

Remarks suggested by the Glasgow bills of mortality. I. On the mortality of children in Glasgow.

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REMARKS

SUGGESTED BY THE

GLASGOW BILLS OF MORTALITY.

By ROBERT COWAN, SURGEON.

I.

ON THE MORTALITY OF CHILDREN IN GLASGOW.

[Being an Essay read before the Glasgow Medical Society.]

GLASGOW:

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REMARKS, &c.

BILLS of mortality should afford an accurate annual statement of the population, of the marriages, births, and deaths of the whole community, distinguishing the still-born among the births, and the mortality at particular ages among the deaths. It would also be very desirable, that the diseases from which the deaths occurred were stated, for although no very great accuracy in distinguishing every disease could be expected, still many important conclusions as to the increase and decrease of certain diseases might be obtained.

In many foreign countries the bills of mortality have been long and well kept, while in Great Britain, and particularly in Scotland, they have been generally neglected, with some few exceptions; and it is still matter of regret that Government has not taken the matter into its own management, and ordered regular registers of the population, marriages, births, and deaths, to be kept on one uniform plan throughout the united kingdom and its dependencies.

The mortality bills of Glasgow were, till lately, very imperfectly kept, but during the last eleven years, by the industry and exertions of Dr. Cleland, they have been put on a most satisfactory basis.

The late Dr. Robert Watt, one of the original members of this Society, took the labour of examining the register of burials, kept in this city and suburbs, from the year 1783 till the year 1812, both inclusive; and published in the appendix to his work on Chincough, tables of the mortality under ten years of age, and the diseases of which the children died during the above-mentioned period of thirty years; and it is from these tables of Dr. Watt, and the mortality bills of this city, as published by Dr. Cleland, that the statistical details of my essay, as far as regards the city of Glasgow, have been drawn.

The first fact to which I wish to draw the attention of the Society, is the great mortality, from small-pox, which took place among children under ten years of age, in Glasgow, during the close of the last century.

From this disease being one, the symptoms and appearances of which are well known, there can be little doubt that the deaths from it are more accurately distinguished in the mortality bills, than those from any other infantile disease.

The introduction of inoculation, although it diminished the relative mortality, will, it is believed, be found to have increased the absolute mortality of small-pox; as by this practice the disease, which, before its introduction, occurred epidemically only at long and uncertain intervals, was kept constantly prevailing at all times and seasons, and thereby produced a mortality, especially among children, which could now be scarcely credited, but for the attested registers of its ravages. The fact is undoubted, that small-pox inoculation did not effect that saving of human life so generally attributed to it. While it was adopted by the upper and intelligent classes of the community, it was rejected by the lower; and the bills of mortality prove the deaths by small-pox to have increased, after the practice of inoculation was introduced. In this city small-pox inoculation was generally practised, and recommended by medical practitioners during the period embraced in the following table. We have no data from the Glasgow bills of mortality to prove the fact of the mortality from small-pox being greater at the close than the commencement of the eighteenth century, but it has been ascertained in other towns, and the following extract from Heberden confirms the assertion in regard to London. "Out of every thousand deaths in the bills of mortality, the number attributed to the small-pox, during the first thirty years of the 18th century, before inoculation could yet have had any effect upon them, amounted to seventy-four. During an equal number of years, at the end of the century, they amounted to ninety-five. So that as far as we are enabled to judge from hence, they would appear to have increased in a proportion of above five to four." I have, therefore, no hesitation in ascribing a large proportion of the mortality recorded in the following table to the practice of inoculation for the small-pox, being borne out in my assertion by the above quotation from Heberden, and by the medical statistics of other cities.

The following table exhibits the total deaths under ten years of age, and the deaths under ten from small-pox in Glasgow, for thirty years, divided into three equal periods.

