

Dr. Page's report to the Local Government Board on an inquiry into the circumstances of an outbreak of small-pox in St. Joseph's Certified Industrial School for Roman Catholic Girls, Manchester / [David Page].

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Dr. Page's Report to the Local Government Board on an Inquiry into the circumstances of an Outbreak of Small-pox in St. Joseph's Certified Industrial School for Roman Catholic Girls, Manchester.

GEORGE BUCHANAN,
Medical Department,
November 14th, 1888.

On August 9th the President of the Local Government Board in answer to a question addressed to him in the House of Commons by Mr. Channing, M.P., as to a reported outbreak of small-pox in St. Joseph's Certified Industrial School, Manchester, stated that the Mayor of Manchester had furnished him with information to the effect that an outbreak of small-pox had been discovered amongst the inmates on Friday July 27th, that 67 of them had been removed to Monsall Fever Hospital, and that the infection was supposed to have been introduced by a girl admitted on July 6th. Origin of inquiry.

The President further stated that the Board had ordered a full inquiry into the circumstances of the outbreak by one of their medical staff.

I was instructed for this duty, and accordingly I visited Manchester on August 10th. At the outset of my inquiry, I had an interview with a sub-committee of the Health Committee of the Corporation, the deputy Town Clerk, and the medical officer of health, Mr. John Leigh.

On the day of my arrival I visited St. Joseph's School, accompanied by Dr. Mackenzie, the recently appointed medical attendant to the inmates, Dr. Oldham, resident medical officer at Monsall Hospital, and Mr. Whiley, superintendent of the Corporation Health Department.

This school is situated in Victoria Park, a residential suburb of Manchester. It is a large, detached, modern building, three storeys in height, standing within its own grounds of some three acres in extent. The building has been occupied for its present purpose since 1884, and is certified under the Industrial Schools Act, 1866, for 150 children. Immediately before the outbreak the total number of inmates had been 172, comprising, according to the classification furnished to me by the lady superintendent, 10 Sisters, including a probationer, 15 attendants, inclusive of certain pupils* in training for domestic service, and 147 pupils at ages ranging from 5 to 16 years. The School.
Inmates.

In accordance with regulations approved by the Secretary of State for the Home Department, the school is under the management of the Roman Catholic Bishop of the diocese and a committee. The care and education of the children are in the hands of Sisters of the Order of St. Vincent de Paul. The regulations require that no girl shall be admitted without a medical certi- Regulations.

* Of the attendants, four were paid servants, adults; the remaining 11 were pupils employed in the domestic work of the institution. These 11 are included among the pupils in the rest of the report.

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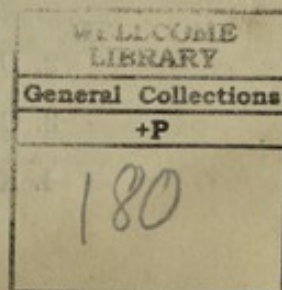
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cate of freedom from disease, and it is also a rule of the institution that every girl shall be vaccinated before admission, and a medical certificate to that effect be sent with her. Every Sister must also be vaccinated before entering upon her duties, but there is no such rule for attendants, though in the case of girls who had originally entered the institution as pupils, a certificate of vaccination has presumably been sent.

Medical
arrange-
ments.

The regulations state that a medical officer shall be appointed to visit the school, but no provision is made for the medical examination of children on admission, and I was told that no such examination had been made. Dr. Mackenzie, the gentleman who has since been appointed medical attendant, was called in for the first time on July 20th by the Lady Superintendent to see one of the Sisters then ill of what afterwards proved to be small-pox. The connexion with the school of his predecessor in office, Dr. Russell, had ceased on the 30th of June. Between those dates the school was without a medical officer, and no medical visits, as matter of fact, had been made. On referring to a book entitled "The Doctor's Book," provided in accordance with the regulations for the record of visits and serious cases of illness, I found that no entry had been made since May last, and according to medical testimony and the lady superintendent, the school has enjoyed a remarkable and complete immunity for years past from outbreaks of infectious disease.

Sanitary
arrange-
ments.

The internal arrangements of the institution consist of a common dining room and a large schoolroom on the ground floor, workrooms on the first floor, and dormitories on the uppermost floor. The dormitories of the children are four in number, and so arranged that they communicate directly with one another, the first, or "new" dormitory, alone opening upon the staircase landing, the second, or "middle" dormitory, being entered by crossing an angle of the former, while the third, or "top," and the fourth, or "little", dormitories are reached by traversing the entire length of the "middle" dormitory. The several dormitories thus share in effect one common atmosphere. Each girl has her separate bed, and beds are distributed between the four dormitories thus:—42 in the new, 44 in the middle, 44 in the top, and 20 in the little dormitory. There is no classification of the children save during school hours for teaching purposes, and inmates of various ages along with an attendant occupy each of the dormitories. Additional accommodation is afforded by the infirmary,—a couple of rooms on the first floor, consisting of a small ward of six beds entered through a sitting room, and used for cases of sickness occurring amongst the inmates; and half a dozen of the attendants sleep in a separate building known as the "cottage," but are employed in the institution and associated with the rest of the inmates from 7 a.m. until bedtime.

