Memorandum by Dr R.J. Reece, as to questions raised by Dr Hope regarding his Report on smallpox and smallpox hospitals at Liverpool 1902-03 / (sgd) Richard J. Reece, 6th July, 1905.

Contributors

Reece, Richard James, 1862-1924.
Great Britain. Local Government Board.
Liverpool (England)
London School of Hygiene and Tropical Medicine

Publication/Creation

1905.

Persistent URL

https://wellcomecollection.org/works/sfgr7k5t

Provider

London School of Hygiene and Tropical Medicine

License and attribution

This material has been provided by This material has been provided by London School of Hygiene & Tropical Medicine Library & Archives Service. The original may be consulted at London School of Hygiene & Tropical Medicine Library & Archives Service. where the originals may be consulted. Conditions of use: it is possible this item is protected by copyright and/or related rights. You are free to use this item in any way that is permitted by the copyright and related rights legislation that applies to your use. For other uses you need to obtain permission from the rights-holder(s).



Wellcome Collection 183 Euston Road London NW1 2BE UK T +44 (0)20 7611 8722 E library@wellcomecollection.org https://wellcomecollection.org

3

Dr Hope regarding his Report on Smallpox and Smallpox Hospitals at Liverpool 1902-03.

At the desire of the Board I submit comments on the observations of the Nedical Officer of Health upon my Report to the Local Government Board on Smallpox and Smallpox Hospitals at Liverpool 1902-03.

Dr Hope in his Report to the Liverpool Corporation on "The recent outbreak of smallpox in Liverpool" dated 31st December, 1903, stated (p. 28):- "Until within recent

"hospital, however well conducted, must necessarily
"be a source of infection to the district in which
"it is situated, owing to what is known as aerial
"convection, i.e. conveyance of infection for
"prolonged distances through the atmosphere. It is
"important, therefore, that the experience of the
"Liverpool hospitals in this respect should be borne in
"mind, because it shows that in strictly disciplined
"institutions placed as these hospitals are, no
"danger arises from this source."

And in February, 1904, Dr Hope tendered evidence in a Court of Law to the same effect.

Thus Dr Hope had already, before my inquiries
were begun, denied the existence of spread of smallpox round
Liverpool hospitals due to serial convection, and had also
stated that the administration of the hospitals had been

MCHORANDUM by Dr R. J. Resce, on to questions relead by Dr Hope regarding his Report on Amaligon and Smallpon Hospitals at Livergool 1908-03.

At the desire of the Board I submit comments on the observations of the Hedical Officer of Health upon my Report to the Local Government Scard on Smallpox and Smallpox Hospitals at Liverpool 1908-08.

Or Hope in his Haport to the Liverpool Corporation on "The recent outbreek of smellpox in Liverpool" dated 31st December, 1905, stated (p. 28):- "Until within recent

"years there was an impression that a Saallpox
"hospital, however well conducted, must necessarily
"be a seurce of infection to the district in which
"it is altuated, owing to what is incern as certal
"convection, i.e. conveyence of infection for
"prolonged distances through the ethosphere. It is
"important, therefore, that the attempent of the
"lityerpool hospitals in this respect should be come in
"institutions placed as these in attictly disciplined
"institutions placed as these hospitals are, no
"danger saises from this source."

And in February, 1904, Br Hope bendared syldence in a Court of Law to the same effect.

Thus Dr Hope had elready, before my inquiries were beauty beauty the existence of spread of wellpox round liverycol hospitals due to serial convection, and had also state the edulatetration of the hospitals had been

successful in preventing the spread of the disease from them by other means.

An opinion has sometimes been expressed by those engaged in public health work, that the Medical Department of the Local Government Board should investigate the circumstances of a case in which it is believed that a hospital situated in a populous district and used for the reception of acute smallpox patients during a considerable epidemic, has exerted no adverse influence on the population in its neighbourhood. The Liverpool epidemic of 1902-03, in view of the statement above quoted, seemed to offer such a case; but the first requisite was knowledge of the facts. It was into the facts that I was instructed to inquire, and in particular whether there had been any excess of incidence. as regards smallpox invasion, upon houses situated around the several Liverpool hospitals which had been used for smallpox, during the periods in which those hospitals recaived smallpox patients.

By the publication of the facts obtained by my inquiry,
Dr Hope appears to have been placed in the position of
having to accept my conclusions as to the existence of
"hospital influence" in Liverpool unfavourable to the health
of that City, and acknowledge that he had been hasty in 1903,
or of attempting to explain away the facts established by
my Inquiry, so as to justify in some measure statements in
his Report of December, 1903. It is necessary to point out
that he had not worked out prior to the publication of that
Report the data which were absolutely essential before any
pronouncement could properly be made on the question of
hospital influence. I have now supplied these data, and
Dr Hope cannot find fault with my facts, for my report is
little else than a collection and an ordering of facts which

emonousful in preventing the aproad of the disease from them by other means.