Year.	Total.	Small-Pox.	Year.	Total.	Small-Pox.	Year.	Total.	Small-Pox.
1783	719	155	1793	1126	389	1803	940	194
1784	877	425	1794	759	235	1804	863	213
1785	744	218	1795	1048	402	1805	884	56
1786	941	348	1796	797	177	1806	786	28
1787	1016	410	1797	884	354	1807	899	97
1788	1059	399	1798	864	309	1808	1775	51
1789	1058	366	1799	1105	370	1809	1187	159
1790	1236	336	1800	746	257	1810	1027	28
1791	1367	607	1801	766	245	1811	1274	109
1792	902	202	1802	985	156	1812	1278	78
1st period	9919	3466	2d period.	9080	2894	3d period.	10913	1013

The ravages of small-pox were never before more vividly illustrated than in the foregoing table.

In the first period of ten years, the total deaths under ten years of age amounted to 9,919, and the deaths from small-pox, to 3,466, being 34·94 per cent., and rather more than one-third of the whole deaths under ten.

In the second period, the total deaths under ten are 9,080, and the deaths from small-pox, 2,894, or 31·87 per cent.; and in the last period, the total deaths under ten are 10,913, and the deaths from small-pox 1,013, or only 9·28 per cent.

The saving of human life in infancy, by the introduction of vaccination is thus most satisfactorily attested, as the table shows an improvement to the extent of 25 per cent., and if to this be added the lives saved above ten years of age, which we have no means of exhibiting from the Glasgow mortality bills, we will be able to judge of the benefits conferred on society by Jenner.

In the year 1791, the population of Glasgow and suburbs, amounted to 66,578. In 1801, to 83,769. In 1811, to 110,460. These details are added to render the above table more complete, and that the total infantile mortality may be compared with the amount of population at each period.

I am not aware that small-pox was so fatal in any town as it appears to have been in Glasgow. In Berlin, the deaths from small-pox were for a short time as 1 in 4, but more generally as 1 in 7 of the whole deaths under ten years of age, while in the city and suburbs of Glasgow, it was fatal in the proportion of one in three of the deaths under ten years, and that not for one or two years merely, but for a long period.

The great saving of human life is rendered apparent from the third period embraced in the table. Up to the very

moment of small-pox inoculation being superseded by cow-pox, the mortality is immense, and the instant the latter is employed, the mortality becomes trifling in comparison, and a little additional attention on the part of the profession and the public, would still diminish, if not altogether annihilate, this source of mortality among children.

Some foreign governments have extirpated small-pox, and surely without any breach of the liberty of the subject, the same beneficial result might be accomplished in our own country. At all events the medical corporations should exert themselves in promoting vaccination, and in explaining its efficacy, when they have opportunity. In our own city, the practice of vaccination is not so common now among the poor as it once was, and I fear that if the list of infantile diseases were still published in the mortality bills, many deaths from small-pox would annually be found; a source of death, which, ere this time, might have been by judicious exertions totally eradicated.

It being proved, without the slightest possibility of contradiction, that the introduction of vaccination has checked the excessive mortality of small-pox, and it being evident, from the returns from those countries where vaccination has been introduced and enforced by government, that small-pox might be completely eradicated, it now becomes an important question whether the diminution of infantile mortality, which the friends of vaccination anticipated, has been more apparent than real; in short, whether the other diseases of infancy have become proportionably more fatal, and ultimately kept the rate of mortality among children as high at least, as it was before the practice of vaccination.

