amongst young children under two years of age; old persons, however, contributing thereto somewhat largely.

I suppose it is unnecessary for me to state that I have not selected the particular years 1845-46 because they accidentally support the view which I have advanced, as by mere coincidence; but because, for every reason, they supply, without a disturbing influence, the most typical illustration. Whatever be the years taken, the results will, under like circumstances, correspond in character, when submitted to the same method of examination.

It may now be demanded,—Do moderate seasons, mild winters and cool summers, always exhibit a low mortality?—and the contrary? The answer must be given with qualifications. Such seasons have always a high or a low mortality from what I have denominated the ordinary causes of fluctuation; but then anything like uniformity in

the aggregate mortality is interfered with by the operation of the *extraordinary* causes ; and by these, as already stated, I understand the diseases which we call epidemic.

The more simple forms of fever, scarlatina, measles, small pox, and hooping cough, constitute the more familiar epidemics, disturbing the death rate in an irregular and generally in an unforeseen manner ; whilst the true typhus fever, malignant cholera, and influenza, form instances of epidemics, the visitations of which are comparatively rare, and occur at wide and uncertain intervals. The origin and source of these diseases, I take to be as hidden now as in centuries past ; some of the circumstances which favour their development and extension we may estimate approximately ; but of the definite agency producing them, of their *vera causa*, we know nothing. They may arise and prevail under all sorts of physical conditions,—in summer's heat and winter's cold, in well and in ill-ventilated places, in districts notable for their cleanliness, as well as in those characterised in a different manner. We can observe the phenomena and collate them ; we can estimate the circumstances which conduce to their intensity and extension ; but we cannot—as we can in some degree in the case of seasonal maladies—predict their duration, or the times of their origin and extinction. As the wind bloweth where it listeth, and we cannot tell whence it cometh and whither it goeth, so would it seem in some measure to be with epidemic diseases. Still, however uncertain their advent, their extension, and duration may be, all places are more or less liable to such visitations ; and when they occur, their influence upon the death rate is notable and distinct.

For illustration of these points, the years 1847 and 1849 supply excellent types. These two years had a larger number of deaths registered in them, within the Manchester Registration District, than any others in the series of twenty given in a foregoing page ; and the result is plainly traceable to the epidemic prevalence of typhus and influenza in 1847, and of malignant cholera in 1849. And, moreover, these were years which had the mortality but little influenced by seasonal causes, as in both instances there was neither severity of winter nor any undue heat of summer.

The circumstances of the so-called Irish famine will be still fresh in the memory of most persons. The great failure of the potato crop in 1846, and a bad harvest as regards all other kinds of food produce, made themselves so much felt towards the end of the year, and in the first half of the year following, that an enormous and unprecedented immigration of half-starved Irish poor took place into most of the large towns in this part of England; and these, in many instances, brought with them the germs of contagious disease, more especially of typhus fever. A depressed state of trade, and a very high price of provisions, had already brought about great distress among the working population of Manchester, to an extent, indeed, bordering very much upon physical destitution. And it was under such circumstances that shoals of debilitated and ailing Irish arrived. Now at this period, unquestionably, the distress was such as really to increase both sickness and mortality. Accordingly, it will be remarked, on reference to a previous table, that the deaths registered in 1847, in the Manchester Registration District, attained the extraordinary number of 9,521,—nearly 2,000 more than the births. The excess was attributable, for the most part, to the extraordinary prevalence and fatality of typhus. Besides great numbers sick and treated at such homes as they had, upwards of 6,000 were removed to hospitals; and altogether, in that year, about 1,500 deaths were registered from fever alone. An unusual mortality, however, took place from all causes in 1847, including both ordinary ailments and other epidemic affections. Large numbers having partially recovered from the effects of fever, succumbed through prostration of strength to attacks of disease that, under other circumstances, would have been comparatively innocuous. Diarrhoea and dysentery, always more or less prevalent in the summer months, carried away numbers out of all proportion to the cases, or to the severity of the attack considered in itself. And, to crown the whole, at the latter end of the year a somewhat severe epidemic of influenza set in, and prevailed for three or four weeks, making especially fatal havoc amongst persons aged, and amongst those who were already labouring under chronic mischief in the chest. Altogether, the year 1847 supplied a striking illustration of the rarer forms of

epidemic diseases springing up in a season of great distress, which very notably intensified their destructive agency. Typhus fever, in an especial manner, seems to be favoured, in its origin and course, by material want and social misery; but there is no constant or uniform relation of this kind.

