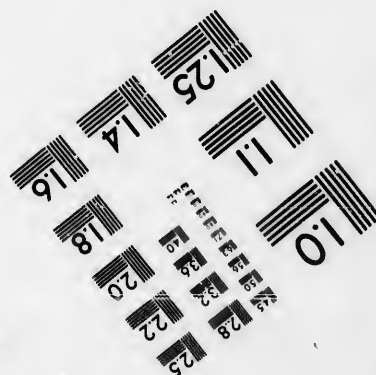
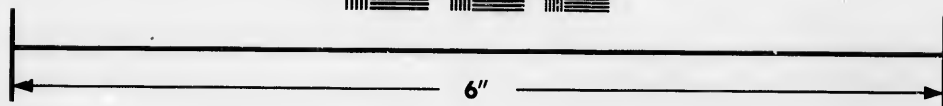
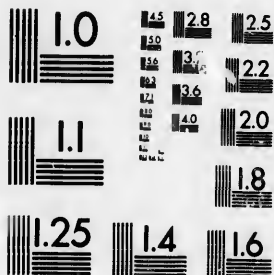


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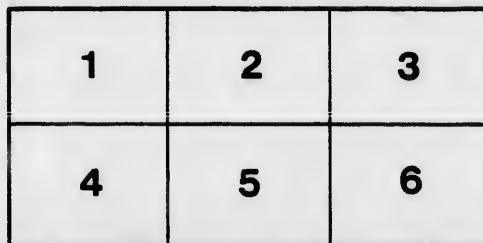
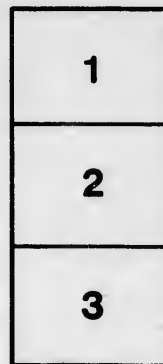
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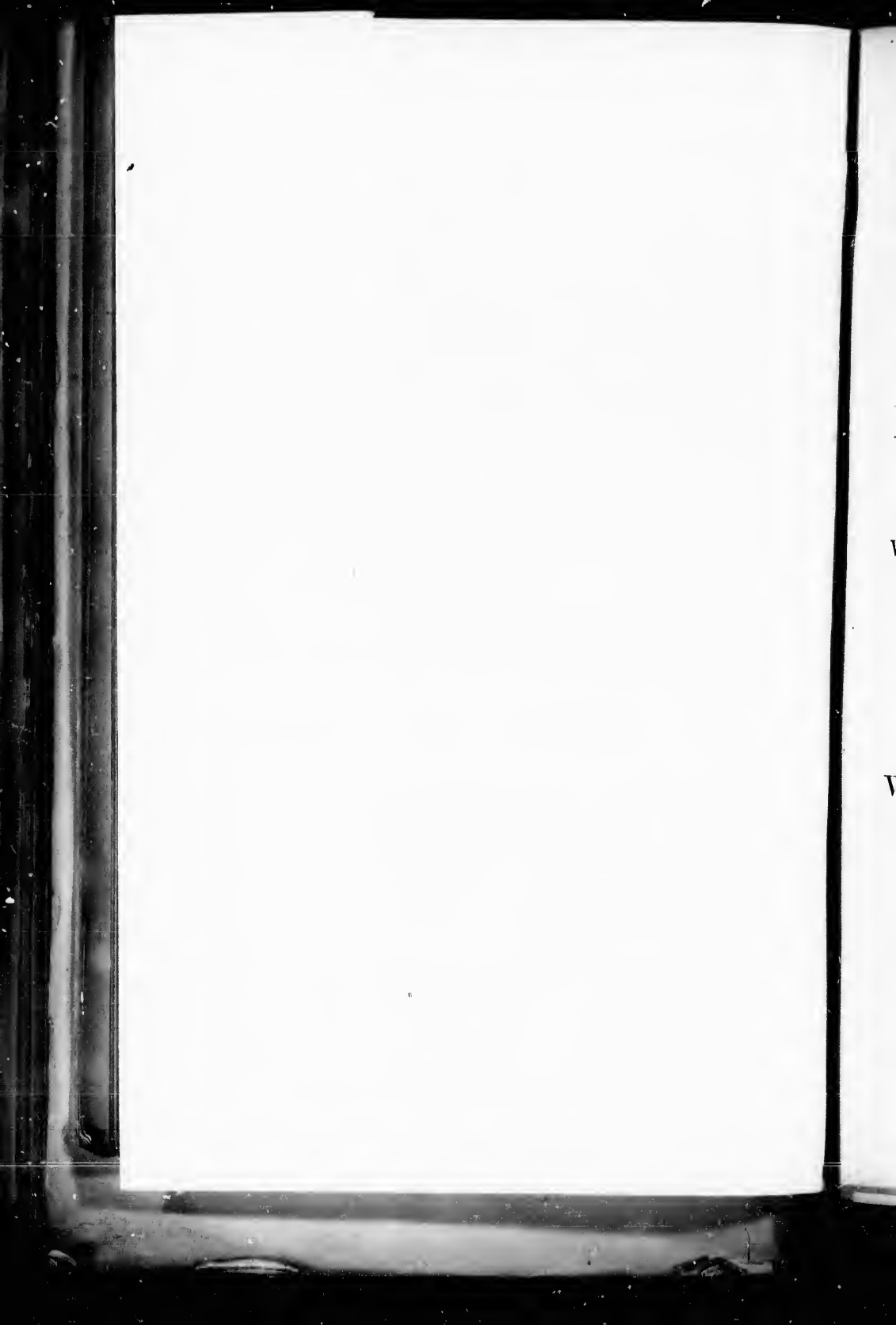
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Vol. 112