An opinion has sometime been expressed by those encaged in public best to the the Helical Department -anothe eds spentagevent bloods brood scentreved feed and to ladiqued a said bevelled at it doldw at each a to measure muligeour sile tot bess but debutelb asoluged a at bedensta clueble efterellance a milital advellan regificus edeps to adl al moldalugos end no echeufini cereves on bedress uad welv at .50-2021 to obsette footsevil eff .beckmoddeler teads a figure with our bemose, second eveds anecomme end to but the first requisite was moved on the feets. It was at how took a beforedant new I don't eder and in ecomblems to assers was meed bad ereds medicals refuelding basous belsuots assured norm . notaevat woellags afreser as tol hear most had doller alsolvent loovevil laveves and -er elastqued spods delaw at abelian els entrad groutless .Bomeling modifies bevier

The publication of the facts outsined by to inclify, by the try laport, by the publication of the facts outsined by to inclify, by the facts of the facts of the second of the facts of the second of the facts of the second of the facts of the inclination of the facts of the second influenced in the facts of the health of the facts of the second of the facts of the second of the facts of the second of the facts of the f

were supplied me by Liverpool officials.

Dr Hope's position would have been stronger, in my judgment. if he had frankly admitted that a series of important facts had been obtained which were not before him two years ago. Many of his present observations, it appears to me, go wide of the main issues involved. It is beside the mark, for instance, to suggest, without warrant, that I accuse the Liverpool Hospitals Committee of negligence; that I "complain" of various things; that there is a difference of opinion between my official Chief and myself, and that I condemn the Fazakerley Hospital site for the treatment of smallpox. And on the main question, Dr Hope has, I think, failed to reconcile the facts of my report with the view that none of the Liverpool hospitals exerted an adverse influence on their neighbourhoods, either by aerial convection of smallpox or by hospital maladministration. To this I revert below.

It will be convenient now to refer to the 10 numbered "conclusions" attached to Dr Hope's "Observations."

"Conclusions."

- 1. On the whole the observations of Dr Reece relating to the administrative arrangements are indicative of an absence of practical acquaintance with the sanitary administration of cities.
- 2. This is further shown by his general reflection upon the supervision of the whole of the City Hospitals; but in this latter case he might with but little trouble have visited these institutions, or at least, by making inquiries concerning them, have made himself acquainted with the methods of their supervision.

.alcieltho foogreval vo es beligges erew

Ir Hope's position would have been stronger, in to series a dad besitabe villeri bad od if december ye min eroted for ever notify bentaded meet had adon't duadrount two years ago, Many of his present observations, it apparts ebised at dl .bevievat sevest alem odd to shiw og .em od I said , for instance, to secrest, without worrant, the end dani termentinen in enditamon stadiosell longrowhi edd cames somewhile at stell deal teaches and the distance I I deds bue . Meave bus held Lakelilo va seemed nothing to to drespect out tol esta lesignal velvemened en meshado amelloom. And on the main question, Dr Hope has, I think, send welly and daily proper on to adopt and ellowoost of bellet wit oprovis as begresse afestiment foogsevil ent to enou fluence on their noighbourhoods, element by serial convection I sind of .coldsatelutebelen ledbosod ve to morfing to .woled drever

Of edd of refer of won decimenton of file dI ".emolsevesedo" a egoH rd of badeside "amolanicato" bereggen

"donolantono"

- 1. On the whole the observations of Hr Heere relating to the administrative errengements are indicate the tive of an absence of practical acquaintence with the sanitary administration of cities.
- 2. This is further shown by his seneral reflection upon the supervision of the whole of the did Hospitals; and the this in this archite the short one handle with his little through the third through the third of the history or at least, by making the third through the history have made himself acquainted with the mediads of their expervision.

- altogether upon a limited aspect of the geographical distribution of the disease. No other aspect of the question has been taken into consideration, and the acceraphical one to only such partial extent as will onable it to invest the conclusions with an appearance of accuracy.
- 4. Spot maps, and tables compiled from them, are alone relied upon. The futility of basing conclusions upon spot maps and tables compiled from them alone, is illustrated by a comparison of the smallpox incidence in the Parkhill Mospital area with its incidence in the Netherfield Road Mospital area. The two ceses are practically parallel so far as geographical incidence is concerned. The gradations in the incidence of the disease are remarkably similar, and as a basis of statistical argument, the case of Netherfield Road Mospital is a much stronger one than Parkhill, because the observations extend over a longer period, viz: twenty-three months as compared with six months, and relate to a considerably larger number of houses.
- 5. But there is no reason to assume that
 Netherfield Road hospital, which was not used for
 smallpox at all, could have been a source of smallpox
 infection to the neighbourhood. The presence there of
 smallpox was due to other causes the same causes in fact,
 which gave rise to it in the neighbourhood of Parkhill.
- 6. In both cases the prevalence of smallpox was due to causes wholly unconnected with either hospital.
- 7. Referring to Priory Road hospital, the spot maps themselves lend no colour to the conclusions sought to be drawn from them. For more than an entire year the hospital was in full use, and the whole population