In the summer and autumn of 1849, there was in this part of the country an epidemic prevalence of malignant or Asiatic cholera, after an interval of immunity from such a visitation of seventeen years. From June 16th to November 3rd of that year, 828 deaths were registered as from that cause in the Manchester *township* alone; and, besides these, an unwonted number of deaths were registered as from diarrhœa, the fatality of which had undoubtedly arisen in many cases from its having been of choleraic character. For the entire Registration District, 8,219 deaths from all causes were registered, the excess corresponding very much with the number of victims of the pestilence. And, on reference, it will appear that in the whole series of years from 1841 to 1860 inclusive, the highest mortality was in the two years distinguished in the one instance by typhus, and in the other by cholera.

The foregoing facts and figures have been adduced as typical illustrations, which show the action of causes productive of fluctuation in the death rate; some of these exhibiting their efficacy with something like the precision of *law*, and others producing their effects under circumstances imperfectly understood, and not to be anticipated. And thus, as I observed at the onset, whilst a certain uniformity in the rate of birth is observable, fluctuation in the death rate is to be expected rather than otherwise. And so, of course, when a high or a low mortality has obtained, in any given district, at any given time, the facts of familiar experience must have been found incompetent to explain the particular result, before some extraordinary agency is anticipated to have been in operation. "*Leges philosophandi vetant plures causas fingere vel quærere quam quæ ad rem explicandam sufficient.*"

I conceive that we have now obtained certain practical generalisations, as to the circumstances of a high or a low mortality; and that these indicate the influence of causes proper to the season, and

of causes depending upon occult conditions of the physical environment. Guided, then, by the principles suggested by all that has gone before, I now proceed to an analytical survey of the deaths occurring in the Ancoats District, for a period bordering on five years,—a period which will embrace three years before there was any question of a cotton famine, and the year 1862, and the first three quarters of the present 1863: by this process it may be ascertained, to a great extent at least, whether there has been anything in the number or the kind of deaths fairly ascribable to the distress that for nearly two years has prevailed in this locality. I select the Ancoats District, for reasons already stated; it has the largest population, and contains more mills, and a greater number of factory people and of the classes immediately depending upon them, than any of the others in the township of Manchester; having thus a sort of representative character, and supplying, therefore, the best field for an enquiry of this nature. I take a period of five years, because, in looking over the twenty years' mortality, as given in an earlier page, I find that a kind of cycle of the fluctuation is about completed in that period. In this way, I apprehend, sufficient means will be before us for comparative estimates.

I would here observe that having for many years kept records of the temperature and the general state of the weather, my assertions concerning the character of the particular seasons may be relied upon, as they do not rest simply upon vague recollections.

To commence, then, with 1859; the first three months of that year were of average winter temperature; there were several very cold days in April, and on one occasion there was a heavy fall of snow; May and June were of somewhat lower temperature than ordinary; July was a very hot month, and so was August until near its end; September and the first half of October were somewhat cool; so early as the 21st of the latter month, a severe frost set in, and continued with brief intervals during the rest of the year. The extraordinary degree of cold prevalent a little before Christmas will be in the memory of most persons.

The following is the record of the Ancoats mortality for the year,

analysed and tabulated on the same plan as the records given in an earlier page :—

Quarter.	Births.	Chest Affections.	Diarrhoea and Dysentery.	Epidemic Ailments.	Other Diseases.	Total.
First	523	.. 91	.. 4	.. 94	.. 221	.. 410
Second	555	.. 61	.. 8	.. 45	.. 230	.. 344
Third	566	.. 30	.. 119	.. 22	.. 204	.. 375
Fourth	558	.. 128	.. 14	.. 30	.. 193	.. 365
Total.....	2,202	310	145	191	848	1,494

The above figures realise the expectation suggested by the previous facts and statements. The first quarter of the year had an excess of deaths registered from chest affections ; the last one, in correspondence with the especial severity of the season, exhibited a still higher mortality under this heading. The summer being one of more than average temperature, shews an unusual proportion of deaths from diarrhoea and dysentery.