SMALL-POX AND VACCINATION.

A LETTER

TO THE

RIGHT HON. LYON PLAYFAIR, C.B.,

M.P., F.R.S., &c., &c.;

WITH REFERENCE TO MR. HOPWOOD'S MOTION
FOR THE REPEAL OF THE COMPULSORY
CLAUSES OF THE VACCINATION ACTS.

BY

WILLIAM B. CARPENTER, C.B.,

M.D., F.R.S., &c., &c.,

Corresponding Member of the Institute of France.

LONDON:

HARRISON AND SONS, ST. MARTIN'S LANE,

Printers in Ordinary to Her Majesty

1883.

SMALL-POX AND VACCINATION.

DEAR DR. PLAYFAIR,

BEFORE the House of Commons is moved to repeal the compulsory clauses of the Vaccination Acts, I desire to call your attention, and that of other Members of the Legislature, to what appear to me the very cogent reasons against this measure, drawn from facts which cannot be contested.

I take as my basis Mr. P. A. Taylor's own Table* of the mean annual death-rate from Small-pox per 1,000,000 living in England and Wales, from 1838 to 1879; substituting for the rate 344 given by him as that of the last period (which is really that for *measles*) the true *small-pox* death-rate now admitted by him to be no more than 82.† With this I combine a similar Table for Scotland, commencing with the date at which the Registration-system was introduced; and across each column I have drawn a line, showing when Vaccination was made compulsory:—

<i>England and Wales.</i>		<i>Scotland.</i>	
1838—42	571		
1843—46	No returns.		
1847—49	303		
1850—54	279		
1855—59	199	1855—59	298
1860—64	190	1860—64	392
1865—69	147	1865—69	47
1870—74	433	1870—74	375
1875—79	82	1875—79	10

Now, although, by Mr. Taylor's own showing, the Small-pox death-rate had progressively come down in England and Wales from 571 in 1838-42 to 147 (or scarcely more than *one-fourth*) in 1865-69,

* *Nineteenth Century* for May, 1882, p. 794.

† See my letter in the *Echo* of May 31, 1882, and his reply thereto in the *Echo* of June 2.

he sees no evidence that Vaccination had anything to do with this decline. Such evidence is furnished, however, by the *marked irregularity in the rate of that reduction*; by far the greatest fall occurring in the periods which followed the two principal legislative measures for the promotion of Vaccination.

