

now of no pain in his bowels; thirst great; slept a little in the night; the bubo causes much pain though not large. Was ordered five grains of camphor three times a day, and the muriatic acid as before. An emollient poultice was put to the bubo.

Vespere.—This evening is very restless and delirious; tears off his blisters: oppressed with constant nausea and retching; a blister was put to his forehead, repeating the saline mixture and camphor as before.

Die 6.—Very delirious in the night; tongue not very foul; will not drink his barley-water; expresses great distress from the pain of the bubo; affected with a degree of tenesmus. The muriatic acid was omitted.

Vespere.—Has had a great many trifling evacuations by stool. About 8 o'clock P. M. he died.

After death his lower extremities were all equally of a motley bluish cast, with some small petechiæ over his breast and arms. The bubo was completely stationary for some days previous to death. The tongue, though whitish, was remarkably clean throughout the whole of his illness.

II.

Observations on the Influence of Vaccination on other Diseases, and on Population in general. By ROBERT WATT, M. D. Lecturer on the Theory and on the Practice of Medicine, Glasgow.

To the Editors of the Edinburgh Medical and Surgical Journal.

GENTLEMEN,—I perceive by a critique in your last number, and by remarks from various other quarters, that my inquiry, respecting the fatality of measles, and the numbers who have died under ten years of age in Glasgow, is likely to produce a variety of discussion, and some difference of opinion. I shall be glad if it do; for these discussions always lead to improvement, provided they are conducted with that candour and temper which ought to characterize all philosophical investigations. But, unfortunately, it too often happens, that professional men run into opposite extremes. They either sink into a profound apathy, which renders them totally regardless of the interests of science; or their discussions are carried on in a strain of acrimony and invective, which no circumstances can either excuse or justify.

At first I resolved to take no share in any discussions to which the inquiry might lead, and I should have kept to that resolution, had it not appeared to me, that your reasoning frequently rested on what I considered to be very questionable grounds, and sometimes on mere hypotheses, when the facts, had you known them, would have led to very different conclusions. The truth must ultimately prevail, and I have no objection that it fall to that side of the question which you have espoused; but let it be ascertained by fair induction. The result of an investigation is often very different from what was expected; but whatever be the result, the inquiry itself, if conducted with candour and perseverance, will seldom fail to promote the interests of science.

You will perhaps say the facts are well enough; but the attempt to account for the result might have been spared. I question, however, if the tables, without the speculations, would have excited the same degree of interest which they have done. It is not because a fact is new, extraordinary, or unaccountable, that it excites attention; but because it is made to open new prospects to our view, to overturn old and established opinions, and, thus to extend the sphere of our knowledge. Nine-tenths of the discoveries in natural science have been made in attempts to establish or overturn particular theories.

You object to the length of time and the extent of field to which the tables apply. This I grant you is just, were I attempting to draw conclusions beyond the extent of my facts; but, as I have oftener than once observed in the inquiry, the conclusions apply merely to Glasgow. I leave it to the industry of others to produce similar tables to show how the matter stands in other places, and, till that is done, it is unnecessary to suppose local circumstances or any thing else. Facts can only be opposed by facts equally numerous and well ascertained.

You remark, that it does not correspond with your own observations, except in the year 1808, that measles have been more fatal of late than formerly, and to this you have added the firm belief of Dr Bevan, and you might also have subjoined the evidence in the possession of Dr B. of the Carey-Street Dispensary. But what does all this amount to? Had you asked myself a year ago, or I believe any other practitioner in Glasgow, the answer would have been the same. The result of the inquiry has not been less surprising to the practitioners of Glasgow than to those of other places. But why have recourse to hypotheses when direct evidence can be obtained? What do the London bills of mortality say? To ascertain this point, I take the last ten years, and compare them with the ten years previous to the commencement of vaccination. In the ten years from 1788