The children mix together in the playground, chapel, refectory, schoolroom, and elsewhere in the institution.

An examination of the premises as to their sanitary circumstances testified to much care having been bestowed upon the completeness of the arrangements and general hygiene of the school. The cleanliness and order everywhere prevailing, and the comfortable and happy appearance of the children were noticeable features.

Vaccination
observed—
(a.) Among
those re-
maining at
school.

On a personal examination of the 99 persons found living in the school at the time of my visits of August 10th and 11th, I found six Sisters and 85 pupils with scars of primary infantile vaccination. In the case of those pupils the results of my own examination accorded with the evidence of the medical certificates presented with the several children on their admission. There were also four cases where the facts of primary vaccination were doubtful, and these, with four unvaccinated children, had just undergone successful vaccination.

The four doubtful cases were:—

1. Rosamond Kernagan, aged 10 years. No scars of infantile vaccination visible. No medical certificate. Recent vaccination over usual site for scars.
2. Delia Martin, aged 11 years. No scars visible. No medical certificate. Recent vaccination over usual site for scars.
3. Caroline Duffield, aged 13 years. No scars visible. Medical certificate says, "Doubtful; no scars visible."
4. Kate Stirrup, aged 16 years. No scars visible. Medical certificate states, "Vaccinated, but no scars visible."



The four unvaccinated cases were :—

1. Maggie Cuff, aged 9 years. No scars. No medical certificate. She says she has never been vaccinated. Admitted to the school, 16th September 1886.
2. Hannah Arthur, aged 10 years. No scars. Certificate says, "Not vaccinated successfully." Admitted, 18th March 1888.
3. Annie Stubbs, aged 11 years. No scars. Medical certificate says, "Not been vaccinated." Admitted, 3rd May 1888.
4. Catherine Cullen, aged 9 years. No scars. Medical certificate says, "Unvaccinated." Admitted, 8th May 1888.

Re-vaccination had recently been practised on all the vaccinated inmates, unsuccessfully in one Sister and 22 children. Of these unsuccessful re-vaccinations, the Sister and two of the children had undergone successful re-vaccination before July 27th. Of the successful re-vaccinations, two were of Sisters re-vaccinated before July 27th. I found two children, consumptive inmates of the school infirmary, who had been overlooked as to re-vaccination.

Of 73 persons who had been transferred to Monsall Hospital, I found on August 12th, four Sisters and a probationer, three attendants, and 56 children, with scars of successful primary infantile vaccination. One child was undergoing primary vaccination, performed on July 27th. There were also two cases where the facts as to primary vaccination were doubtful; and six persons unvaccinated.*

(b.) Among those removed to Monsall.

The two doubtful cases were :—

1. Margaret Waterhouse, aged 9 years. No scars visible. Medical certificate, dated 2nd December 1886, says, "Vaccinated; scars faintly marked."
2. Mary Jane Maxwell, aged 12 years. No scars visible. Medical certificate, dated 18th March 1887, says, "Vaccination doubtful; no scars visible."

The six unvaccinated cases were :—

1. Jane Stirrup, aged 15 years. No scars. Medical certificate, dated 26th July 1882, says, "Unvaccinated."
2. Annie Maxwell, aged 14 years. No scars visible. Medical certificate, dated 9th February 1887, says, "Has not had small-pox; has not been vaccinated."
3. Melinda Clewor, aged 14 years. No scars. No medical certificate.
4. Margaret Woodruff, aged 10 years. No scars. No medical certificate.
5. Maggie Dunleary, aged 13 years. No scars. No medical certificate.
6. Anne Cavanagh (attendant), aged 22 years. No scars.

Of the 73 cases, three, a Sister-probationer, an attendant, and one of the children, had undergone re-vaccination before July 27th.

Re-vaccination had, on July 27th, been performed in 26 of the persons afterwards removed here from the school. It was not performed for those who were ailing already by July 27th. Of the 26 re-vaccinations of July 27th, 21 were successful; of the five unsuccessful cases, four were again re-vaccinated at Monsall on August 3rd, three successfully. And re-vaccination had been performed at Monsall in two other cases on July 31st with successful results.

On the date of my second visit to St. Joseph's School, August 11th, I found one child who had been re-vaccinated successfully on July 27th suffering under early symptoms of small-pox, but with this exception all the inmates were free from eruptive illness.

Small-pox observed—
(a.) At School.

At Monsall, among those who had been removed from the school, I found four Sisters, including a probationer, two attendants, 49 children who had suffered or were suffering under small-pox of one or another degree, and also 15 persons who had been removed from the school for reasons of suspicion, but who had had no eruption of small-pox whatever; the above making, with the three fatal cases, the total number of 73 persons thus removed.

(b.) At Monsall.