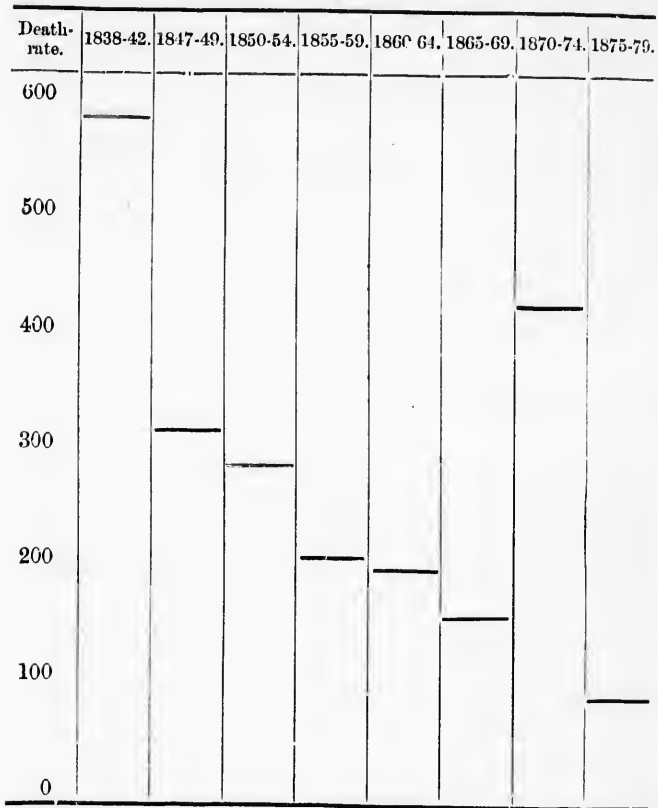
Previously to 1840, the Vaccination of the great bulk of the population depended upon the gratuitous action of the Medical profession; and in many country localities it was altogether neglected. The consequence of this was, that severe epidemics of Small-pox were not unfrequent; but as there was no general system of Registration until 1838, the actual mortality could not be determined. It was in 1840 that provision was first made for Vaccination out of the Public purse; and it is only by separating the years of Mr. Taylor's first quinquennial period, that the *immediate* effect of that measure is made apparent.

Year.	Small-pox Death-rate.	Averages.
1838.....	1,064	
1839.....	589	
1840.....	663	
	—	772
	Public Vaccination.	
1841.....	400	
1842.....	168	
	—	284

Admitting the death-rate of 1838 to have been exceptionally high, I do not think it fair to take the short three years' average, 772, as representing the Small-pox death-rate previously to the introduction of Public Vaccination; but accept Mr. P. A. Taylor's own average, 571, of the entire quinquennial period. So, again, as the death-rate of 1842 was exceptionally low, I do not claim the whole of the sudden reduction of the two years' average to 284 as the result of that measure. But it is clear that it *was* followed by a sudden and marked reduction, and that this reduction was *continuously* maintained; the death-rate being *little more than one-half* in the

period 1847-49, and *less than one-half* in the next quinquennium.—It was in 1854 that Vaccination was made *compulsory* in England and Wales; and another *sudden* reduction took place in the next quinquennial period, followed by a further *continuous* reduction in the two succeeding periods, bringing the death-rate down in the years 1865-69 to *little more than one-fourth* of what it had been in 1838-42.

These facts are made conspicuous by the following graphic arrangement:—



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Now that this second reduction in the English death-rate was not due either to any mitigation in the type of the disease, or to a general improvement in the health of the population, is shown by the fact that the Small-pox death-rate in Scotland, where Vaccination was *not* then compulsory, was *fifty* per cent. higher than that of England for the years 1855-59, and more than a *hundred* per cent. for the years 1860-64.—Compulsory Vaccination being then introduced into Scotland, and being accepted by its population generally without resistance, the Scotch mortality immediately underwent a most extraordinary diminution; the mean for the ensuing five years falling from 392 to 47, a reduction of no less than *eighty-eight* per cent.

So far, then, everything tells in favour of the effect of Vaccination in preventing Small-pox; since it can scarcely be contended that *three* such successive reductions in the death-rate, following directly upon *three* legislative measures, and not only maintaining themselves, but steadily increasing, can be fortuitous.

But, it is affirmed, the whole case for Vaccination breaks down under the severe Epidemic visitation of Small-pox which commenced in 1871, carrying up the mean death-rate for the quinquennium 1870-74 to 433 in England, and 375 in Scotland.

It is impossible for Mr. Taylor to controvert the fact, that this Epidemic originated in the importation*, at the end of 1870, of a type of Small-pox which had not prevailed in this country during the present century, but was often mentioned in the Medical history of the preceding 200 years as the "malignant;" bearing the same relation in severity to the "confluent," that the confluent bears to the "mild" or "discrete." *Not five per cent. of those*

* It seems now clear that this "malignant" type of Small-pox had made its appearance in Brittany in 1867, and gradually found its way to Paris in the two succeeding years.

attacked by it recover; and death usually takes place within four or five days—often before any eruption appears. It is the frequent occurrence of this form among the *unvaccinated* since 1870, which has raised the total proportion of deaths in that class in the Small-pox Hospitals of London to *forty-five* per cent. of the cases; a proportion which (having been never even approached in any modern Small-pox epidemic) Mr. Taylor and his supporters have treated as “incredible,” but which the returns published by the Metropolitan Asylums Board unequivocally prove; while even higher rates have been shown in North America, as, for instance, above 50 per cent. in Boston, 54 per cent. in Montreal, and above 64 per cent. (*nearly two-thirds* of the *unvaccinated* cases) in Philadelphia (see pp. 11, 12).