till 1797 inclusive, the deaths by measles were 1 in 75.7 of the whole deaths, and this is considerably above the average proportion of deaths by measles in the whole century. In the last ten years, viz. from 1803 till 1812 inclusive, the deaths by measles are as 1 in 31.7 of the whole deaths; or, to express it otherwise, the deaths by measles have increased in the last ten years, compared with the first ten years, as from 4 to 9, or they are considerably more than doubled. Taking the same two periods, you will find, that the deaths by small-pox, in the latter, are not reduced to a half of what they were in the former, but nearly as 9 to 5. In the one case then, we have the deaths reduced as from 9 to 5, and in the other, increased as from 4 to 9.

How does this ratio correspond with the deaths as given in the Glasgow tables, in the same periods? From 1788 to 1797 inclusive, the deaths by small-pox are as 1 in 5.1. From 1803 till 1812 inclusive, they are as 1 in 19.9. This then is a reduction, not from 9 to 5, as in London, but as from 20 to nearly 5. In what proportion have the deaths by measles increased? From 1788 till 1797 inclusive, the deaths by measles are as 1 in 65.7. From 1803 till 1812 inclusive, as 1 in 12.8. This then is an increase, not from 4 to 9 as in London, but from 4 to nearly 20.

Now I would ask, if any two statements could be expected to come nearer one another than these? Is not 20 to 5, and 4 to 20, pretty much the same as 9 to 5, and 4 to 9. Thus the London bills of mortality, in so far as the deaths by small-pox have been reduced in that city, go the same length as the Glasgow tables, in support of the inference I have drawn. And if the increase of deaths by the one disease has hitherto exceeded the decrease of deaths by the other, is it not fair to suppose, that, had the decrease gone farther, as it has done in Glasgow, the increase would have continued to bear the same proportion to it. This you will say is but on hypothesis. I grant you it is; but I think it a fair one, and one which, at all events, deserves to be investigated, and in a more satisfactory way than by quoting individual experience or observation, whatever may be the extent of the one, or the correctness of the other.

You doubt the connection between the decrease of the small-pox and the increase of measles. I am not disposed to enter into the metaphysical regions of causation, where men have been led to doubt even of their own existence; but I may remark, in general, that when we find one thing succeed in the same proportion as another is withdrawn, so as to produce the same general result, it is very natural to suppose they are somehow or other connected. I hold it to be equally as unphilosophical to be

be indiscriminately sceptical as to be indiscriminately credulous. But it often happens, that those who are most sceptical on the one side of a question, are the most credulous on the other. You are quite sceptical as to the result of an inquiry conducted on the most rational principles of induction, and with a degree of minuteness, I believe, hitherto unexampled; but you have no difficulty in yielding implicit faith to the circumstance of the Inverness Militia. This circumstance, you admit, was a mere probability. That probability, in the next instance, grows on your belief, and becomes a fact, and then a fact of so comprehensive a nature as not to leave the possibility of a doubt.

You have quoted a number of places to show, that the deaths in Glasgow under ten years of age have always been excessive. But I would beg leave to ask, Are you certain that the registers in all these places are kept as generally and as minutely as I have stated them to be kept in Glasgow? That much depends on this circumstance, will appear from the following fact. When I first began the investigation, I took in merely the three burying-grounds belonging to the city, and I found that the deaths among children under ten years of age were only about 46 per cent. of the whole deaths. When I came afterwards to take those of the suburbs separately, they exceeded 60 per cent. The consequence was, that, on throwing the whole into one, the average turned out to be 54.75 as you have stated.*

I have no means of knowing how the bills of mortality are made out, in most of the places you have quoted, and therefore I cannot speak as to their generality and correctness. With regard to London, they are made out in such a partial manner, that I should not be surprised to find as great a difference between the bills published, and the real state of mortality, as I found here between the registers of the city and those of the suburbs. In London, the bills only include those who are buried according to the rites of the church of England, and consequently they exclude the Jews, Quakers, Catholics, and the whole body of dissenters; and that these correspond, in some manner, with the poorer sort of the people, who are chiefly buried in the suburbs in Glasgow, is more than probable. The
lowest

