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Contributors

Stark, James.

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REPORT

ON THE

MORTALITY

OF

EDINBURGH AND LEITH,

FOR THE MONTHS OF

June, July, and August 1848.

BY

JAMES STARK, M.D.

FELLOW OF THE ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH.

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REPORT.

The mortality of Edinburgh during the months of June, July, and August 1848, amounted to 1018,—502 being males, 450 females, and 66 still-born. The mortality in Edinburgh for the corresponding months of 1845, 46, and 47 was respectively 935, 1077, and 1634.

The mortality of Leith during June, July, and August amounted to 236,—106 being males, 118 females, and 12 still-born. The mortality in Leith during the corresponding period of the years 1845, 46, and 47 was respectively 128, 199, and 166.

The meteorological phenomena of June, July, and August differed in several important particulars from those of the corresponding months of last year. Thus the mean temperature of the months of June, July, and August 1848 was respectively 55·13, 57·88, and 54·37 degrees of Fahrenheit's scale, while the mean temperature of the corresponding months of 1847 was respectively 57·83, 61 22, and 58·22. During June of this year the range of temperature was from 37 to 75 degrees; during June of last year, from 38 to 78 degrees, being a range of 38 degrees during the month of June in each of these years. During July 1848 the range of temperature was from 38 to 82 degrees; during July 1847, from 42 to 83 degrees, being a range of 44 degrees in 1848, but of 41 degrees in 1847. During August of this year the range of temperature was from 36 to 70, but in August of last year from 37 to 77 degrees; being a range of 34 degrees in 1848, but of 40 degrees in 1847. More than twice the amount of rain fell during June, July, and August of this year than during the corresponding period of last year. Thus during the above months of 1848, the aggregate fall of rain amounted to 9·40 inches; but during the corresponding months of 1847 only to 4·07 inches. The mean barometric pressure was 29·46 inches during June of this year, 29·57 inches during July, and 29·50 inches during August, the cistern of the barometer being 246 feet above the mean level of the sea at Leith. In 1847 the mean pressure of the atmosphere during the months of June, July, and August was respectively 29·64, 29·78, and 29·68 inches. West and westerly winds blew 51½ days, east and easterly winds 31 days during the above months of this year; but during the corresponding period of last year westerly winds blew 62½ days, and easterly winds 24 days.

The peculiarities, therefore, of the atmospheric phenomena during the months of June, July, and August of this year, as compared with that of the corresponding months of last year, consisted in, (1.) a lower mean temperature; (2.) a lesser range of temperature; (3.) a much greater fall of rain, and a consequently more humid state of the atmosphere; (4.) a lower ba-

rometric pressure ; (5.) and lastly, a greater prevalence of easterly winds. How far these atmospheric phenomena have exerted an influence on the prevailing epidemics (typhus and scarlet fevers), experience and observation have as yet failed satisfactorily to demonstrate. But these facts, so far as they go, taken in connection with the low mortality in Edinburgh during those months, appear to corroborate Dr Casper of Berlin's remarks, deduced from pretty extensive statistical researches, that a humid state of the atmosphere and a low barometric pressure are more favourable to life than a dry condition of the atmosphere and a high barometric pressure.

As from the above general statement of the mortality in Edinburgh and Leith it is apparent that the ratio of mortality differs in towns even closely adjoining, it may be interesting to compare the mortality of these places during the second quarter of the year with that occurring in several of the chief towns of England. The calculations of the mortality in the English towns are based on the Registrar-General's "Returns of the Mortality in 117 Districts of England for the Quarter ending June 30th, 1848." As the year 1846 may be considered as a year of mean mortality, the towns are arranged in the order of least increase during 1848 as compared with that year.

TABLE I.—Proportional Mortality of different Towns during the Second Quarter (ending 30th June) of the years 1846, 47, and 48.