It is urged, however, by Mr. P. A. Taylor, that if this Epidemic is really of a more malignant character than has been known since the introduction of Vaccination, this only shows the fallacy of the expectation expressed by Jenner and his followers as to the *mitigation* of Small-pox, if not its entire extinction. But no one has ever (that I know of) anticipated any such effect upon the *unvaccinated*; just as well might it be expected that Pasteur’s “vaccination” of one flock of sheep would protect from the deadly *charbon* another flock turned into a poisoned pasture. That the vaccinated *have* thus been almost entirely exempt from the “malignant” type of Small-pox, is shown by the fact that the proportion of deaths to cases among them in this epidemic has been but little above the average.

I shall not go again over the proof of this which I formerly gave;* but shall support my case for the protective influence of Vaccination, by the figures given by the Registrar-General† in regard to the renewed outbreak of Small-pox in the Metropolis in 1881. Of the 2,275 recorded deaths, 962 occurred

* *Nineteenth Century* for April, 1882.

† *Annual Summary for 1881*, p. vi.

among the certified *unvaccinated*, and 524 among the certified *vaccinated*, 885 being reported as "doubtful." It is quite obvious that even if the unvaccinated residuum be admitted to constitute 15 per cent. of the Metropolitan population, the advantage is enormously on the side of the vaccinated; for (putting aside the "doubtful" cases) if the vaccinated portion of the population of London had died at the same rate as the unvaccinated, *their mortality would have been 5,451, or more than ten times as great as it actually was.*

This comparative exemption of the vaccinated is attributed by Mr. Taylor and his party to the different Sanitary conditions of the two populations; but what evidence is there of this? Doubtless some of the large areas which were almost entirely unvisited by this peculiarly localized epidemic, contained a population on the whole more favourably circumstanced in this respect than that of the North-east and South Districts, in which 58 per cent. of the total Small-pox mortality occurred.* But what about the nearly two million vaccinated subjects inhabiting the latter, who, according to Mr. Taylor, had no protection whatever, and were exposed, equally with the unvaccinated, to the infection?

There is a more cogent way, however, of testing Mr. Taylor's doctrine. If Vaccination affords no protection, the *ages* at which the vaccinated and the unvaccinated respectively die should correspond; but the *exact reverse* of this is shown to be the fact by the Registrar-General's latest figures, as by all previous comparisons. Of the 962 deaths among the unvaccinated, *three-fourths* (speaking roughly) occurred *under* the age of 20, the disease showing the same fatality among the young at present, that it used to do in pre-vaccination times: but of the 524 deaths among the vaccinated, *three-fourths* occurred *above* the age of 20,—that is to say, among *adults*, who

* Registrar-General's *Annual Summary for 1881*, p. vii.

had outgrown their original protection, and had not (so far as was ascertained) renewed it by *revaccination*. The proportion of children under 5 years old, vaccinated however indifferently, that died in the epidemic of 1881, was quite insignificant, being only 5·2 per cent. of the 524 deaths among the vaccinated; whilst the proportion of deaths among *unvaccinated* children under 5 years of age was 38·2 per cent. of the 962 deaths in that class. (*Op. cit.*, p. vi).

To the evidence of the protection afforded by *revaccination* which I have given elsewhere,* I now add the following, the cogency of which can scarcely be over-estimated:—

In Germany, vaccination is compulsory in children under a year old; and every man on his entrance into the army is *revaccinated*. In France, on the other hand, vaccination is not compulsory, and *revaccination* is not enforced on army-recruits. During the Franco-German War of 1870–71, the total number of deaths from Small-pox in the German army was 263, while in the French army it was 23,469, or very nearly *ninety* times as great. Of the 263 Small-pox deaths among the half-million or more of men brought into the field on the German side, it may be safely said that as many would have suffered in this Epidemic if they had been all “protected” by a previous attack of Small-pox; and no one now claims for vaccination a *greater* power than this. What reason is there to doubt that the adoption of compulsory *revaccination* in the French army would have saved a large proportion of the 23,469 who died of Small-pox, as well as an enormous amount of sickness?