The year 1860 had a temperature considerably below the average of years. The first quarter was severely wintry ; the spring was of an ordinary character to near the middle of May, when it became very fine and warm ; but June was cold, and severe east winds prevailed. The summer was a complete failure, being regarded as the lowest in temperature since 1816. The last three months of the year, on the whole, were not remarkable until near the middle of December, when it became intensely cold for the rest of the month ; on Christmas-day the thermometer, in some places, fell to zero. I subjoin the Ancoats mortality for the year, tabulated as before :—

Quarter.	Births.	Chest Affections.	Diarrhoea and Dysentery.	Epidemic Ailments.	Other Diseases.	Total.
First	633	.. 116	.. 3	.. 57	.. 252	.. 428
Second	549	.. 106	.. 7	.. 45	.. 238	.. 396
Third.....	521	.. 55	.. 52	.. 22	.. 211	.. 340
Fourth	551	.. 89	.. 10	.. 27	.. 222	.. 348
Total.....	2,254	366	72	151	923	1,512

The only remark which the above table calls for, is that the mortality from chest affections in the second quarter was somewhat higher than, from its character taken by itself, might have been expected. I have no doubt that the explanation of this anomaly, if

such it should be considered, would be found in the fact, that the severity of the preceding months had originated many attacks, whose fatality was not consummated until the quarter in question was attained. And, moreover, the prevalence, to any unusual extent, of the customary north-east winds of spring, is often more productive of pulmonary affections than the calm, though colder, atmosphere of mid-winter.

1861 was a more genial year than its predecessor. January was at times unusually cold; but February and March were not of severe character. The spring quarter was of fair average temperature. The summer heat was considerable; but as there was a good deal of rain, the season could hardly be regarded as *fine*. There was a very genial October; but severe, though not long continued, frosts prevailed in November and December.

The Ancoats mortality for the year is given below:—

Quarter.	Births.	Chest Affections.	Diarrhœa and Dysentery.	Epidemic Ailments.	Other Diseases.	Total.
First	556	.. 127	.. 6	.. 23	.. 244	.. 400
Second	585	.. 72	.. 12	.. 24	.. 219	.. 327
Third	560	.. 44	.. 152	.. 24	.. 232	.. 452
Fourth	547	.. 139	.. 26	.. 104	.. 251	.. 520
Total	2,248	382	196	175	946	1,699

It will be seen that the last quarter of 1861 had an unusually high mortality from chest affections, although the season was by no means of a severely wintry character; it may be noticed, also, that the number of deaths from epidemic ailments was very great in the same quarter. I am informed by Mr. Royston, the intelligent Registrar of the district, to whose kindness, indeed, I am greatly indebted for these analyses, that during the quarter in question there was an unwonted prevalence of hooping cough and measles; and deaths from these diseases ordinarily take place from inflammation of some portion of the respiratory apparatus. Experience enables me to say that medical men, in giving the customary certificate as to the cause of death, sometimes give the primary malady, and sometimes the secondary one; at times, however, both are named. I have no doubt that the large number of deaths registered

from chest affections, in the last three months of the year, may thus be accounted for.

We now come to the year 1862, the year in which the Cotton Famine began to make itself felt. I will preface the table of mortality, as before, with a sketch of the several seasons. Each month of the first quarter had some very cold weather, but no long-sustained frosts. April had great extremes of temperature, varying from summer's heat to winter's cold. May was a fine month, and much warmer than usual. June and July had a low temperature for the season; and, on the whole, these months were wet and ungenial. August furnished the finest weather of the year, but no great amount of heat. September and October were fine and genial, but November had for two or three weeks some sharp, frosty weather. December was very mild.