A great many authors, and some of them of no mean note, have taken the gloomy view of the question, and among others, Dr. Watt, who, after allowing that the mortality at particular ages, under ten years, was materially diminished, asserted that the total deaths under that age remained nearly the same. Dr. Watt quotes the following passage from Dr. Woolcombe as somewhat prophetic of the general result. "May not the discovery of the cow-pox, if it should ultimately effect the extermination of the small-pox, which it may do, when the prejudices of mankind will permit, be welcomed rather on account of its influence, in diminishing human suffering, than on account of its effect in diminishing human mortality? Since disease is one of the appointed checks to excessive population, and the plan of providence in the creation of human life requires the termination of the existence of one-third of its creatures before they have attained the age of two years, it may be doubted whether the annihilation of so efficient an

“instrument as small-pox can be admitted, without the substitution of some other equally destructive malady. The substituted malady may, indeed, be productive of less collateral affliction, than the loathsome distemper whose place it supplies. But granting that no direct substitute should arise, it will not follow that disease in general will be deprived of its accustomed share in checking population, and if it be not the only difference, will be in the proportion of victims submitted to other disorders. The infant rescued from small-pox, may be rescued only to perish in childhood by measles or scarlatina, or be preserved to swell the list of youthful victims to the insatiate maw of consumption.” “This speculation,” continues Dr. Woolcombe, “on the influence of cow-pox on population, is totally foreign from the question of the merits and advantages of vaccination, which in my estimation are placed beyond all cavil.”

Dr. Watt asserts, that he has discovered the substituted malady, alluded to by Dr. Woolcombe, in measles, and thinks, that the tables appended to his work on Chincough, decidedly prove the truth of his assertion. Another writer denominates small-pox “The poor man’s friend,” as it saves him the expense and trouble of a family; and asserts that it, or some other equally fatal malady, is essential to the comfort of the poor. Let us, therefore, consider first, whether or not measles have become more fatal since the introduction of vaccination; and, secondly, whether the mortality among children, from all other diseases, has increased since the comparative extinction of small-pox.

Dr. Watt divided the thirty years, comprehended in the first table, into five equal portions of six years. In the first, the deaths by measles did not amount to one per cent. of the deaths. In the second period, they amounted to 1·17, or 24 hundred parts more than the first. In the third period, to 2·10, or nearly one per cent. more than in the second. In the fourth period, to 3·92, and in the last, to 10·76.

Dr. Watt is perfectly correct in the above statement; but it must be kept in view, that measles is irregularly epidemic, while small-pox, after the introduction of inoculation, was prevailing at all times.

“The deaths imputed to the measles,” says Dr. Heberden, “are remarkably different in different years, sometimes amounting to one-thirtieth of the whole number of deaths, and at other times falling short of one in 4,000.” Dr. Watt formed his tables a few years after the periodic visitation of measles, and the most fatal one that ever afflicted this city—I allude to the epidemic of 1808, which carried off 787 children, the deaths

being more numerous in one month, from measles, than they ever were before, from the same disease, in a year. Those in May amounting to 259, and in June to 260. Since 1808, we have had no very serious return of measles, with the exception of 1816. I have examined the files of the Glasgow Courier, for the mortality bills, since 1813, in order to find the precise number of deaths, occasioned by measles, but finding that the suburbs were excluded, and the Calton being the burying-place, in which the greatest number of children are interred, I thought it needless to insert any tabular view of the deaths, by measles, since the date of Dr. Watt's tables.

As sufficient data cannot be obtained from the mortality bills, it will, no doubt, be elicited from the senior members of the Society, how far they consider measles more fatal now than formerly—that is to say, since vaccination was practised. “How miserably disappointed would that practitioner be,” exclaims Dr. Watt, “who forms his estimate of measles now by the sentiments of Dr. Cullen, and others, who practised thirty years ago;” and he goes on to conclude, that the dreadful mortality of measles is, in some measure, to be imputed to the practitioner, not being aware of the formidable nature of the disease he had to contend with. On reading this paragraph of Dr. Watt, I took occasion to consult two or three of the best employed seniors in the profession, one of whom had practised nearly fifty years in Glasgow, and all of them declared, that they did not consider measles more fatal of late years, than at any former period of their practice. With regard to my own experience, I consider the measles in the middle ranks of life, when due precautions are taken, to be a mild disease, and, at the moment, I cannot recal to my memory more than one single death arising from measles in my own practice.