- 3. The conclusions in the Meport are besed of the capabler upon a limited aspect of the geographical distribution of the disease. No other espect of the question has been taken one the consideration, and the geographical one to only anon partial extent as will especials it to invest the conclusions with an appearance of scentreov.
- d. Spot maps, and tables compiled from them, are alone relied upon. The rutility of basing donolusions upon apot maps and basics compiled from them
 alone, is illustrated by a comparison of the amelipox
 incidence in the Parkhill Wompitel area with its
 fractions in the Metherrield Road Mospital gree. The

Digitized by the Internet Archive along a man has restant a sin 2015 mayor rectal and to empose all rectal and eno restant a form a at last good a raw house unobservesco end has a minimum at a sin a

S. Int there is no recome to was not used for Motherriald Hond hondical, which was not used for Motherriald Mark hond how been a source of mailing to the neighbourhood. The presence there of uself the seaso cames in fact, which gave rise to it in the neighbourhood of Parishill.

- due to cause whelly uncommerced with either heaptical.
- 7. Referring to Friery Rend hospital, the spec maps

https://archive.org/details/b21360066

within a quarter of a mile of it lived in entire security during that time.

8. As the site for the Fazakerley Hospital is one which the Corporation, after due deliberation and consultation with the Local Government Board, purchased for a smallpox hospital with the sanction of the Board, questions affecting its fitness for the purpose are of great importance. The cost of the Pazakerley Smallpox Hospital was about £60,000.

But it is apparent that in dealing with this hospital the gravest mistakes have been made by Dr Reece. It is quite true that at table has been constructed which would ascribe to the Fazakerley Hospital a nost damaging influence upon the public health.

The allegation, however, rests on the invasion of two houses within the half-mile circle, with an increase of house invasion in the zone more distant from the hospital. In the first place, these figures are far too small to justify tabulation, and the table constitutes a use of figures which is altogether misleading and improper.

9. Neither the Local Government Poard nor the
Port Sanitary and Hospitals Committee could assent to
the continued use of this institution if the allegations contained in Dr Resce's table are to be regarded
seriously.

It does appear that the sole object sought
to be served by the table is to lend colour to the
preconceived view which is expressed at the outset
of the Report.

within a quarter of a mile of it lived in entire

8. As the alte for the Pensierley Hospital is one which the Corporation, effor the deliberation and consultation with the Local Government Hoard, purchased for a smallpow heapital with the semetion of the Board, questions affecting its fitness for the purpose ere of great importance. The cost of the fitness for the Ferskerley Estalipoi Hospital was about 250,000.

booltes the arreval that here have been made by booltes the course that seem can be been confirmed the confirmed that he that seem can attracted which would nearlise to the Frankeries Wompital attracted which would nearlise to the Frankeries Wompital a near demands upon the public health.

The allegation, however, reads on the invasion of two hours within the helf-mile sirule, with an increase of hours within the helf-mile sirule, with an increase of hours in the first place, these figures are for hours to the first place, these figures are for constitutes a use of figures which is altograther wis-leading and increase.

of ten preed measured along the local tent tent to the process of the case of the case of the tradition of the state of the process of the pr

color of motor had of at elect ent to hevice ed of deside ed of besenings at clear welv bevienceberg

The Port Sanitary and Hospitals Jonnittee
will desire to be satisfied upon this point, and will
no doubt confer with the Local Government Board upon
the matter.

that Dr Reece's Report derived its importance from the official position which he holds, and although it does not appear that the Local deverment Board have adopted the Report, or have given official acceptance to it, yet no doubt must be allowed to remain as to the views of the Board and the views of the Committee in the matter.

E. W. Hope."

In the first instance I may dismiss Nos. 1 and 10.
No comment is needed.

No. 2. As to what I state in my Report on this matter see pp. 6 and 7, where I mention certain details connected with the administration of the Liverpool Hospitals.

I fail to see how a suggestion for a revision of
the scheme of supervision can be construed as "suggesting
"negligence on the part of the Hospitals Committee of the
"Corporation." (Dr Hope's Observations, p. 5, para. 4).

However Dr Hope admits the correctness of my statement and he himself points out "that this trouble is of old standing." (Observations p. 5, para. 2).

No. 3. My report shows the topographical distribution of the invasion by smallpox for the City of Liverpool as a whole, and for the special mile areas around each of the three Hospitals used at one and another period for the reception of acute smallpox patients. Also it shows period by period the time incidence of this house invasion. It is this latter point which is of special importance, as it

The Port Senitary and Hospitals Joseftee will denire to be antiched upon this point, and will no doubt confer with the Local Government Board upon the matter.