* I myself made examination of 70 of these 73 persons; but in respect of three patients who had died from small-pox in Monsall Hospital, one attendant and two children, I cite the authority of Dr. Oldham, and in one case of the medical certificate, for reporting that they were all unvaccinated.

With the exception of six cases removed from the school between August 8th and 11th, and including the case discovered on my visit on the latter date, the outbreak was at an end by July 28th.

The severity of cases that came under my observation varied between the two possible extremes of small-pox. There were cases barely recognisable as such, having only one single pimple or vesicle. At the other extreme there were cases of the confluent disease. Dr. Oldham told me that all the three patients who had died had had confluent eruption, and that one case had been of the hæmorrhagic variety.

Small-pox
as influenced
by vaccina-
tion.

I have now to record, in combination, the facts as to vaccination and small-pox of the whole 172 persons who were in St. Joseph's School on 27th July. This I have done, giving the age of each person, the facts as to the vaccination of each, and the facts as to the occurrence of small-pox in each, in the annexed table.

FACTS as to 172 PERSONS, INMATES of ST. JOSEPH'S SCHOOL on July 27th, showing their previous VACCINATION and the ATTACKS of SMALL-POX among them, during July and August 1888.

Individuals classified according to their Vaccination and their Small pox.	Not vaccinated before 27th July.	Vaccination before 27th July doubtful.	Bearing Scars of Infantile Vaccination, but not re-vaccinated before 27th July.	Successfully re-vaccinated before 27th July.
Classified below as to Small-pox, Total being 172	Ten persons (their ages shown by figures below).	Six persons (aged as below).	A hundred and forty-eight persons (their ages shown by figures below).	Eight persons (aged as below).
Escaped small-pox - -	14, 11, 10, 9, 9	16, 13, 11, 10	50*, 40*, 27*, 23*, 16, 16, 16, 16, 16, 16, 16, 16, 16, 15, 15, 15, 15, 15, 15, 15, 15, 15, 15, 15, 13, 13, 13, 13, 14, 14, 14, 14, 14, 14, 14, 14, 14, 14, 14, 13, 13, 13, 13, 13, 13, 13, 13, 13, 13, 13, 13, 12, 12, 12, 12, 12, 12, 12, 12, 12, 12, 12, 12, 12, 12, 12, 12, 12, 11, 11, 11, 11, 11, 10, 10, 10, 10, 10, 10, 10, 10, 10, 9, 9, 9, 8, 8, 8, 8, 7, 7, 7, 7, 6, 6, 5, 5	36*, 30*, 29*, 28*, 16, 14, 13
113	5	4	97	7
Had slighter small-pox. VIZ. :—				
{ With from one to fifty spots.	—	—	39*, 23*, 23*, 18*, 16, 16, 16, 15, 15, 15, 15, 15, 15, 15, 15, 15, 15, 15, 15, 14, 14, 14, 13, 13, 13, 13, 13, 13, 12†, 12, 12, 12, 12, 12, 12, 12, 11, 10, 10, 10	22*
41	0	0	40	1
{ Discrete, with more than fifty spots.	—	—	16, 15, 15, 15, 12, 12, 12, 11	—
8	0	0	8	0
Had severer small-pox.				
{ Semi-confluent -	—	12, 9	14, 14, 13	—
5	0	2	3	0
{ Confluent -	*22 (died), 15 (died), 14, 13 (died), 10	—	—	—
5	5	0	0	0

* Sisters and attendants are thus distinguished, *

† Conley, the child attacked on 6th or 7th July.

Except for the names of individuals and the days of their respective attacks, this table gives every fact of any importance to the inquiry; viz., for each person, her age; vaccination, non-vaccination, or re-vaccination; her escape from small-pox or the nature of the small-pox that attacked her; together with her status in the school. I hand in the records of the several cases, but see no object in printing them in this report.

In brief the table shows—out of 172 persons exposed to the conditions of the school up to the day of small-pox being detected and of the general re-vaccination—10 who had never been vaccinated, of whom five took the infection of small-pox, and five escaped it*; six whose vaccination was doubtful, of whom two contracted the disease and four escaped*; 148 persons who had been vaccinated in infancy, of whom 51 contracted the disease, and 97 escaped it*; along with, lastly, eight who had been re-vaccinated some months or years before, of whom one (it is believed) was attacked while the other seven escaped.

The table also shows the degree of severity of the disease in the several cases which, with the escapes, may be summarised as follows:—

1. Of those unvaccinated up to July 27th, 10 in number, five escaped small-pox, and five suffered from confluent attacks, of whom three died.†
2. Of those with doubtful vaccination on this date, six in number, four escaped attack, and two suffered from semi-confluent attacks, not fatal to either.
3. Of those vaccinated before the same date, 148 in number, 97 escaped attack, 40 were attacked in whom the eruption consisted of from one to 50 spots, eight were attacked with discrete eruption of over 50 spots, and three with semi-confluent small-pox. Among the 51 persons of this class attacked by small-pox, there was no death.
4. Of eight persons re-vaccinated before July 27th, one is believed to have been attacked; she had only a single spot.