Places.	Mortality of Second Quarter, 1846.	Mortality of Second Quarter, 1847.	Mortality of Second Quarter, 1848.	Percentage of mortality in 1848, with that of 1846.	Percentage of mortality in 1848, with that of 1847.
Liverpool, .	2,098	4,809	1,907	— 10·01	—152·17
Carlisle, .	241	433	235	— 2·55	— 84·25
Edinburgh, .	1,062	1,529	1,107	+ 4·23	— 38·12
England and Wales,	43,734	51,585	46,552	+ 6·44	— 10·81
Manchester, .	1,611	2,362	1,746	+ 8·37	— 35·22
London, .	11,423	12,361	12,945	+ 13·32	+ 4·72
Wolverhampton,	500	847	625	+ 25·00	— 35·52
Birmingham, .	842	1,263	1,135	+ 33·61	— 11·27
Leith, . .	160	189	237	+ 48·12	+ 25·39

Note.—The + mark in the above table denotes that the mortality of 1848 was greater than that of the years 1846 or 1847 by the amount specified. The — mark denotes that it was less.

This table, while it shows that Edinburgh, as compared with the standard of 1846, only exhibited an increase of 4 per cent., and in this respect has been more favourably dealt with than England and Wales, than Manchester, London, Wolverhampton, or Birmingham, also shows that Leith, during the same period, has had its mortality increased in the ratio of 48 per cent., being a greater increase than that of any of the places mentioned in the table. Again, while the mortality in Edinburgh was 38 per cent. below the mortality of 1847, that of Leith was 25 per cent. above it. In fact, Leith and London are the only towns in the above table whose mortality during the second quarter of 1846 has been above that of the epidemic and fatal season of 1847.

One fact, however, brought out very prominently in the above table, calls for remark, that is the high position as to improved healthiness which Liverpool has attained during the second quarter of 1848. Liverpool has long been known as one of the most unhealthy of the towns of England. About two years ago, however, the authorities there got a Local Sanitary Act passed, which they have been actively working since, under the superintendence, it is understood, of James Newlands, Esq., Civil Engineer, and Dr W. H. Duncan, Medical Officer of Health; and the inhabitants of that large and populous town seem now to be reaping the first fruits of the benefits which will accrue from their praiseworthy efforts to improve the sanitary condition of their town. From Dr Duncan's last report, of date 9th August 1848, we learn that "It is satisfactory to know that Liverpool is better prepared than at any former time to meet a visitation (the cholera) such as we are now threatened with. Within the last few months nearly 2000 houses, which were discovered in a filthy and unwholesome condition, have been cleansed, after notice from the officers of the committee; 5000 of the most unhealthy cellars have been cleared; considerable progress has been made in house-drainage; and a marked improvement has taken place in the condition of the back streets and courts, which are better and more regularly cleansed than before." It is to be hoped that the marked improvement in the health of that town will continue, and that the example thus shown of the unquestionable benefits which result from a Local Sanitary Act will induce the other towns of England to avail themselves of the provisions of "The Public Health Act of 1848," and induce Government, with as little delay as possible, to extend the same to Scotland, where it is even more required than in England.

In last report it was mentioned that the number of deaths in Edinburgh, which in January amounted to 19·8 daily, gradually fell, till in May they only amounted to 11·7 deaths daily, being merely a fraction above the daily average of the last seven years, excluding last year, which was one of excessive mortality. The mortality since May has still continued on the decline, the daily average being 11·7 deaths during June, 9·3 during July, and 10 during August.

The mortality of Leith, on the other hand, has risen considerably above the average of former years. Thus during the months of June, July, and August of this year the mortality of Leith was 91·4 per cent. above that of the corresponding months of 1845; 23·7 per cent. above that of the corresponding period of 1846; and 47·3 per cent. above the deaths during the corresponding months of 1847.

From this statement, then, it is apparent that while the mortality of Edinburgh during the above months has been below its usual standard, that of Leith has been greatly above it.