10. The Compitee will, of course appreciate that the Property of the the property of the the first the forest of the forest the forest that the position which he helds, sad although it does not appear that the Local Government Posmi have adopted the first the Local Government House to it.

The Mount must be allowed to remain as to the views of the Government the the the wiews of the Government the the the views of the Governtee in the matter.

T. W. Hope, "

In the first instance I may dississ Hos. I and 10.

No. 2. As to what I state in my Deport on this matter see pp. 5 and 7, where I sention contain details.

I fail to see how a suggestion for a revision of the scheme of supervision can se constitued as "suggesting "negligence on the part of the Tospitals Carattee of the "Corporation." (In Mape's Observations, p. 5, para. 4).

However IN Hope admits the correctment of his temble is statement and he himself points out "that this time trouble is of old stending," (Observations p. 5, pare. 8).

loserevil to the tiveston by analiged for the City of inversed to not ton of the tiveston by analiged for the cross erons of the tives work for the secons end mother partial to the times Hospitals used at one and emotion partial for the tone to sale and to the times of each one and emotion to the time to the time to the time to the time times to the time times to the time times to the times to time times times to time times t

shows that the opening of one or another hospital for the reception of acute smallpox cases was followed by special incidence of smallpox on houses in its neighbourhood.

No. 7. In the quarter mile area in question there are only 85 dwellings, 80 of which are clustered together on one point near the circumference of the area. Escape of a small group of dwellings of this kind (one house only was invaded by smallpox in the whole period under consideration) does not prove the absence of "hospital influence". When the larger and more populous areas (the 1 to 1 mile and 1 - 1 mile zones) are considered, the excess of incidence of smallpox round this Priory Road Hospital becomes apparent.

Conclusions Nos. 4, 5, 6, 8 and 9 may most con-

My main work at Liverpool was to get out the data
to apply all available means of checking and correcting
the collected facts as to the occurrence of cases and the
invasion of houses; to determine populations and numbers
of dwellings in different areas; to spot maps so that they
showed, fortnight by fortnight, all the newly invaded houses
in the City; and subsequently to combine these various data
es to local incidence of smallpox in relation to the hospital
operations. In my report I summarise the questions with
which I had to deal as follows:-

- "(1) Has the inhabited area within a mile in each instance of hospital suffered more severely than the rest of Liverpool? And, if so,
- (2) Has the exceptional incidence within that area corresponded in point of time (having regard, of course, to the period of incubation of smallpox) to the use of the hospital for the treatment of acute smallpox

cases? And

end not ladiqued redrous to end to gathego end dant swons
Lairens and bewolfelt new seaso months adunce to mondacer
.boorkwoodgien at in removed no months to seashient

No. 7. In the quarter wile cres in question there are a mail seed together on one point near the officer, 80 of which are a sure. Herege of the cres. Herege of the cres. Herege of the cres of the cres. Herege of the point one only was invested by smallpox in the whole particl under consideration) does not prove the absence of "hospital influence". When the larger and more populous areas (the first populous areas (the cress of insidered, the excess of incidence of smallpox round this Priory Head Head Heapital

Considering Nos. 4, 5, 8 and 9 may most com-

and our of any of any loogueval of from the till and our means of cases and corrections of the cases for construct or the cases for construct or the cases for construct or the cases of the cases and the cases and make any any construct of destructs and make and cases and make they are the cases and make they are the cases and cases are cases and cases and cases and cases are they cased the cases are the cases and cases are cased on a case and cases are cases and cases are cases are cases and cases are cases are cases and cases are cases are cases are cases are cases are cases and cases are cases are

- (1) Hear the indeption area within a mile in each team the instance of the compact and the second team the compact and the second area of inverseoil and if so,
 - nors deal minister committed Landidgette and the (2)

 To describe and the deal to deal of the (thereing regard, of (sequence to mealings) to the use of the hospital for the transmit of each of the hospital for the transmit of each of the landidgetter.

onnoul Vad

(3) Is there evidence that within the several "onemile areas" as they may be termed, dwellings nearer
to hospital sustained a heavier incidence of smallpox
than those farther away?"

And my conclusions, based solely upon data as to the accuracy of which Dr Hope and I are completely in accord - for obtaining many of them I am of course indebted to him and to his steff, aws were :-

- "(1) Inhabited areas within a mile of each of the three Liverpool Smallpox Hospitals have suffered more severely from smallpox than the City as a whole,
- (2) Exceptional incidence of smallpox within these areas has corresponded in point of time with the use of these hospitals for the treatment of acute smallpox cases.
- (3) Broadly speaking, within these hospital areas the dwellings nearer to hospital have sustained a far heavier incidence of smallpox than those further away."

above conclusions is parallel to that met with in London before 1886, and subsequently in a plubality of -other had instances of provincial hospitals which have seen considerable populations in their neighbourhood; so that with regard to Liverpool I drew the inference that it supplies a notable example of the "smallpox hospital influence" with which we have become familiar.