In proceeding to give a history of the outbreak, I have first to recall the fact that from June 30th to the 20th of July the school was without a medical officer. On the latter date Dr. Mackenzie was asked to see one of the Sisters, Sister Clare, who was then ill. I saw Sister Clare at Monsall Hospital on 12th August, when she was quite recovered from her illness, of which she gave me the following account. On Friday July 13th she had an attack of headache, accompanied on the two following days by sickness and vomiting. On Monday July 16th she felt better and resumed her place in school, teaching the younger children. Sister Clare told me that she is subject to periodical attacks of neuralgic headache and sickness, and that she had regarded this attack as being one of these. On Tuesday July 17th she was seized with headache, sickness, severe pain in the back and abdomen, accompanied by diarrhoea, symptoms which she described as being quite different from her customary attacks. "She had not been ill like that before." She was confined to bed in her dormitory until July 20th, when she felt no better, and the doctor was accordingly sent for. Dr. Mackenzie explained to me that on his first visit he found Sister Clare suffering from what appeared to be a "bilious attack," with no apparent feverishness. He saw her next day, the 21st, again on the 23rd, when she expressed herself as feeling a little better, and not again until the 25th, when for the first time, either to patient or doctor, I am told, a few spots became visible upon Sister Clare's face. But the sickness and backache had gone, slight headache alone remaining, so that, except for other cases of sickness which were meanwhile occurring in the school, his suspicions that it might prove to be a case of small-pox would not have been aroused. On the evening of the same day a rash, Sister Clare informed me, appeared on her

History of outbreak.

* I recall, in connexion with these several groups of escapes, the general vaccination and re-vaccination of July 27th.

† 1. Anne Cavanagh, aged 22, attendant, died 5th August.

2. Maggie Dunleary, aged 13, pupil (hæmorrhagic), died 9th August.

3. Jane Stirrup, aged 15, pupil, died 10th August.

History of
outbreak—
cont.

arms, and it disappeared next morning. On Friday July 27th a further eruption of spots was discovered upon her body, leaving, when Dr. Oldham saw them on that date, no room for doubt as to the nature of the disease. On Monday July 23rd Dr. Mackenzie had been asked to see four or five children whom he found in bed, complaining of headache, pain in the stomach, and vomiting. The Lady Superintendent stated that so early as the 19th there had been a case or two of slight indisposition amongst the children, but that these and other cases occurring up to the 23rd were treated with domestic remedies and looked upon as the result of some indulgence in pastry at an entertainment which was given to the children upon the earlier date. Fresh cases of sickness occurred on the following day, and others on the 25th and 26th, by which latter date 24 of the inmates were upon the sick list. These facts, together with the sickening of another Sister and an attendant, confirmed the suspicion which Dr. Mackenzie had begun to entertain, that the spots he found upon the various inmates might really be small-pox; and he paid an early visit on Friday 27th July, to find some 20 additional cases of sickness reported to him. He proceeded forthwith to the Town Hall, and communicated his fears to the authority that small-pox had broken out among the inmates of St. Joseph's School. Dr. Falconar Oldham, Medical Superintendent of Monsall Hospital, was at once requested to visit the school on behalf of the Corporation. Dr. Oldham found a large number of the inmates suffering either from small-pox or from symptoms suspected to be premonitory of the disease. Instructions were given by the Health Committee for the immediate removal of all such inmates, and in the course of the evening 46 persons were taken to Monsall. Dr. Mackenzie proceeded with the re-vaccination of the remaining inmates, and under the direction of Mr. Whiley, of the Health Department, disinfection of the dormitories and removal of the bedding to the Corporation disinfecting chambers was carried out by a large staff of assistants. Next day July 28th a further examination of the inmates led to the removal to Monsall of other 20 persons, and on July 31st another of the inmates was sent there, making 67 persons, including three Sisters, five attendants, and 59 children removed by the end of July.

Dr. Oldham reported that amongst this number he discovered on 27th July one case already convalescent from small-pox, still exhibiting, however, traces characteristic of the disease in the form of a scattered eruption of spots upon which were still adherent horny scabs or scales. This case was the girl Mary Anne Conley, admitted to the school from York on July 6th. Dr. Oldham described the whole of the remaining cases as being of much more recent date, some presenting merely suspicious symptoms, while others exhibited the eruption of small-pox in the papular or vesicular stage, in one or two cases only advanced to pustules. Dr. Oldham told me that in Sister Clare's case he found the vesicles, seven or eight in number, upon the face, beginning to dry without passing into pustules.

Importation.

Taking into consideration the ordinary incubative period of small-pox, 14 days to the period of eruption, and the succession of cases from the date of Sister Clare's attack until the 28th of July, it is obvious that an outbreak showing the above dates cannot be accounted for by a series of infections from case to case, but that it must have been dependent upon the operation of a single source of contagion to which those attacked had, in common, been exposed.