* It will be seen, however, by the subjoined bill of mortality for 1813, that the deaths under ten years of age, even in the city burying-grounds, now exceed 50 per cent. of the whole deaths. In this, measles do not appear to have had any very remarkable share. But in the inquiry it is not maintained that the deficiency occasioned by the decrease of small-pox is made up by measles alone. It is most distinctly stated, (in Inquiry p. 383,) that chincough, stopping, scarlet-fever, &c. may all have a share; and it appears from the present bill, that the two former of these have been very fatal indeed; and very probably a number of those registered under fever were cases of scarlatina.

lowest and most wretched of the inhabitants of London are to be found among the Jews and Catholics.

But

Mortality Bill of the city of Glasgow and suburbs, for the year 1813. Interred in the High Church, Black Friars, and North-West Church Yards.

	Males,	Fem.	Tot.		Age,	No.
January, . . .	47	47	94	Whereof have died,	Under 2 years, . . .	384
February, . . .	43	68	111		Between 2 and 5,	151
March, . . .	36	6	92		5 10,	81
April, . . .	46	51	97		10 20,	55
May, . . .	49	54	103		20 30,	57
June, . . .	52	45	97		30 40,	78
July, . . .	39	48	87		40 50,	72
August, . . .	42	45	87		50 60,	68
September, . . .	40	46	86		60 70,	133
October, . . .	32	59	111		70 80,	94
November, . . .	69	62	131		80 90,	34
December, . . .	58	69	127		90 100,	3
	573	600	1223			1223

Diseases.	No.	Diseases.	No.
Abortive, . . .	45	Jaundice, . . .	1
Accidental, . . .	4	Killed, . . .	2
Aged, . . .	256	Measles, . . .	55
Apoplexy, . . .	3	Mortification, . . .	1
Asthma, . . .	23	Palsy, . . .	4
Bowelhiye, . . .	118	Rupture, . . .	1
Burnt, . . .	3	Small-pox, . . .	42
Childbed, . . .	18	Sore throat, . . .	5
Chincough, . . .	120	Stopping, . . .	83
Cholic, . . .	1	Suddenly, . . .	13
Consumption, . . .	229	Swelling, . . .	4
Dropsy, . . .	10	Teething, . . .	20
Drowned, . . .	3	Water in the chest, . . .	3
Fever, . . .	99	Water in the head, . . .	28
Gravel, . . .	1		
Inflammation, . . .	28		1223

Interred in the High Church Yard,	645	}	798
In do. from the Infirmary,	83		
In Black Friars and North West Burying Grounds,			578
In Episcopal Chapel,	do.	do.	24
In Town Hospital,	do.	women, 40	}
		men 25, children 16	
			81
		Total in the City,	1421
In Calton Burying Ground,			446
In Bridgeton,	do.		107
In Gorbals,	do.		420
In Anderston,	do. Relief,	212	}
In do.	do. Cheapside,	98	
			310
		Total in the City and Suburbs,	2704
		Total in the year 1812,	2716

Decrease this year, 12

But this is not the only partiality; there are other circumstances, which may have a share in altering the proportion of deaths under ten years of age. Besides the many burying-grounds belonging to the different religious denominations, several very extensive public cemeteries are entirely omitted. Of these, I may mention St Paul's cathedral, Westminster Abbey, the Temple, the Rolls, Lincoln's Inn, St Peter's in the tower, the Charterhouse, the numerous hospitals, and even the great parishes of Marybone and Pancras; in the former of these alone, the average number of burials exceeds 1500 per annum*. At the time Mr Pennant published his account of London, in 1791, it was believed that there were nearly as many burials without, as within the bills of mortality, and if this was the case then, it is likely to be still more so now.