I now subjoin the Ancoats mortality table for 1862:—

Quarter.	Births.	Chest Affections.	Diarrhoea and Dysentery.	Epidemic Ailments.	Other Diseases.	Total.
First	537	144	10	129	253	536
Second . . .	607	89	10	39	197	335
Third	522	52	36	26	167	281
Fourth . . .	528	130	16	50	203	399
Total . .	2,194	415	72	244	820	1,551

We look in vain to the above for any evidence of an influence exerted upon the mortality by local distress. The number of deaths, indeed, during the first year of the so-called cotton famine, was below that of the preceding year. And although the effects of the calamity showed themselves upon trade more and more as the year advanced, the mortality went on diminishing until the last quarter, when an increase takes place in most years; but even then the number of deaths was less than in the corresponding quarter of the preceding year. The fluctuations notable in 1862 seem, like those of previous years, to be explained by variations in the weather, and by the varying prevalence of epidemic disease.

The character of the seasons during the year now drawing to a close, will be in every one's memory. There was the singularly mild winter, followed by the genial spring, which was succeeded by a fine

and warm, though not particularly hot, summer, until it was cut short about the middle of August, when wet and somewhat cool weather ensued, which has continued to the present date (October 26th).

I subjoin the Ancoats mortality for the first three quarters of 1863 :—

Quarter.	Births.	Chest Affections.	Diarrhoea and Dysentery.	Epidemic Ailments.	Other Diseases.	Total.
First	579	.. 148	.. 8	.. 126	.. 217	.. 499
Second	569	.. 92	.. 9	.. 111	.. 248	.. 460
Third.....	495	.. 80	.. 105	.. 86	.. 201	.. 472
Total.....	1,643	320	122	323	666	1,431

It appears, from this last table, that the three completed quarters of the current year have experienced a high mortality ; and, at first sight, the excessive death rate might, in some way or another, seem to be ascribable to the cotton famine. But we will glance at the matter a little in detail. It must be observed, in the first instance, that an unwonted mortality during the present year has not been peculiar to the cotton districts; it has shown itself elsewhere, particularly in London,—witness the admirably circumstantial reports published weekly under the authority of the Registrar-General. The high mortality, noticeable alike in London and in our own part of the country, has been obviously owing, not to circumstances of local distress, but to the inordinate prevalence of hooping cough, measles, small pox, and scarlet fever. The Registrar-General's weekly returns supply evidence of this fact, in reference to the metropolitan districts ; and the valuable publications of our own Sanitary Association give details of the same state of things, in this neighbourhood. Measles prevailed the most extensively in the early part of the year, contributing to swell the death records, not only under the head of "epidemic ailments," but also, as already explained, under the head of "chest affections;" then, as the year advanced, small pox became singularly and fatally prevalent; and latterly, scarlet fever has been most rife. All these extraordinary causes of a high death rate have, down to the period at which I write (October), been in most unusual action ; and, if persons be disposed to credit

the local distress with these results, what about London, where nothing of the kind has been hinted at?

The physical destitution arising out of the food scarcity in 1847, supplies an experience enabling us practically to judge concerning the way in which, in this part of the world, distress, when sufficiently severe, operates to produce extraordinary disease and mortality. From an official position which I at that time occupied, I had excellent opportunities for studying the circumstances of disease occurring at the period; and, from my own observations, I can state that, besides the epidemic typhus already mentioned, there was, in 1847, a most inordinate prevalence of what is called purpura hæmorrhagica, a disease wherein there is a want of proper cohesion in the constituents of the blood, leading to hæmorrhagic discharges, and thence to a still further reduced vitality—already existing so largely in the subjects of it. In the year in question, indeed, very slight causes of any kind prostrated the strength of the half-fed poor; and diseases of no especial severity in themselves, had frequently a fatal termination. And thus, various circumstances formed concurrent causes of the remarkably high death rate, in the famine year of 1847.