In drawing this inference I was of course alive to the consideration that the excess of incidence of smallpox within the hospital areas might have been due merely to the accident that undetected cases, or other causes of spread of smallpox from person to person, had occurred in exceptional number, as a result of mere chance

References to the literature on the subjects are given in a feetnete on p. 9 of my Report.

"The those every may be termed, dwallings nearer to be termed, dwallings nearer to the those to the termed a heavier incidence of mailpox

And my conclusions, mass acressed upon data as to the sountracy of which Dr Hope and I are completely in accord - for the colling many of them I am of course independ to him and to him senft, aws were :-

- "(1) Inhabited areas within a mile of sect beddenic (1)"
 three Liverpool Smallpow Hospitals have suffered nord
 severally from smallpow them the City as a whole,
- ereas head final termination of qualiform within these ereas are these hospitals for the treatment of south
- (8) Frosdly speaking, within these hospital areas the dealtings nearer to hospital have assumined a far heavier insidence of smallpox than those further ever."

notion is self-and superisons for the interest of the self-and in the self-and of leftered at anotherical and self-and and self-and and self-and and self-and self-and self-and self-and self-and self-and the self-a

In drawing this inference I was of course alive to the consideration that the excess of incidence of smallpox within the hospital error might have been due neverly to the santiant that undetected cesse, or other courses of spread of mealipox from person to person, had coomined in exceptional number, as a result of next change of the References to the liberature on the subjects are given in

a footnote on p. D of ny Report.

in the areas in question at the time when the hospitals were open. Considerations such as these might perhaps have required discussion in my Report of the experience of Liverpool in 1902-03 had stood by itself. But having regard to the notorious occurrence of similar phenomena round many other hospitals in other epidamics, "personal infection" could at once, in my judgment, be dismissed as altogether inadequate to explain the whole of the Liverpool facts.

Dr Hope, however, appears to entertain seriously
the suggestion that the whole matter was fortuitous. This
seems to be his sole argument on the main issue. I
understand him to contend that the Liverpool experiences
are not instances of true "hospital influence"; that the
excess of incidence of smallpox round Liverpool hospitals;
the correspondence of such incidence in point of time with
hospital operations; and the gradations observed, have
had none but accidental relation to the hospitals themselves.

I do not think Dr Hope has fortified his contention materially by citing instances where particular individuals living int the neighbourhood of a smallpox hospital probably contracted their smallpox as a result of direct personal communication with an antecedent case.

Of course scores of instances could be brought forward in which persons living near a smallpex hospital were in all probability infected independently of it.

Living close by a smallpex hospital does not confer immunity from smallpex attack by direct infection - this point is indeed too elementary to need stating. The question at issue is not whether all cases living within a mile of a hospital contracted smallpex from the hospital, but whether the exceptional incidence round the hospital is attributable to the hospital.

in the areas in question at the when the hospitals were open. Considerations and as these sight perhaps have required discussion in my Report of the experience of Liverpool in 1903-05 had stood by itself. But having require to the notorious commresses of similar phenomena round many notorious commresses of similar phenomena round many other hospitals in other epidemics, "porconsi infection" altogether insdequents to explain the whole of the liverpool fracts.

Un Hope, however, appears to entertain seriously
the successful that the whole mather was forthitous. This
seems to be his sole engaged on the main issue. I
understand him to combend that the liverpool experiences
are not instances of true "hospital influence"; that the
extess of incidence of smallpox round liverpool hospitals;
the correspondence of such incidence in point of the with
hospital operations; and the eredations caserved, have
had none but accidental relation to the hospitals themselves.

I do not think Dr Hope has fortified his contention materially by ofting instances where pertioning
individuals living int the the neighbourhood of a smallpox
hospital probably contracted that smallpox as a rosult
of direct personal communication with an antequation case.

Institute of a more account to merces earned to brought forward for which persons living near a mealing and proposed in the result.

It is not seen in all propositive independent bedeenthy of the account to the sound account to the seen of the seen of the seen of the seen at the se