You remark, that it appears from the tables, that the number of deaths by small-pox, in Glasgow, prior to vaccination, was also excessive; and in support of this opinion, you have quoted a number of authorities. As to the first of these, viz. London, you can easily see how liable it is to deception, from its not comprehending the whole deaths of the city; and it remains to be shewn, whether the same objection does not apply to Geneva, Edinburgh, Berlin, Leipzig, Vienna, Breslau, and Lebin; as to Salzwedel, and the 140 German villages, they come so near that of Glasgow, as to do away, in a great measure, the idea of its being in this respect singular. Indeed, that of the 140 German villages appears to be the best authority you have produced; for this reason, that it is not only an extensive average, but, in each of these villages, there would very probably be only one burying-place, so that there was no room left for deception. I may also add, that the proportion of deaths by measles, in the 140 German villages, stands much higher than even in Glasgow, and nearly double what it does in the other places you have quoted. I would be disposed to ascribe this to the same cause, a more complete registration.

You remark, in opposition to the conclusions drawn from the Glasgow tables, that, in other places, vaccination has had a considerable effect in diminishing the deaths under ten years of age, and you strengthen your opinion by the authority of Dr Heberden; but as Dr Heberden's own authority is merely that of the London bills of mortality, I have already shewn how liable it is to error. By confining my first researches to the city registers,

* Heberden's Observations on the Increase and Decrease of Certain Diseases, p. 6.

I obtained a saving of from five to six per cent. and especially in the last eight or ten years; but when I came to extend them to the whole city and suburbs, in place of a saving, I discovered a loss. Before any general conclusion is drawn, let the same thing be tried with regard to London.

But there is one of Dr Heberden's results, which corresponds exactly with that of Glasgow; namely, a considerable saving of lives under two, but a great increase of deaths between two and ten. In Glasgow, the increase of deaths, between two and ten, is nearly six per cent. of the whole deaths in the city and suburbs. In fact, it appears from the tables, that a child never had a better chance of reaching its tenth year, than between 1783 and 1789 inclusive, when nearly a fifth part of the whole deaths in the city and suburbs were occasioned by small-pox.

Let us next examine the proofs from France. These may be comprehended under four heads: 1st, Those which shew a diminution in the aggregate of deaths. 2d, Those which show that the aggregate of population is increased. 3d, Those which show that there is a progressive increase of births, compared with the number of deaths. And, lastly, the direct proofs which shew that there is a real diminution of deaths under ten years of age. I shall notice each of these separately.

I. As to the first, it may be remarked, that a variety of causes may operate in diminishing the number of deaths in a particular place, and with regard to France, some of these causes have of late years been abundantly obvious. How many thousand Frenchmen have paid the debt of nature, without adding to the list of deaths in their native cities? But laying little or no stress on this circumstance, out of the immense population of France, you have given only a very few towns, some of them indeed mere villages, and even in these the calculations apply only to a few years. In none of them is it nearly equal to the period given in Glasgow.

But fatal as disease appears to have been in Glasgow, the following table will shew, that the deaths now bear a much smaller proportion to the aggregate of population, than they did formerly. The population of Glasgow was ascertained in 1780, in 1785, in 1791, in 1801, and in 1811. These 32 years I divide into four unequal periods. The I. consisting of six years from 1780 till 1785, inclusive. The II. consisting of six years, from 1785 till 1791. The III. consisting of ten years, from 1791, till 1801; and the IV., consisting also of ten years, from 1801 till 1811. In each period, taking the average population, and the annual average of deaths, the proportions stand thus:

Periods.