It is easy enough to account for the half dozen later cases occurring between August 8th and 11th with which the outbreak ended, for these in all probability contracted infection by personal intercourse with infected inmates with whom these later cases had been unrestrictedly associated before the removal of them to Monsall on July 27th and 28th.

In regard, therefore, to the origin of this outbreak and the mode of introduction of infection into the school, I made inquiry in the first instance into all movements of the inmates beyond its walls. I was told that such movements were, in the case of the pupils, confined to attendance every Sunday morning at the neighbouring church of St. Edward, Rusholme, whither they are taken in detachments; that none of the attendants had been away from the institution during the latter half of June or beginning of July, and that, save for purposes of shopping, none of the Sisters had been in Manchester

during the same period, Sister Clare informing me she had not been in the city for any purpose since some time in May last.*

I inquired as to the possibility of infection by clothing, but it was shown to me that the clothes of the children are made upon the premises from new material, and I was told that it is an invariable practice on the admission of a pupil to destroy in the kitchen furnace every article of apparel she brings with her. Every child is provided with a new outfit, no worn clothing is accepted by way of gift, and all needlework is wrought upon new material.

In view of a possible introduction of infection by children or others recently admitted to the institution, I directed my inquiry to the history of every one who had entered it between the middle of June and the middle of July. These admissions were stated by the Lady Superintendent to have been altogether six in number, and included five children admitted from Manchester on June 21st, 22nd, 26th, July 1st and 11th, and a child admitted from York on July 6th.

Of the Manchester cases, two were homeless waifs picked up in the streets by the local school officers. I visited the homes of other two, accompanied by Mr. Whiley of the Health Department, where, as well as at houses around, I made inquiry and examined children with the result of finding no evidence of the existence of small-pox of any description; and the fifth case was a girl admitted from Crumpsall workhouse, in whose case there was no history of antecedent illness.†

With regard to the sixth child, admitted as stated from York on July 6th, I saw her in the wards at Monsall on August 12th, when she was running about and helping to wait upon those who were still confined to bed. This child, Mary Anne Conley, nearly 13 years of age, showed, upon examination, three vaccination scars of well-marked characters, but of small area. I observed, scattered over her feet legs and arms, about a dozen spots, two or three more upon the body and a single one upon the face, the whole number not exceeding 20. Several were mere stains or discolorations, but the majority were distinct, although not deep, depressions of a bluish-red colour, the spot upon the face being red and more deeply pitted than the rest. I noticed no adherent scabs or scales, but both the medical superintendent and the ward nurse stated that these were to be seen after the child's admission on July 27th, and that they were similar in appearance to what are seen in the later stages of modified small-pox. I questioned the girl with the view of eliciting her history, but her discrepant statements inducing me to make a subsequent visit to the hospital for the purpose of cross-examining her, I found her story from beginning to end hopelessly contradictory, and in material points the child admitted her previous statements to be untrue.

The girl
from York.

I visited York on August 14th when I had an interview with the Town Clerk, Mr. McGuire, and Dr. North, medical officer of health, from whom I received most cordial assistance at this stage of my inquiry.

I visited the locality in Hungate where the child lived prior to her removal to Manchester, and saw her mother, sisters, and other persons with whom she had been most intimately associated up to the day she left. I also saw the school attendance officer who accompanied her from York to Manchester, and I was enabled to find their fellow passengers on the journey.

I may state at once that the evidence is complete and conclusive that Mary Ann Conley was duly examined and truthfully certified on July 3rd to be free from disease, and that on July 6th, the day of her removal from York, she continued to be to all appearance in good health and free from recognisable symptoms of illness up to the time of her reception at the school. This case has become matter of dispute between York and Manchester, but without, so far as I can see, the smallest occasion. The facts about the child are

* It may be well to state explicitly that the Sisters do no visiting amongst the poor, but are wholly engaged in the care and education of the children in St. Joseph's School.

† During the same period covered by this part of the inquiry, three cases only of small-pox had been notified to the health authorities at Manchester, on June 15th, 19th, and 29th, when they were removed to Monsall. No further cases were notified prior to the outbreak at St. Joseph's School, and throughout August the only notification received was of the later cases that occurred in connexion with the school outbreak.

I examined the five Manchester children without finding any indications of illness prior to admission. All had been successfully vaccinated in infancy, and all had escaped small-pox save one, who had been attacked on July 27th, and was seen by me at Monsall.

perfectly clear and intelligible. She was found on examination before her journey to be free from small-pox eruption. There is evidence that she had no noticeable eruption when on the journey. She was found, on examination, to be free from eruption on her arrival at the school. She began to be ill the night of her arrival with slight symptoms, which were shown by the events to be those of small-pox. I have data for all these statements, and place them among the Board's records without entering upon them here.

It only remains now to consider the relations of Mary Ann Conley to the outbreak with which she has been associated, and of which she is believed to have been the origin.