It is worth noting also that the instances given by Dr Hope are not particularly convincing. Thus in one series of cases his Staff traced the source of infection of a woman (p. 18 of his "Observations") "Armie Robinson living at No 14 Balkan Street, (which is within 50 yazzis of Park Hill Hospital Walls"). As matter of fact there were no cases of smallpox in Park Hill Hospital at the time and thus the tracing of the case is irrelevent to the issue. In another series (P.S. Diagram & p. 21 of his "Observations") he traces the infectione of certain persons to a single primary case. But the primary case in question was a patient who died suddenly at a house in the # 2 - 1 mile zone of Priory Road Hospital at a time when this Hospital was receiving acute smallpox patients and the infection of this primary case is unaccounted for by Dr Hope. also useful to recall that Dr Hope stated quite recently at a meeting of the Epidemicological Society that he had succeeded, through the efforts of his staff and with the aid of special powers to which he has referred, in tracing a probable source of infection in "about 1,000 out of 2,082 cases" Which occurred in Liverpool during 1902-3. There seems to be here in the balance "unaccounted for". emple mergin for cases due to serial convection from the hospitals. But there is also some question in regard to the 1,000 cases which he regards as maccounted for. some of these cases, occurring in the hospital areas, it appears to me after study of the detailed lists that, after all, the recorded evidence of contact with smallpox cases was slight, and that it might at least be equally probable that aerial convection from the hospital was the real cause. This however can only be a matter for speculation. A further point to be borne in mind is the possibility (not recognised,

attended has been said out on makesons at some oil of

moving commitmat end send outs antion force at ST by in Mana are not particularly convincing. Thus in one moldoelni le source est benero That sid seaso to selves noemided stard" ("unotinvestione") "Arate Rebinson living at No 14 Haligan Stores, [which is within 50 yearsh ored for lever at . ("alle" lastgeon Tith was to ware no cause of mealiper in Fark Hill Hospitel at the time . curat end of drevelerri at case end to antern end aud bus In smother merica (P.S. Diagram & p. 21 of his "Chastvetions nI he trades the infertione of certain persons to a single primary case. But the primary case in question was a olis I - 4 8 est at eason a de ginebbus both adv duckden some of Eriory Road Hospital at a time when this Hospital he moldcafted and but admelden workland admen gulybases new this primary case is unaccounted for my in Nope, It is visuover ed by headin egol til sads fiscar of fulcan onis bad of Jail Victor Incipationable of to anticom a de smooseded, through the efforts of his staff and with the add of special powers to which he has referred, in tracing to suo 000, I duoda" at moistaint to engues eldedors s 2.088 cases" which eccurred in liveryces during 1908-5. There weems to be here in the belence "unaccounted for". edf north nolicevess Leines of out seaso not alphes elune hospitals. But there is also some question the regard to the 1,000 cases which has regards as seaso 000, I and of of the design of the partition of the board to come reits, teds statt beliated out to which moths on at excepte source would make at the contract with the contract and the elden or village od Just in inch if danis bom . Idalia any that seried convection from the hospital was the rest cause. Toda and and state out of the angle of the angle of the contraction of point to be borne in wind in the possibility (not recognised,

of course, by Dr Hope) that certain of the un-datected cases which remained at their houses (in any part of the city) caused infection in their neighbourhood as a result of aerial convection, not of direct or mediate infection.

The Retherfield Road story does not seem to me to lend weight to the argument that the occurrences round the hospitals were merely fortuitous. The analogy is hopelessly incomplete. If it is desired to show by analogy that the occurrences round the smallpox hospitals were accidents and nothing more, there is wanted something of this kind: Namely - a series of facts as to the incidence of swallpox round three establishments which are the only three of their kind in or near the city - say three skin hospitals, three pieno factories, or three gasworks provided they are in each case the only three - end are placed in different parts of Liverpool, and outside the smallpox hospital areas. If the analogy is to be of any value there should be found an excess of incidence of smallpox round each establishment. And a graduation of incidence round each establishment. And it would not be enough to find that this excess of incidence and this graduation occurred when the whole epidemic period was taken; in the case of establishment A. they must be found during the period in which Park Hill Hospital was receiving cases; and assesses and the not at other times; in the case of establishment B. selely while Priory Road Hospital was receiving cases; and in the case of establishment C. solely when Fazakerley Hospital was receiving cases. In the absence of some such demonstration, I do not see how to attach weight to the comparison to which Dr Hope invites attention.

or course, by hr Hope the cast is mistres and (soof of the parties of the city) which remained at their houses (in any part of the city) coursed infraction in their neighbourhood as a result of serial convection, not of direct or mediate infection.

of our of meet for soon grown head bleltrowed out eds bourst soomertgood eds said dreamen and od singles boof hospitals were merely fortuitous, The analogy is hope-Veolage ve wode of berired at it if .efelement wienel tiet the cocurrences round the smallpox hospitues and Jani To middenes bedieve at evall , evon subdeed bue agretions constitute and of as ador't to selves a - viewed that state vino ess cue della esmentellante ecutt basor morfiem to this or their tind in or many the otty - may three aids hospitals, three plane factories, or three hassories ers bus - sould vino end east thee mi ere vent belivore eds chiefer bus , foogravid to as may suggestable at begate culay was to ed of at vanishes out if it . seems Indiquon mouthern modificate to somehicut to asserve us bure's ec bimode exemiengebieni lo moldaubern e han . dasmielidades done banor of figures of for bloom of had . IncomistIdadge fore broom nolderhorn while bus enceblent to necome and days but? order and the whole application between the remove end putrub hours od June vend .A dieminifesse to ease period in worth Fern Hill Heaptiel was receiving cause; and end it taened tonio de don . Describilitades de de de la companie case of establishment H. selesy while Printy Nosd Hospital wieles .O Jacobilionies to ease of at has tueses wittheest new To compade and all . Lease receiving asy Indianol velocities of the and and designaturation, I to not see how to attach would be the comperison to which in Mone invites attenues.