Periods.	Population.	Deaths.	Proportion.
I.	44,360	1661	1 in 26.7
II.	56,233	2012	1 27.9
III.	75,173	2127	1 35.2
IV.	96,997	2377	1 40.8

If the number of deaths under ten years of age had not been ascertained by the tables, this extraordinary disproportion between the deaths and the population, would have been chiefly ascribed to the effects of vaccination; and as vaccination has prevailed more in Glasgow than almost anywhere else in the kingdom, it would have been held up as a triumphant proof of its influence on population in general. But has it had no effect? I am far from either thinking or saying so. Though the rapid increase of population in Glasgow must be partly ascribed to the influx of people from other places; yet I have no doubt that it has also proceeded from the number of births far exceeding the number of deaths; and, that vaccination has snatched many names from the list of deaths, and added them to the aggregate of population, is I think more than probable. It has been proved, that as great a proportion die under ten years of age as ever, but this does not necessarily imply, that there is not also a greater number living at that age than in any former period.

2d, As to the increase of population, I do not see that any inference can be drawn, either for or against the question. The increase of population in Glasgow, where the deaths appear to have been so excessive, will bear a comparison with that of any other city in Europe. In the year 1780, the city and suburbs contained 42,832 inhabitants; in 1785, they contained 45,889; in 1791, 66,578; in 1801, 83,769; and, in 1811, the last survey that has been made, they contained 110,225. To this I shall add a small table, taken from a late history of Glasgow, to show, that, in point of healthiness, Glasgow is not inferior to other places. I do not vouch for its accuracy: it is given merely as I found it.

“ The proportion of inhabitants which die annually in cities and large towns, on an average of three eras in the preceding twenty years :

In Vienna, . . . 1 in $19\frac{1}{2}$	In London, . . . 1 in $20\frac{3}{4}$
Berlin, . . . 1 $20\frac{1}{2}$	Liverpool, . . 1 $27\frac{7}{10}$
Manchester, . . 1 28	Edinburgh, . . 1 30
Glasgow, . . 1 $39\frac{8}{12}$	Paris, 1 21.”*

3d,

* Chapman's Picture of Glasgow, published 1812, p. 284.

3d, With regard to the increase of births in France, the two examples you give afford but a very slight evidence. Besides being local, they apply merely, in the one case to four, and in the other to five years. The time is, therefore, too limited to admit of any general inference; and, moreover, we are not told whether there may not have been a similar increase prior to 1806, in the one case, and 1807 in the other. On this head I have no evidence to offer. The births in Glasgow are registered in a very imperfect manner. This arises partly from the negligence of parents, and partly from the great number of dissenters. The sum levied by the keeper of the registers is too small to make it an object for him to look after the defaulters. It is much to be regretted, that some more effectual measures are not adopted by the legislature to insure an accurate registration of births. There is no reason, however, to doubt, from the rapid increase of the population of Glasgow within these last 12 years, that the number of births has greatly exceeded the number of deaths. The operatives here marry very young, and though their progeny may not be the most robust, it is far from being deficient in point of number. Your remark with regard to the increase and enlargement of schools, seems to be still less to the point. You might as well ascribe the late furor about Lancasterian schools in this kingdom to the same cause. Of this kind of evidence of increased population we have three or four splendid examples in Glasgow.

4th, Lastly, as to the direct proofs of a diminution of deaths under ten years of age, the examples afforded are not very numerous. In the reduction of deaths at Bensacon, the reporter says, that it was chiefly among those under ten years, but the remark applies merely to a period of nine years, and a district where not a thousand died annually. In Toulon there seems to have been a considerable reduction of deaths under fifteen years, but this applies merely to a period of five years. Take the first five years in Glasgow after vaccination was introduced, say from 1802 till 1807 inclusive, and you will find a similar, if not a greater reduction. The only other proof that remains to be noticed, is that of M. Petiet, physician at Gray. He states, generally, that, since vaccination has been introduced into that circle, that the deaths under five years have annually been *sensibly* lessened. So it also happens in the 4th period of the Glasgow Tables: but what was the final result?