Now, as regards the last two years,—the period of the cotton famine,—excepting a few cases of true typhus in Manchester, particularly in the autumn of 1862, and a slight irruption about the same time in Preston, which threatened to become epidemic, but did not, we have scarcely had any fever of this type; a fact which, as regards last year, was made apparent by the Manchester and Salford Sanitary Association, in a correspondence published towards its close, in *The Times* newspaper, relative to Dr. Buchanan's Report; and the weekly returns issued by the Sanitary Association are conclusive so far, to the same effect, with respect to the present year.

I have made many inquiries of surgeons and clergymen, here and elsewhere, as to the condition of the working people; but, in the absence of a preconceived idea, none have reported to me the prevalence of either purpura or any other bodily derangement fairly ascribable to physical destitution. And certainly my own casual observations of the poor, in various portions of this cotton district, in such places, for example, as Ashton-under-Lyne, Oldham, and

Glossop (somewhere at the bottom of the scale), have afforded me no reason for thinking that the material condition of the people has, so far at least, undergone any sensible deterioration.

Reverting to the subject of recent mortality, I am well aware that the foregoing facts and figures exhibiting its character and extent, do but relate to a limited area; the Ancoats District, however, as before observed, may fairly be regarded as representative; and I have every confidence that, in the main, results similar in their significance would be obtained for other places, if the facts were submitted to a like analytic investigation. The mortality returns from various towns, for different quarters, as given, for example, by Mr. Purdy, at the recent meeting of the British Association, to illustrate the supposed effects of the cotton famine, have shown, in their general character, fluctuations corresponding very much with those that have been traceable in the Ancoats District in Manchester.

And here I would ask,—Why should late and present exceptional circumstances of the cotton manufacture be supposed to have affected the death rate? It appears to myself that the absence of a suspicion, even, that large numbers have been starved to death, should have excluded the notion of any material increase in the mortality, unless it had been found that inanition and over-crowding of the poor had supplied the occasion for some violent outbreak of fever, the absence of which to any extent has all along been noticed with great interest.

Now, let us inquire what has been the actual working of this so called cotton famine upon the several classes of society? It may be stated that, among the wealthier portion of the community, it has given rise to much anxiety and thoughtful attention; that, to many of the middle ranks, it has brought a dissipation of savings and a diminution of business, and been a cause of painful consideration and gloomy foreboding; and that, to the working population, it has been the occasion of enforced idleness to large numbers, and to consequently diminished resources, but not the occasion—as has been apparent from the beginning—of any actual physical destitution,—at least upon any large scale. In reference to this latter point, it has been conceded on all hands that the food requirements and other more prominent exigencies have been admirably met by the various

bodies already existing, or specially organised, for the relief of the poor.

Where, then, has existed the probable cause for an anticipated increase in the death rate, referable to the Cotton Famine? Without doubt, anxiety in the higher divisions of the community, and a reduction of luxuries and comforts in the lower, are competent to reduce the tone of the system in individuals, but not to produce acute disease and speedy death. If, indeed, the mortality of these districts should hereafter be elevated as a consequence of recent events, it should be anticipated not as an immediate, but as a remote result.

As to the idea that our cotton miseries may have diminished the death rate in this part of the country, I have myself seen no reason for such a probability stated which, upon consideration, I can regard as even plausible. And besides, in Manchester at least, there has been no reduction in the mortality.

After all, shall we not look for the origin of many of these speculations to a certain infirmity of our nature, which, shrinking from the labour of thoughtful investigation, is ever impatient to at once assign causes? "The mind," says Lord Bacon, "has this property, that it readily supposes a greater order and conformity in things than it finds;" and thus, when a local calamity is seen to have been associated, even for a few months, with a rise or a fall in the corresponding mortality, a causal *nexus* is at once anticipated; and "anticipations," says the great authority just quoted, "have a much greater power to entrap the assent than interpretations."

Not that in combatting what I have deemed to be an unsustained "anticipation," I claim myself to have given the absolutely veritable "interpretation;" I profess only to have made a tentative effort in this direction; and if I have inadvertently omitted to give prominence to some important and qualifying circumstance or circumstances, I shall be happy to have the fact pointed out, so that any conclusion which may have been suggested in the course of this paper may be modified accordingly.