We shall now proceed to inquire, whether the diseases of infancy, including measles, have increased in mortality, since the extinction of small-pox; and here I am glad to say, that the mortality bills will afford satisfactory data on which to found our conclusions. The following tables, compiled from the tables of Dr. Watt, and the mortality bills of Dr. Cleland, contain much valuable information on the subject.

The first table comprehends the same period as the first one in this essay, comprehending a term of thirty years, equally divided into three portions. No bills of mortality, except those for the Royalty only, in the Glasgow Courier, are in existence, for the period embraced from 1812 till 1821. After this last date, Dr. Cleland has prepared an annual bill, distinguishing the deaths at different periods of life: and my

second table comprehends a period of 10 years, commencing in 1821, and both tables give the total deaths in the community, distinguishing those under 10 years of age.

Year.	Total Deaths.	Under 10 Years.	Year.	Total Deaths.	Under 10 Years.	Year.	Total Deaths.	Under 10 Years.
1783	1413	719	1793	2045	1126	1803	1860	940
1784	1623	877	1794	1445	759	1804	1670	863
1785	1552	744	1795	1901	1048	1805	1671	884
1786	1622	941	1796	1369	797	1806	1629	786
1787	1802	1016	1797	1662	884	1807	1806	899
1788	1982	1059	1798	1603	864	1808	2623	1775
1789	1753	1058	1799	1906	1105	1809	2124	1187
1790	1866	1236	1800	1550	746	1810	2111	1027
1791	2146	1367	1801	1434	766	1811	2342	1274
1792	1848	902	1802	1770	985	1812	2348	1278
17607		9919	16685		9080	20184		10913

Year.	Total Deaths.	Deaths under 10.
1821	3686	1953
1822	3690	1973
1823	4627	2524
1824	4670	2599
1825	4898	2667
1826	4538	2190
1827	5136	2698
1828	5942	3008
1829	5452	2552
1830	5185	2724
47824		24888

	Total Deaths.	Deaths under ten.		
In first 10 years, 1783 to 1792	17607	9919	being 56.33	per cent.
Second, 1793 to 1802	16685	9080	— 54.42	—
Third, 1803 to 1812	20184	10913	— 54.06	—
Fourth, 1821 to 1830	47824	24888	— 52.04	—

The arrangement of the thirty years, comprised in Dr. Watt's tables, into three periods, instead of five, as adopted by him, was accidental on my part; and yet it turns out, that this arrangement overthrows the Doctor's assertion, that the percentage of deaths, under ten years, had increased or remained stationary. In short, it had fallen from $56\frac{1}{3}$ to 54, in the Doctor's lifetime, and since to 52. It was only by dividing his table into five portions, and taking advantage of the epidemic

measles of 1808, that his statements could have been supported by his tables.

In the first of the four periods, the deaths under ten years of age are 56·33 per cent. of the whole deaths. In the last, 52·04 per cent. being an immense reduction in the mortality, though not so great apparently as it really is. Dr. Watt labours under an error, which pervades all his tables, and materially affects his conclusions. The error was pointed out in Hufeland's Journal, and by other critics, on the Doctor's work. It is mentioned in the following words by Robertson, in his observations on the mortality of children. "In comparing the deaths under ten, in 1812, with what they were twenty or thirty years previously, and drawing the inference, that they were as great as before, Dr. Watt evidently refers to the per centage of deaths in the registers, under ten, at the particular periods, and not to the actual mortality under this age—that is, the number of deaths compared with the population which, as is evident, is very different, and ought not to have been omitted.

"In 1783, the per centage of deaths, under ten, was 53·48, and the annual mortality of the inhabitants 1 in 26.

"In 1812, the per centage of deaths, under ten, 55·49, and the annual mortality of the inhabitants 1 in 40·8.

"Here the relative proportion of deaths, under the tenth year, is greater in the period of 1812, than in that of 1783; and yet, on account of the very diminished ratio of the annual mortality, the actual mortality under ten, in 1812, is nearly one-third less than it was in the period for 1783."