The testimony as to the protective power exerted by *revaccination* upon nurses and hospital-attendants during the recent severe epidemics in the United States and Canada, is fully confirmatory of that of our own Small-pox Hospital superintendents.

* *Nineteenth Century* for April, 1882.

The control which Vaccination has exerted, and is exerting, over the ravages of this deadly pest, is further shown by the fact that even during the worst period of its epidemic spread, the mean rate of Small-pox mortality was only a little more than three-fourths that of the period 1838-42, the later being 433, and the earlier 571; whilst upon its general subsidence, the death-rate of England and Wales fell during the next quinquennium to 82,—*a figure far lower than it had ever previously approached.* The reduction was still more remarkable in Scotland; for the Small-pox death-rate of the epidemic years (which was somewhat *lower* than that of the years 1860-4 immediately preceding the introduction of compulsory vaccination) dropped suddenly from 375 to 10, and has for the last five years averaged only 4 per million.*

Now it is very easy to treat this extraordinary fall as an effect of the previous epidemic prevalence of Small-pox, which gave it to the great bulk of the subjects susceptible of the disease. But this theory fails in two particulars. In the first place, it is totally unsanctioned by experience, the amount of reduction being altogether unprecedented, as Mr. Taylor's own Table shows; and, in the second place, it does not accord with the fact that, though the disease is still present among us in undiminished malignity (as is proved by the occurrence of local outbreaks in the Metropolis and elsewhere through the whole series of years since 1874), it attacked scarcely any of the *four millions* of infants born and vaccinated in England and Wales during the years 1875-9, or of the 800,000 born and vaccinated in

* In drawing attention to the fact that the *total number of Small-pox deaths* in all Scotland in 1878 was only *four*, the Registrar-General for that kingdom remarks—"This is a most satisfactory circumstance, for which we have no doubt, in a great measure, to thank our excellent Vaccination Act, and the common sense of our people, which does not dispose them to receive without qualification the statements of the Anti-vaccinators."

Scotland during the same period. And this condition of things has continued, as regards the Provinces and Scotland, to the present time; the only considerable exception to it being furnished by the outbreak of 1881 in London and the surrounding counties. But this outbreak, as already shown, was almost exclusively confined (1) to the known unvaccinated, (2) to those (ranked "doubtful") whose arms showed no sign of vaccination, and (3) to vaccinated adults who had not renewed the protection they had outlived.

I feel fully justified, therefore, in re-affirming the protective power of Vaccination, as eminently shown in the control it has here exerted over this most deadly Epidemic; more especially since Legislative provision was made, by the compulsory appointment of Vaccination officers, for the more thorough enforcement, in the country generally, of the Law which it is now proposed to repeal. Of that enforcement, the localities in which it has been resisted are receiving the benefit; just as unvaccinated families who are living in parts of London not visited by Small-pox, are enjoying the practical immunity conferred by the "protection" of the great bulk of their inhabitants.

Of what would be the consequence of the abolition of Compulsory Vaccination among ourselves, we may judge from the recent experience of the United States, where the system had never been adopted either by the Federal or the State Governments. The malignant type of Small-pox poison carried across the Atlantic in 1871, was extensively diffused over the American continent in succeeding years, causing severe epidemics in most of its great cities. During a visit which I paid in the latter half of last year to the United States and Canada, I made a special point of gaining all the information I could from the most authentic sources in regard to this Epidemic; and I everywhere received the same testimony to its extreme severity among the unvaccinated population. Owing to the former absence

of any public provision for Vaccination in the United States, the proportion of unvaccinated was there much greater than in this country; and no inconsiderable number of persons among the upper classes were destitute of its protection. The disease prevailed epidemically in Boston (N.E.) in 1873; and the number of deaths out of a population of 265,000 was 1,045 in thirteen months, or at the rate of 965 for twelve months. This was a far heavier mortality in proportion to the population, than even that of London in 1871; for the Metropolitan population, being then 12·3 times that of Boston, its *pro-rata* mortality would have been 11,869, or almost exactly *fifty per cent.* more than the *actual* mortality of London in that year, which was 7,912. Now, it cannot be said that the general sanitary condition of Boston is worse than that of London; but we are expressly told that "the disease in its most malignant and contagious form *was present in every part of the city.*"* The total number of *cases* was 3,187, and the number of *deaths* 1,045, being thus at the high rate of nearly *one-third* of the whole number attacked; mainly owing to the terrible proportion of deaths to cases—considerably over 50 per cent.—among the *unvaccinated*.