I find it somewhat difficult to follow Dr Hope's criticism in regard to rates. The statistical part of my report was intended for readers who could distinguish between actual figures given and rates calculated on those figures, and throughout my report I have given the actual figures side by side with the rates. In dealing with the case of Fazakerley Hospital I have in three separate places drawn attention to the necessity of caution in drawing inferences from rates based upon small numbers (pp. 12, 14, & 15). The fact is, of course, that in my report some of the rates are calculated on large figures, e.g. the rates for the more populous areas round Park Hill Hospital during the period (7 December 1902 to 20 June 1905) when that hospital was receiving cases on a large scale at the height of an epidemic; whereas others are calculated on small figures, e.g. the fortnight by fortnight rates, as also the rates on the small area within I mile of Fark Hill Hospital, which contains only171 dwellings, nine of which were attacked, giving the rate of 526 per 10,000 referred to by Dr Hope. smallness of the number of houses in such an area as this or as the Fazakerley neighbourhood, is a matter which had to be taken as it was found. The point which comes out in dealing with the mile areas round these several hospitals and the subdivisions of those areas is that whether there be taken the large figures for the large hospital (Park Hill) at the height of the spidemic, or the smaller figures for the smaller hospital (Priory Road) in the early portion of the epidamic, or the figures for the cutside (Fazakerley) hospital with comparatively few houses round it, each basis of

12.

a eroH ad wollo's of flooithib defire wor fi bull I To sung Incidnidate off . nedar of brager of maleking neighbord was intended for erebser tot bebream asw droger on esons no hersinoles seast has never serent fautes meeted rigures, and throughout my report I have given the actual odd notwentage of . soder odd notwe the vd oble serusif neosity entranges devid at eved I lections verteleral to oneo makerin at moldano to wheeees and of noldmedde mouth informosa from rates based upon monal numbers (pp. 18, 14, & 15). The rest is, of course, that in my report some of the Tot seist eds .3.0 . Refugit eggs! no bejeluoise ere sejer the rore populous arose round Park Hill Mospital during the issignoi sads min'w (3021 ean't OR of 2001 recessed V) befreq me to diffici end de elace egual e mo como entviccer aem .g.e , normant fishe no bedefunise one arendo meetedw ; olumbing the fortnight up fortnight rates, as also the rates on the mainten anterno moint , insteach fill wret to othe - midstw sens gniving ,besideside erew Holdw to enth , ugnitient fvivino the rate of 588 per 10,000 referred to by Dr Hope. The alid on sers no neur at accord to reduce est to quantiens or as the Fersherley neighbourhood, is a meteor which had to at two agues dollar dalog off .baudi new it as newed of bus alasignod fareves spend bracer asers of the out dilw amblech ad oracis wendon't dais al users sports to anotatythere end de (IEEE Stall) Leriqued egual out not sexual't circal eds centes the height of the sydedie, or the useller flaures for the and to nother your the time early portion of the andamin, or the firmes of the duteside (Fernanday) hospital To alast thee of hours conton wer viewlisten on this consideration indicates in its degree and on the invasion rates, a like specialized incidence corresponding in point of time to the hospital operations. Furthermore where the figures are largest, and the conclusions to be drawn from the rates are consequently the most definite the indication of the excess of incidence, and the graduation of incidence are clearly manifest.

It is reading into my Report that which is not there to represent that I state distinctly there is only one explanation of smallpox incidence round hospitals, viz: dissemination of infection by serial convection, and that I ignore all the considerations upon which so much stress is laid by Mr Power and other observers. Those who read my report carefully will see that it is limited, so far as prevalence of smallpox around the Hospitals is concerned, to the three considerations set forth above, and that I offer no explanation as to the cause of this prevalence; the statements in the report are strictly limited to observeds facts.

My provisional attitude with regard to serial convection of smallpox infection is set forth on pp. 9 and 10 of my report as follows :--

"Well known, has demonstrated that excessive in"cidence of smallpox on populous areas in the
"vicinity of a hospital receiving a plurality of
"acute cases of the disease is no unusual occurrence
"and it can hardly be doubted that the relationship
"between the operations of these hospitals and the
"excessive smallpox incidence in their neighbourhoode

consideration indicates in the degree and on the investor reter, a like appointment families operations converged in point of time to the housitel operations. The thereof where the mark of other converges, and the entering the most definite the indicates of the exacts of incidence, and the gradue.

there to represent that I state distinctly there is duly
there to represent that I state distinctly there is duly
one emplanation of smallpox incidence round hospitaln,
included hospital to not small that the constitution of small and that the distribution of the small that the small the small that the mode which are the first and other observats.