The absence of evidence of exposure to contagion of small-pox in York, the want of medical observation of the three days' illness with which the child's school life at St. Joseph's, Manchester, immediately began, and the blank in her subsequent history until her case was recognised by Dr. Oldham on July 27th as being one of mild, modified small-pox in the stage of recovery, are important omissions in the circumstantial evidence of the case. But the early illness of Sister Clare, who had early concern with the child on her reception into the school; of Sister Monica, the superintending Sister, who had much to do with the child soon after her reception; and the next earliest occurrences of small-pox amongst those who were most intimately associated with her, and sleeping in the same dormitory (*e.g.*, a little York girl, Maggie Rafter, who became her companion at the outset), constitute a sequence of events, intelligible only on the hypothesis that her obscure illness on July 6th to 8th was veritable small-pox, capable of infecting other people exposed on these and subsequent occasions to her companionship.

The absence of any indications of the duration of the eruption on this child is of less moment. It was not present on July 6th, it had advanced to scabbing by July 27th, and between those dates it must have appeared early enough to go through the successive changes leading to scabbing and cicatrization in which later stages Dr. Oldham found it.*

It is clear that the phenomena of disease in this child preceded by a distinct and appreciable interval the whole of the other events of the outbreak.

If the child was, as she appears to have been, in York during a period of at least several weeks prior to the removal to Manchester, she must have caught, although in what manner cannot be learned, her infection there. No small-pox had been known to exist in the city itself for a considerable interval, but two cases had been brought for treatment into the city fever hospital, one on June 14th and the other on June 23rd from the militia camp in the surrounding country district. The statements of the girl herself regarding her movements cannot be believed, for she was admittedly a truant and was proved to be untruthful.

Advice to
school
authorities.

Before leaving Manchester I had an interview with Mr. Richardson, secretary to the committee of the school, and made the following recommendations for the future better administration of the institution:—

1. Enforcement of the rule requiring the production of a medical certificate with every child on admission.
2. Vaccination of every child without scars of successful vaccination, and re-vaccination of all children upon reaching 10 years of age.
3. Provision for medical supervision of the inmates, and particularly in cases of illness, no matter how trivial, occurring in recently admitted children.

* I am told by the sisters that the incidence of attacks upon the several dormitories on 28th July had been as follows:—

	Beds.	Attacks.
New Dormitory (Conley's)	42	26
Middle	44	16
Top	44	11
Little	20	6

I am not disposed to attach much, if any, importance to a statement made to me on August 14th by one of the attendants to the effect that she recollected seeing a spot on Conley's face on one of the days when she was ill. This attendant omitted all mention of this fact when I first questioned her on August 12th.

4. Provision of a probationary ward or small sanatorium detached from the main building in which cases of illness suspected to be of infectious character could be isolated.

Mr. Richardson promised that my suggestions should receive the careful attention of the committee.

The lesson taught by this outbreak is of twofold application:—

In the first instance it demonstrates the result of having no medical officer charged with the duty of supervising the health conditions of an institution, and of the neglect of rules which apparently from long immunity from infection in the school had been allowed to fall into abeyance.

And secondly, it repeats the long known experience as to the infectiousness of the most trivial cases of small-pox, and the consequences of ignoring this experience.

Marson writing on small-pox says in regard to the infectious nature of the disease: "Most likely it is communicable from the moment when the 'initiator' fever begins. It may be given by the breath of the patient 'before the eruption has appeared on the surface of the body,' and further, as regards the relation of the infecting source to the resulting disease, 'a mild case may, and often does, give rise to a severe one, and, on the contrary, a severe case may produce a mild one.'"[†]

DAVID PAGE.

October 9th, 1888.

APPENDIX.

ANALYSIS of Table on page 4, showing for St. Joseph's School, during July and August, the number of SMALL-POX ATTACKS (whatever their intensity) upon Vaccinated and Unvaccinated persons of different ages; influence of the general vaccine operations of July 27th not being taken into account.

[There are no children under 5: eight re-vaccinated persons whose infantile vaccination was doubtful are not here considered. Fatal attacks are indicated by figures in brackets].

Inmates at subjoined ages.	Vaccinated in Infancy.			Unvaccinated.		
	Total.	Attacked.	Attacks p.c.	Total.	Attacked.	Attacks p.c.
5-10 years - -	15	0	0·0	2	0	0
10-15 " - -	82	28	34·0	6	3 [1]	50
15-20 " - -	44	20	45·5	1	1 [1]	100
Over 20 " - -	7	3	42·9	1	1 [1]	100
All ages - -	*148 {	Attacks 51 Deaths 0	34·5 0·0	10 {	Attacks 5 Deaths 3	50 30

So that, under the circumstances of this school, these 148* persons should have had 23 more attacks, and should have experienced 44 or 45 deaths from small-pox, if the 148 had been in the same case with the ten who were unvaccinated.

[†] Reynolds' System of Medicine, vol. I., p. 451, 1866.