The mortality from the class of zymotic (*i. e.* epidemic and contagious) diseases, as compared with the total mortality, has been above the average proportion during the above three months. Thus in Edinburgh, during 1846, the deaths from the zymotic class of diseases was to the total mortality as 24 to 100; but during the above three months of this year, the deaths from this class of diseases in Edinburgh were in the proportion of 32 to the 100 deaths from all causes; while in Leith, they were in the high proportion of 43 to the 100 deaths from all causes. In both Edinburgh and Leith, this high proportion was kept up by the last lingering remains of typhus fever, but more particularly by the great prevalence of epidemic scarlet fever. Leith, in especial, has been ravaged by scarlet fever, as is manifest from the fact that, whereas in Edinburgh the deaths from this disease were in the proportion of 9 out of every 100 deaths from all causes, in Leith they bore the high proportion of 26 out

of the 100 deaths. Of the 88 fatal cases of scarlet fever in Edinburgh, 51 were males and 37 females. Of the 59 fatal cases in Leith, 29 were males and 30 females. Measles and hooping-cough have been in almost complete abeyance during the above months,—a circumstance which has frequently been remarked during the excessive prevalence of epidemic scarlet fever.

The mild and somewhat moist condition of the atmosphere which prevailed during the above months proved favourable to those affected with consumption and other diseases of the respiratory organs. Indeed, the mortality of diseases of the respiratory organs has not been so low during any month of the last two years, as during the months of July and August of this year.

The influence of weather on disease was, however, still more strikingly manifested in regard to bowel complaints and affections of the organs of digestion, registered under the heads of diarrhœa, dysentery, cholera, teething, inflammation of the bowels, &c. During the heats of summer and autumn, these diseases in general become exceedingly prevalent and fatal, and it has been the too common belief that the use of fruit and vegetables was the cause of these affections. The mortality of these diseases, however, during the above months, most satisfactorily proves that these diseases do not depend on, or are caused by, the use of fruit and vegetables as articles of diet, but that atmospheric agencies, and, in especial, temperature, exert a most marked influence on their prevalence and fatality. Thus during the month of August 1846, when the mean temperature was so high as 59·58 degrees Fahrenheit, the deaths from bowel complaints and diseases of the organs of digestion amounted to 81 in number. During August 1847, when the mean temperature was a full degree lower, viz. 58·22, the deaths from the same class of diseases fell to 71 in number. But during August of this year, when the mean temperature was so low as 54·37 degrees, the deaths from these diseases only amounted to 33.

The mortality of diseases of the brain has been much less during the above-named months of this year than during the corresponding period of 1846 or 1847. Thus during June, July, and August 1846, the deaths from these diseases amounted to 116; during 1847 to 120; but during the corresponding months of this year only to 79. Whether the milder weather during the present year has occasioned this result is difficult to prove; but, as was pointed out in last Report, the proportional mortality of diseases of the brain is unquestionably much greater in warm than in cold weather; and it is exceedingly probable that the greater mildness (or coldness) of the summer of this year has been the chief agent in lessening the mortality arising from this class of diseases.

The same diminished mortality was noted with regard to diseases of the heart and blood-vessels during the above months of this year. Thus, during June, July, and August 1846, the deaths from this class of diseases amounted to 29; during 1847, to 26; but during this year to 21 only.

The influence of weather on health was also very strikingly illustrated in the proportional mortality among persons above 60 years of age during the corresponding months of 1846–7 and 1848. Aged persons are extremely sensitive to atmospheric agencies, particularly to sudden changes of temperature, and to extremes of heat and of cold. When the weather is mild, and the air not too dry, the mortality among the aged is at a minimum; but, as the temperature rises above or falls below that mean, the mortality among them increases. This was very well illustrated by the proportion of deaths among the aged to the total deaths in Edinburgh during the months of June, July, and August, of the years 1846, 1847, and 1848. This year, while the mean temperature of these