Thus, gentlemen, have I carefully and dispassionately examined the proofs you have collected to invalidate the conclusions I have drawn respecting the effects of vaccination on other diseases, and on population in general. I feel indebted to you
for

for the pains you have taken, and I give you credit for the zeal you have shewn; but I trust you will also receive the observations I have thought it my duty to make, in the same spirit of candour in which they were written. Nothing would have induced me to embark in support of an opinion so contrary to established notions, but a conviction of its importance, and a desire to discover the truth. If you, or any of your readers, from the side I have taken, should think me hostile to the cow-pox, I can assure you that you are very much mistaken. Indeed that inestimable discovery has suffered much more from the forwardness of its friends, than the strength of its enemies. I have been led into my present belief not designedly, but by the discovery of what I conceive to be the most unquestionable facts, and nothing can alter that belief, but facts equally general and well ascertained.—I am, &c.

ROBERT WATT, M. D.

Glasgow, 18th January 1814.

P. S. I am much pleased with the following very pertinent remark you have made in your review of Dr Warren's cases of diabetes, and therefore beg leave to direct the attention of your readers to it. "It has been observed by some practitioners, that the removal of the urinary disease, by animal diet, opiates, &c. is by no means always equivalent to a cure of the constitutional malady, and that the emaciation, the *tabes*, or consumption connected with it, still goes on to its fatal termination."* This accords completely with my observation, and I must say, that I can hardly conceive any thing more frivolous or puerile, than to see men of common sense pleasing themselves, and building their hopes on drams and ounces of urine, while death from every other quarter is staring them broad in the face. I have elsewhere stated†, that we have no direct proof of any one of Dr Rollo's patients having completely recovered, and afterwards enjoyed a course of good health. On the contrary, the conclusion of the history of their recovery is generally an account of their death, or they pass to a distance, or something else intervenes to leave the mind in a state of doubt and uncertainty. The same remark applies to the cases of Dr Bardsley, and in fact to almost all, if not the whole cases which have been published since. That complete cures, in confirmed cases, are not very often accomplished, the more my experience extends, the more I am ready to admit; and the reason is, that we seldom have confirmed

* See p. 113 of the last number of this Journal.

† Edinburgh Medical and Surgical Journal, Vol. V. p. 297.

firmed cases without their being combined with some other fatal affection. I can say, however, what I believe few other authors on the subject can say, that all the cases I have published as cured remain so, and are alive at this day. Stevenson is a stout healthy ploughman in this neighbourhood. Mr J. C. has completed his studies, and is now an established clergyman; and Mrs Caldwell is a stout healthy woman of 63 years of age.

With regard to the success of my practice, since the publication of the cases in 1808, it is difficult to form an accurate estimate. In that time, I have had a number of cases under my care, and I have been consulted respecting many more. The general impression on my mind is, that the practice will succeed where any plan of treatment is likely to be of service. The obstinacy of some cases, and the peculiarity of others, have led to many modifications, and to a variety of results. I have also had favourable, and less favourable accounts from almost every quarter of the kingdom; and I can say, from all those, that the practice, even where it seems to have done little or no good, never did harm; and I have never even heard of one of these sudden *exits*, which are so frequently the consequence of *cures* by other means. As I intend, at some future period, to give the result of my more mature experience to the public, I shall not at present take up your time on that subject, except merely to say, that, for some years, I have found repeated emetics a very useful addition to the other parts of the treatment I formerly recommended.

R. W.

III.

Case of Aneurism from a Wound, in which the left Carotid Artery was tied. By ALEXANDER MACAULAY, late surgeon of the Coldstream, now at Leith.

IN Calcutta, December 11th, 1812, at half-past eleven P. M. Mr WILLIAM JONES, gunner of the Honourable Company's ship Coldstream, aged 36, fell from a chest upon some glass ware, and received two wounds, one about the middle of the masseter muscle of the left side, which was slight; and the other, about an inch long, and three-eighths of an inch deep, in a longitudinal direction, between the mastoid process and the articulation of the