4. Provision of a probationary ward - small children, admitted from the
 child's birth in which cases of illness, suggested to be infectious
 character, should be isolated.
 5. Richardson promised that any suggestions should receive the careful
 attention of the committee.

The funds raised by this committee is of twofold application:-
 1. The first instance is demonstrated the result of having no medical
 officer employed with the duty of supervising the health conditions of an
 institution, and of the neglect of rates which are usually long annually
 from infection in the school had been allowed to fall into disrepair.
 2. And secondly, it respects the long known experience as to the infectious
 risk of the most fatal cases of small-pox, and the consequences of ignoring
 this experience.
 Having written on small-pox as it related to the infectious nature of the
 disease, "It is likely to be communicated from the moment when the
 infectious virus enters the body, it may be given by the breath of the patient,
 before the eruption has appeared on the surface of the body," and further,
 as regards the relation of the infectious source to the infectious disease, "a
 child can infect and often does give rise to a severe case, and, on the
 contrary, a severe case may produce a mild one."

APPENDIX

As a result of the work done during the year ending 31st July 1904, the
 number of infectious diseases (exclusive of small-pox) in the institution
 (University) given in the following table, showing the number of cases
 July 1903 and being taken into account.
 (There are no ill persons under 5 years of age in the institution
 was admitted into the institution. Total cases are indicated by figures in brackets.)