months was 55·79 degrees Fahrenheit, the barometric pressure low, and the atmosphere moderately humid, the deaths above 60 years of age were to the total deaths in the low proportion of 13 to 100. During 1847, when the mean temperature of these months was 59·09 degrees, the barometric pressure above the average, and the air very dry, the deaths above 60 rose to the proportion of 15 out of every 100 deaths at all ages. And during 1846, when the mean temperature was still higher, viz. 60·76 degrees, the barometric pressure above the average, and the fall of rain excessive, the proportion of deaths among the aged rose to 18 per cent. of the total deaths. The greatest absolute number of deaths, however, among the aged occurred during the three months of 1847, when the mean temperature was high and the atmosphere very dry. In former reports the baneful effects of a low temperature on the aged have been frequently pointed out. The facts, therefore, stated in this and former reports seem to warrant the conclusion that a mean temperature such as we have had this year, with a moderately moist condition of the atmosphere, and a low barometric pressure, are the conditions of the atmospheric phenomena which are most favourable to the health of those advanced in years. But, in fact, these are the conditions most favourable to life at all ages, seeing the above facts seem to prove that though excessive heat, generally speaking, is most baneful to certain classes of disease, even these, under the same temperature, are rendered more or less fatal according as the atmosphere is more or less dry or humid. Thus extreme heat with drought seems to cause a greater mortality among those labouring under diseases of the respiratory organs, and of the brain, as well as in all persons above 60 years of age, than when an equally high temperature is accompanied with considerable atmospheric moisture. On the other hand, bowel complaints and heart diseases seem to be more under the influence of temperature alone.

These facts relative to the influence of atmospheric agencies on disease might be rendered more tangible by arranging them in a tabular form. The following table, then, exhibits the influence of weather on disease, by showing the varying number of deaths in the population of Edinburgh from certain classes of disease during the months of June, July, and August of the years 1846, 1847, and 1848.

Disease.	1846. Heat great; moisture excessive; high barometric pressure. Mean Temperature, 60·76 degrees. Fall of Rain, 12·77 inches. Mean Barometer, 29·68 inches.	1847. Heat great; drought great; high barometric pressure. Mean Temperature, 59·09 degrees. Fall of Rain, 4·07 inches. Mean Barometer, 29·70 inches.	1848. Heat moderate; moisture moderate; low barometric pressure. Mean Temperature, 55·79 degrees. Fall of Rain, 9·40 inches. Mean Barometer, 29·36 inches.
Respiratory organs,	219	280	180
Bowel complaints, &c.	173	177	150
Or during August,	81	71	33
Brain diseases,	116	120	79
Heart diseases,	29	26	21
Aged above 60,	180	242	124
Or per centage of Aged to total mortality,	18	15	13

It may be stated that the mean temperature of Edinburgh during the last three years was 47·67 degrees Fahrenheit. The mean barometric pressure 29·55 inches; and the mean annual fall of rain for the last nine years 24 inches.

Notwithstanding the nearness of Leith to Edinburgh, the mortality there during the above months appears to have been under very different influences from what it has been in Edinburgh, having apparently been aggravated by local causes which have exercised a deleterious influence on its inhabitants. With the exception of the zymotic class of diseases, whose mortality, as above noticed, so greatly exceeded that of former years, the mortality of all the other classes of disease was very nearly the same as during the corresponding period of last year.

As repeated inquiries have been made relative to the BIRTHS occurring in Edinburgh and Leith, it may be stated once for all, that the reason why no notice has been taken of these is, that not exceeding a fourth of the actual births are entered on the parochial registers, consequently the information is quite useless for statistical purposes. Thus, if the births in Edinburgh bore to the population the same proportion as they do in London, then, by the last census of the population, 4382 births ought to be registered annually in Edinburgh; yet the number actually registered within the parliamentary bounds was only 1041 births in 1845, and 1085 in 1846, or less than a fourth of the actual births.

The following is the Abstract of the Mortality Tables of Edinburgh and Leith for the months of June, July, and August 1848.

MORTALITY OF EDINBURGH AND LEITH
For months of June, July, and August 1848.