In Philadelphia (in which city the labouring population is remarkably well housed, "tenement-dwelling" being almost unknown), the number of *cases* of Small-pox in the twelve months' epidemic of 1871-2 was 2,337; nearly equalling the total number of cases (2,517) of this disease during the previous thirty years.† The total of *deaths* from Small-pox during the previous thirty years had been only 429, or at the rate of 17 to 100 cases; but in the Epidemic of 1871-2 the total number of deaths was 743, raising the death-rate of those attacked to 32·15, or nearly double the previous average. That

* *North American Review*, April, 1882, p. 370.

† I take these figures from the Report of the Board of Health of the City of Philadelphia for the year 1872.

this excess was mainly due to the large proportion of deaths among the *unvaccinated* (of whom a considerable proportion were negroes), is shown by the fact that putting aside the 51 cases in which there was no evidence in regard to previous vaccination, the numbers and percentages of deaths among the two classes were as follows :—

	Admissions.	Deaths.	Per Cent.
Vaccinated	1,629	276	16.94
Unvaccinated	697	449	64.41

Thus while the proportion of deaths to cases among those who had been *vaccinated*, whether well or indifferently, scarcely exceeded *one-sixth*, the proportion among the *unvaccinated* was *nearly two-thirds*, or *almost four times as great*.—Surely, in the face of such evidence, Mr. P. A. Taylor and his supporters will no longer contend that there is nothing peculiar about this Epidemic, or continue to treat as “incredible” the statistics of our own Metropolitan Small-pox Hospitals, which showed a percentage of deaths among the unvaccinated amounting to nearly 45 per cent.

I further learned that this Epidemic had been particularly fatal among the coloured population of some of the Southern States, where Vaccination, formerly enforced by most of the planters on their slaves (for the protection of their “property”), had been of late very much neglected. I was personally assured by a medical officer, who had been sent by the United States Government to take charge of a Small-pox Hospital in the South, that the negroes smitten with this malignant “black-pox” often fell down by the road-side; and that such was the prevalent terror at this deadly plague, that these poor wretches were left untended by their own people, whilst he himself could with difficulty induce

his hospital attendants to bring them in, so certain was their speedy death!

In Canada, the severity of the Epidemic in different localities bore a most direct relation to the proportion of *unvaccinated*. Quebec, where vaccination had been all but universal, was passed over very lightly, notwithstanding the continual fresh importation of the poison. Among the immigrants, the mitigative efficacy of previous vaccination was very marked. Thus of 131 cases admitted into hospital between May, 1874, and June, 1875, the superintendent reported that among 54 returned as vaccinated, only one died; while of 69 unvaccinated 37 died, and of the 32 who recovered most were disfigured. In Toronto and Three Rivers, where vaccination had been general, there was scarcely any Small-pox. But in Montreal, where the French Catholic population had, as a class, been prejudiced against vaccination by a medical man of their own nationality and religion, the epidemic broke out with great severity. The Municipal authorities endeavoured to check it by compulsory Vaccination; but this was resisted even to the extent of public rioting. Having heard of this at the time from my brother, the late Dr. P. P. Carpenter, who spent the last twelve years of his life in Montreal, I made a point of enquiring, during my stay there in August last, as to what had been the subsequent course of affairs. I learned, on the very best authority, that the objections of the French Catholics had been completely overcome;—partly by the public exposure made by the Medical profession of the flagrant mis-statements by which they had been misled,—partly by the very decided testimony in favour of the protective influence of Vaccination, given by the Catholic Sisters who took charge of the nursing in one of the Small-pox Hospitals,—and partly by their recognition of the fact, that the Irish Catholic population of their own class, living under the same conditions with themselves, but *for the most part vaccinated*,

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almost entirely escaped. Vaccination being now as well carried out in Montreal by its Officers of Health, as in the other great cities of the Dominion, Small-pox has become almost entirely extinct.