Infectious Diseases		Non-infectious Diseases		Total	
Disease	Number of Cases	Disease	Number of Cases	Disease	Number of Cases
Scarlet fever	18	Measles	20	Scarlet fever	18
Diphtheria	20	Whooping cough	2	Diphtheria	20
Whooping cough	2	German measles	2	Whooping cough	2
Measles	2	Chicken pox	2	Measles	2
German measles	2	Small pox	2	German measles	2
Chicken pox	2	Typhoid	2	Chicken pox	2
Small pox	2	Typhus	2	Small pox	2
Typhoid	2	Scarlet fever	2	Typhoid	2
Typhus	2	Diphtheria	2	Typhus	2
Scarlet fever	2	Whooping cough	2	Scarlet fever	2
Diphtheria	2	Measles	2	Diphtheria	2
Whooping cough	2	German measles	2	Whooping cough	2
Measles	2	Chicken pox	2	Measles	2
German measles	2	Small pox	2	German measles	2
Chicken pox	2	Typhoid	2	Chicken pox	2
Small pox	2	Typhus	2	Small pox	2
Typhoid	2	Scarlet fever	2	Typhoid	2
Typhus	2	Diphtheria	2	Typhus	2
Scarlet fever	2	Whooping cough	2	Scarlet fever	2
Diphtheria	2	Measles	2	Diphtheria	2
Whooping cough	2	German measles	2	Whooping cough	2
Measles	2	Chicken pox	2	Measles	2
German measles	2	Small pox	2	German measles	2
Chicken pox	2	Typhoid	2	Chicken pox	2
Small pox	2	Typhus	2	Small pox	2
Typhoid	2	Scarlet fever	2	Typhoid	2
Typhus	2	Diphtheria	2	Typhus	2
Scarlet fever	2	Whooping cough	2	Scarlet fever	2
Diphtheria	2	Measles	2	Diphtheria	2
Whooping cough	2	German measles	2	Whooping cough	2
Measles	2	Chicken pox	2	Measles	2
German measles	2	Small pox	2	German measles	2
Chicken pox	2	Typhoid	2	Chicken pox	2
Small pox	2	Typhus	2	Small pox	2
Typhoid	2	Scarlet fever	2	Typhoid	2
Typhus	2	Diphtheria	2	Typhus	2
Scarlet fever	2	Whooping cough	2	Scarlet fever	2
Diphtheria	2	Measles	2	Diphtheria	2
Whooping cough	2	German measles	2	Whooping cough	2
Measles	2	Chicken pox	2	Measles	2
German measles	2	Small pox	2	German measles	2
Chicken pox	2	Typhoid	2	Chicken pox	2
Small pox	2	Typhus	2	Small pox	2
Typhoid	2	Scarlet fever	2	Typhoid	2
Typhus	2	Diphtheria	2	Typhus	2
Scarlet fever	2	Whooping cough	2	Scarlet fever	2
Diphtheria	2	Measles	2	Diphtheria	2
Whooping cough	2	German measles	2	Whooping cough	2
Measles	2	Chicken pox	2	Measles	2
German measles	2	Small pox	2	German measles	2
Chicken pox	2	Typhoid	2	Chicken pox	2
Small pox	2	Typhus	2	Small pox	2
Typhoid	2	Scarlet fever	2	Typhoid	2
Typhus	2	Diphtheria	2	Typhus	2
Scarlet fever	2	Whooping cough	2	Scarlet fever	2
Diphtheria	2	Measles	2	Diphtheria	2
Whooping cough	2	German measles	2	Whooping cough	2
Measles	2	Chicken pox	2	Measles	2
German measles	2	Small pox	2	German measles	2
Chicken pox	2	Typhoid	2	Chicken pox	2
Small pox	2	Typhus	2	Small pox	2
Typhoid	2	Scarlet fever	2	Typhoid	2
Typhus	2	Diphtheria	2	Typhus	2
Scarlet fever	2	Whooping cough	2	Scarlet fever	2
Diphtheria	2	Measles	2	Diphtheria	2
Whooping cough	2	German measles	2	Whooping cough	2
Measles	2	Chicken pox	2	Measles	2
German measles	2	Small pox	2	German measles	2
Chicken pox	2	Typhoid	2	Chicken pox	2
Small pox	2	Typhus	2	Small pox	2
Typhoid	2	Scarlet fever	2	Typhoid	2
Typhus	2	Diphtheria	2	Typhus	2
Scarlet fever	2	Whooping cough	2	Scarlet fever	2
Diphtheria	2	Measles	2	Diphtheria	2
Whooping cough	2	German measles	2	Whooping cough	2
Measles	2	Chicken pox	2	Measles	2
German measles	2	Small pox	2	German measles	2
Chicken pox	2	Typhoid	2	Chicken pox	2
Small pox	2	Typhus	2	Small pox	2
Typhoid	2	Scarlet fever	2	Typhoid	2
Typhus	2	Diphtheria	2	Typhus	2
Scarlet fever	2	Whooping cough	2	Scarlet fever	2
Diphtheria	2	Measles	2	Diphtheria	2
Whooping cough	2	German measles	2	Whooping cough	2
Measles	2	Chicken pox	2	Measles	2
German measles	2	Small pox	2	German measles	2
Chicken pox	2	Typhoid	2	Chicken pox	2
Small pox	2	Typhus	2	Small pox	2
Typhoid	2	Scarlet fever	2	Typhoid	2
Typhus	2	Diphtheria	2	Typhus	2
Scarlet fever	2	Whooping cough	2	Scarlet fever	2
Diphtheria	2	Measles	2	Diphtheria	2
Whooping cough	2	German measles	2	Whooping cough	2
Measles	2	Chicken pox	2	Measles	2
German measles	2	Small pox	2	German measles	2
Chicken pox	2	Typhoid	2	Chicken pox	2
Small pox	2	Typhus	2	Small pox	2
Typhoid	2	Scarlet fever	2	Typhoid	2
Typhus	2	Diphtheria	2	Typhus	2
Scarlet fever	2	Whooping cough	2	Scarlet fever	2
Diphtheria	2	Measles	2	Diphtheria	2
Whooping cough	2	German measles	2	Whooping cough	2
Measles	2	Chicken pox	2	Measles	2
German measles	2	Small pox	2	German measles	2
Chicken pox	2	Typhoid	2	Chicken pox	2
Small pox	2	Typhus	2	Small pox	2
Typhoid	2	Scarlet fever	2	Typhoid	2
Typhus	2	Diphtheria	2	Typhus	2
Scarlet fever	2	Whooping cough	2	Scarlet fever	2
Diphtheria	2	Measles	2	Diphtheria	2
Whooping cough	2	German measles	2	Whooping cough	2
Measles	2	Chicken pox	2	Measles	2
German measles	2	Small pox	2	German measles	2
Chicken pox	2	Typhoid	2	Chicken pox	2
Small pox	2	Typhus	2	Small pox	2
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Scarlet fever	2	Whooping cough	2	Scarlet fever	2
Diphtheria	2	Measles	2	Diphtheria	2
Whooping cough	2	German measles	2	Whooping cough	2
Measles	2	Chicken pox	2	Measles	2
German measles	2	Small pox	2	German measles	2
Chicken pox	2	Typhoid	2	Chicken pox	2
Small pox	2	Typhus	2	Small pox	2
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Scarlet fever	2	Whooping cough	2	Scarlet fever	2
Diphtheria	2	Measles	2	Diphtheria	2
Whooping cough	2	German measles	2	Whooping cough	2
Measles	2	Chicken pox	2	Measles	2
German measles	2	Small pox	2	German measles	2
Chicken pox	2	Typhoid	2	Chicken pox	2
Small pox	2	Typhus	2	Small pox	2
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Typhus	2	Diphtheria	2	Typhus	2
Scarlet fever	2	Whooping cough	2	Scarlet fever	2
Diphtheria	2	Measles	2	Diphtheria	2
Whooping cough	2	German measles	2	Whooping cough	2
Measles	2	Chicken pox	2	Measles	2
German measles	2	Small pox	2	German measles	2
Chicken pox	2	Typhoid	2	Chicken pox	2
Small pox	2	Typhus	2	Small pox	2
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Scarlet fever	2	Whooping cough	2	Scarlet fever	2
Diphtheria	2	Measles	2	Diphtheria	2
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Diphtheria	2	Measles	2	Diphtheria	2
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Chicken pox	2	Typhoid	2	Chicken pox	2
Small pox	2	Typhus	2	Small pox	2
Typhoid	2	Scarlet fever	2	Typhoid	2
Typhus					