AGES.	EDINBURGH.						LEITH.					
	June.		July.		August.		June.		July.		Aug.	
	M.	F.	M.	F.	M.	F.	M	F.	M	F.	M	F.
1 year and under,	35	22	32	16	30	25	3	5	2	8	9	6
2	5	17	10	9	8	8	3	6	3	3	2	3
5	14	14	11	8	30	10	7	6	5	2	6	9
10	14	9	13	10	17	18	4	7	6	4	1	3
15	3	4	3	1	1	6	2	1	0	0	1	0
20	6	16	12	4	8	5	1	0	2	4	1	0
30	22	15	19	14	12	11	5	0	2	3	3	2
40	20	15	11	12	11	19	3	1	4	0	4	3
50	21	20	10	15	13	9	2	3	2	6	5	2
60	15	20	18	14	6	16	4	2	3	2	2	2
70	6	11	8	11	16	5	1	4	0	2	4	4
80	8	11	10	9	9	10	1	2	2	6	0	4
90	0	3	4	2	1	0	0	0	0	2	1	0
100	0	0	0	0	0	0	0	0	0	0	0	0
Not stated,	2	3	4	1	4	2	0	1	0	0	0	0
Total deaths,	171	180	165	126	166	144	36	38	31	42	39	38
Still-born,	13	6	14	9	17	7	2	4	2	2	1	1
Total,	184	186	179	135	183	151	38	42	33	44	40	39
	370		314		334		80		77		79	

CLASSIFIED TABLE OF DISEASES.

Mortality of Edinburgh and Leith for June, July, and August 1848.

Class.	Disease.	Edinburgh.			Leith.		
		June	July	Aug.	June	July	Aug.
I.	Small-pox,	12	3	9	2	0	0
	Measles,	5	6	3	1	0	0
	Scarlet fever,	24	20	44	22	18	19
	Hooping-cough,	3	4	3	2	1	4
	Croup,	3	2	4	0	0	2
	Diarrhœa,	0	7	3	0	1	1
	Cholera,	2	2	4	0	0	0
	Typhus fever,	52	41	42	2	7	10
	Erysipelas,	1	1	1	2	0	1
	Other zymotic diseases,	2	4	2	1	1	1
II.	Dropsy,	14	13	8	1	1	0
	Cancer,	3	3	1	0	0	0
	Debility,	10	12	17	0	0	0
	Sudden deaths,	1	1	1	1	1	0
	Other diseases of uncertain seat,	11	7	10	0	2	0
III.	Cephalitis,	0	3	2	1	1	0
	Hydrocephalus,	11	3	10	3	4	2
	Apoplexy,	4	1	2	1	1	0
	Paralysis,	5	9	11	0	0	0
	Other diseases of brain,	7	6	5	2	1	0
IV	Pneumonia,	8	3	9	2	0	3
	Asthma,	3	2	2	0	0	3
	Consumption,	50	47	36	11	4	4
	Other diseases of respiratory organs,	9	4	7	1	1	1
V.	Diseases of heart and blood-vessels,	8	8	5	3	1	1
VI.	Teething,	12	5	4	0	3	4
	Inflammation of bowels,	23	17	7	4	5	2
	Tabes mesenterica,	11	8	11	2	1	4
	Other diseases of organs of digestion,	7	11	4	0	0	0
VII.	Kidney and urinary diseases,	3	1	3	0	0	1
VIII	Child-birth,	6	2	0	0	0	1
	Diseases of uterus, ovaries, &c.,	1	0	2	0	0	0
IX.	Diseases of bones, joints, &c.,	1	0	2	0	1	0
X.	Ulcer, carbuncle, &c.,	0	0	1	1	0	0
XI.	Old age,	19	20	24	4	10	9
XII.	Violent deaths and suicides,	11	8	6	3	5	4
	Causes not specified,	9	7	5	2	3	0
	Total deaths,	351	291	310	74	73	77
XIII	Still-born,	19	23	24	6	4	2
	Total,	370	314	334	80	77	79

22 Northumberland Street,
September 1848.

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THE

RESULTS

OF THE

CENSUS OF GREAT BRITAIN

IN

1851;

WITH A DESCRIPTION OF THE

MACHINERY AND PROCESSES

EMPLOYED TO OBTAIN THE RETURNS.

ALSO AN

APPENDIX.

BY

EDWARD CHESHIRE,

Fellow of the Statistical Society, and one of the Secretaries to the Statistical Section of the British Association for the Advancement of Science.

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