So sensible are the highly intelligent people of the United States of the value of Vaccination, that although they do not consider direct compulsion a proper subject for Federal or even for State legislation, yet they are now generally adopting a method of indirect compulsion, which has long been in use in many Continental countries—namely, the vaccination of the whole existing School-population by Public Vaccinators, and the refusal to admit any child into the Public Schools without a Vaccination certificate. Of an admirable result of the adoption of this system—showing itself in the remarkable immunity of the whole School-population of San Francisco from a recent outbreak of Small-pox which originated in the Chinese quarter, and rapidly spread among the adult population through even the best parts of the town—I last year gave an account,* drawn from the Report of its Officers of Health.

I shall now cite another case from a Circular addressed on the 20th September, 1882, by the Secretary of the Board of Health for the State of Illinois, to County Superintendents, School Boards, and Teachers, with reference to the "School Vaccination Order" of the State Board of Health, promulgated in December, 1881. At the date of this Order *more than two-thirds* of the School-population of Illinois proved to have been unvaccinated; but subsequently to January 1, 1882, no fewer than 1,300,000 vaccinations had been performed, making, with those of the previous nine months, a total of *two millions*. "Until these measures were fairly under way, there was a steady increase of Small-pox in the State; but coincidentally with their successful operation came the decline of the disease, until now

* *Nineteenth Century* for April, 1882, p. 544.

it is practically at an end in Illinois,"—but for a few small local outbreaks *among unprotected persons*, which showed that the poison had not lost its virulence:—

"In Munroe county an outbreak was caused by an infected mattress thrown into the Mississippi River, which lodged in Staten Island. Some unvaccinated persons came in contact with the mattress, and a number of cases ensued. Thence it was carried into Randolph county, where it found a number of other unvaccinated individuals near Prairie du Rocher, and caused an outbreak among them, with 3 deaths at date of last report. In Alexandra county, some 19 cases and 4 deaths have resulted from infection brought from the river; all these were among unvaccinated persons."

With this may be contrasted the following results of the enforcement of the Vaccination Order upon the School-population of the State, "demonstrative," as the Secretary justly remarks, "of its wisdom and utility:"—

"*First.* Among the thousands of cases of Small-pox which have occurred in the State since the Order was issued, *not one* is reported of a Public Scholar who had been properly or recently vaccinated. Several cases, however, with a large proportion of deaths, have occurred among Scholars who either had not been vaccinated at all, or not since infancy.

"*Second.* In no instance where the Order was thoroughly enforced has it been necessary to close the Public Schools, even when Small-pox existed in a community. On the other hand, *Schools have been broken up and studies interrupted* in a number of instances, where—as shown by the returns in this Office—the Order had been neglected."

With reference to the statements sometimes met with, of serious results from Vaccination, the Secretary adds that:—

"Having made it his personal duty to investigate every report of the kind which has come to his knowledge, the net result has been that *not one such report has been substantiated*. He has been wholly unable to find any evidence of a death caused by vaccination in this State, or even of permanent injury or serious illness, due to the operation alone."

I have received from several other quarters the same testimony to the absence of injurious results, in an aggregate of recent vaccinations, now amounting to *many millions*, that have been made under

public authority in the United States, with the pure heifer-lymph obtained from the establishment of Dr. Martin of Roxbury, Massachusetts; and having myself visited it, I can testify to the conscientious care with which the purest lymph is there supplied. There have, on the other hand, been some most severe—even fatal—cases of purulent infection, which were traced to the employment (from motives of economy) of vaccine matter supplied from another source, which proved, on microscopic examination, to be charged with pus-corpuscles.—The moral of this is obvious.

I now commend these recent experiences to the attentive consideration of those, with whom rests the grave responsibility of deciding whether, under the guidance of Mr. P. A. Taylor, and in opposition to the general voice of the Medical Profession, they will *undo* a system, under which the death-rate from Small-pox is shown by Mr. Taylor's own Table—still more by the corresponding Table for Scotland—to have undergone such an enormous reduction; and which has restrained within narrow limits an Epidemic whose virulence among the unprotected populations of Borneo, the Gold Coast, and Madagascar (as attested by recent Consular reports) shows it to be no less deadly than that which ravaged most of the countries of Europe in 1614 even more destructively than the Plague.

Although Mr. P. A. Taylor treated my former assertion of this virulence as *invented* on the part of the advocates of Vaccination, in order to cover its failure, I trust that the intelligence of your House will see that it is fully borne out by the additional facts I have now adduced from authoritative sources.

I remain, Dear DR. PLAYFAIR,
Yours faithfully,
WILLIAM B. CARPENTER.

LONDON,
April 23, 1883.

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