This simple statement overthrows, from the materials of his own collection, the averments of Dr. Watt, and proves, incontestably, the improvement in the duration of human life, produced by vaccination, and that the other diseases of infancy were not increased in fatality by the extinction of small-pox.

There is a slight discrepancy in the quotation from Robertson, and the tables last inserted, arising from Dr. Watt having divided the thirty years into five periods, while I have only done so into three, that I might compare those of Watt for ten years, with the ten years embraced in Dr. Cleland's bills of mortality.

In 1791, the deaths under 10, were	1 in 46·70	of the inhabitants.
In 1821,	1 in 75·29	.
In 1830,*	1 in 74·31	.

* The mortality bill made up to 15th December, 1830, is compared with the Government census taken early in 1831.

proving most satisfactorily the diminished danger of infancy from measles, and all other diseases.

The following table exhibits the proportion which the still-born, the deaths under two, under five, under ten, and the total under ten, bear to the total deaths in the registers. The first five periods of six years each, are from Dr. Watt's work, and the sixth has been made up by myself, and is for the six years previous to 1831.

Period.	Still-born.	Under 2.	Under 5.	Under 10.	Total under 10.	Total Deaths.
1	5.03	39.40	10.66	3.42	53.48	9994
2	5.53	42.38	11.90	3.79	58.07	11103
3	5.33	38.82	12.21	3.45	54.48	9991
4	6.69	33.50	13.43	5.10	52.03	10034
5	6.70	35.89	14.22	5.58	55.69	13354
6	7.49	36.84	9.03	5.12	50.84	31151

The foregoing table is constructed in the first five periods by Dr. Watt, and in the sixth by myself, on the same principle as the five preceding periods; and even on this defective principle, it proves, that Dr Watt's conclusions as to the non-diminution of infantile mortality were completely erroneous. In the per centage of the still-born, there is a slight increase; but compare this with the population at any of the six periods, and you will find, that in reality, there is a diminution in the number of the stillborn. At all the different stages of life the improvement is marked and visible, and, consequently, in the totals, even admitting the stillborn. But to do justice to this subject, it would require the numbers of the stillborn, the numbers under two, five, and ten years, to be compared with the population of the city at each of the periods, and then the triumph of civilization, and the increasing success of medical treatment, would become more and more apparent. This I have done at large, but my time will not permit my inserting the tabular results here.

It was my intention to have carried my inquiries farther into the great diminution in the mortality of the city of Glasgow, which has taken place, and which the mortality bills fully prove, but this must be delayed till some future opportunity.

To recapitulate. In the foregoing paper it has been proved.

1. That before the introduction of vaccination nearly $\frac{1}{3}$ of the deaths under ten years of age were occasioned by small-pox.

2. That after the introduction of vaccination, the deaths by small-pox, under ten years of age, were $\frac{1}{11}$ th of the whole deaths under ten.

3. It was asserted, and in my opinion, proved, that measles are not more fatal now than before the comparative extinction of small-pox.

4. It was proved, in opposition to the statements of Dr. Watt, and others, that the diseases of infancy, including measles, have not increased of late years in fatality, but the reverse; the deaths, under ten, which, in 1791, were 1 in 48.70 of the population, being, in 1821, only 1 in 75.29; and 1830, 1 in 74.31, of the population.

5. That the improvement exists at every period of life under 10.

6. That the proportion of stillborn is actually also diminished, when compared with the number of inhabitants.

43, West Nile Street.

Since the above essay was written, the mortality bill, for 1831, has been published, and the following are its results:—

Population.	Total Deaths.	Deaths under 10.
202,426	6,547	3,371

The deaths are 1 in 30.91 of the population; while, in 1830, they were only 1 in 39.

The deaths, under ten years of age, are 1 in 60.04. The deaths under ten are 51.48 per cent. of the whole deaths.