Those who read my report emerically will see that it is
the first as unevalence of smallpox around the
modification of the trevel of the three small that the
set forth clove, and that I offer no explanation as to
set forth cloves, and their prevelence of smallenation as to
set forth cloves, and their prevelence of smallenation as to

Delices of brager film ebulide Innotativery vil common to sold on the self of the self of

"and it can describe at the sort in question, which is

"oldered the demonstrated that areas in the "

"oldered of smallpox on populate at the "

"out it can be a least to the disease is no unusual countrains

"end it can handly to demond that the relationality

"and it can handly to demond that the relationality

"between the openation of these boundaries and the

"between the openations in the chart metablecthoods

"end the sale that the the the relationship of the chart metablecthoods

"is one of cause and offect. Further, it has been "strongly indicated from careful study of various "instances of 'smallpox hospital influence', that "explanation of extra incidence of smallpox around "such hospital, by assumption of hospital mismanage-"ment or of lack of precautions in regulating the "necessary traffic and business of the establishment "does not suffice to account for the facts. The "generally accepted, and so far as I am aware the "only completely satisfactory, explanation of the "peculiarities of smallpox incidence around hes-"pitals receiving acute cases of the disease, is "dissemination of infection by aerial convection; an "explanation introduced many years ago by Mr W. H. "Fower, the Board's present medical officer, after "detailed study of the behaviour of smallpoxeround "Fulham and other London hospitals. He held that "particulate matter capable of conveying infection, "escaping into the air from the wards of a smallpox "hospital, does on occasion and in suitable atmos-"pheric conditi ns become wafted to considerable "distances from such hospital.

"traced in certain instances, where circumstances

"allowed the stidy to be made in respect of in
"habitede areas, as far as one mile from the hospital

"by some observers it has been thought to have been

"traceable though to a much less degree on in
"habitede areas situated even further than a mile

"from the hospital.

"te one of cause and effect. Further, it has been another to what a latered spir hedselbut vigacrata" dans, 'someoffer Isitened rogilems' to secretari" between modificate to comebtant statue to motioneloxs" "cuch a captal, by easuration of hospital mismerses." add galdwinger at anolduspers to Mosi to to dueue Justicial facine out to saentain bue office viscassen" "does not suffice to sonound for the facts. "generally accepted, and so far as I am amore the "only completely satisfactory, emplanation of the -most benove conshient montless to settingtimeen al ,esceult eds to asses of one aniviecer aladig" MS inologovence Laires vd noisceful to noisentmensith" "explanation introduced many years ago by Mr W. H. "Fower, the Board's present medical officer, after brus asked from to much said and to whose befrageh dans blod eH .slestquod nobnol redso bus mailes "moretowing makes depend of conveying infection, "sucception a from the wards of a martine wards of a manageme" -acids elegible of how molescop on sech , intigacia "distribution of before empose an idihano etreno" .Istiquod four mout secondable

"Houpital influence" in this sense has been "careced in certain instances, where circumstances in the sense in the sense of in"allowed the abddy to be made in respect of in"hy sense observers it has been thought to have been "by sense though to a ruch less degree on in"habited- areas situated even in them than a mile
"from the hospital.

"Tt has not, of course, been affirmed that,

"whenever acute cases are admitted to a smallpox

"hospital situated near a populous area, demonstra
"tion of serial convection will certainly be forth
"coming if only the facts be strictly studied.

"There is ground indeed for belief that a "smallpox hospital in a populous area does not, as a "result of its actual operations, always whether aerial-"ly or otherwise, distribute smallpox in conspicuous "fashion in its naishbourhood; and perhaps opinion has "come to be entertained in some quarters that disad-"vantage such as accrued from Fulham and other smallpox "hospitals may be regarded as the exception, not the "rule. Similarly there has, when emergency has resulted "in compulsory use as it were for smallpox of a hospital "in a populous neighbourhood, arisen a tendency to min-"imise any wischief which may be alleged to be due to "the hospital. A description, therefore, of absence "of spread of smallpox from hospital in the case of "Liverpool, where three hospitals, two of them in the "dity, were receiving acute smallpox cases, and where "in particular one of the hospitals (Park Hill) for a "pariod of some 24 weeks at the height of the epidemic "received soute smallpox patients in large marbers. "would, if established, be not only particularly interest-"ing to epidemiclogists, but in its administrative "aspects would be reassuring to smallpox hospital "authorities." at house in 190% had

\$ - } mile = 100 house

u - i mila = 175 houses.

"The hear note of normal, been efficient to a stallpox "
"Insurance of the stall of the angle of

a me Jos anch sein emojugos a mi faitquod montfemot "result of the second operations, simply whether seriesor ofference distribute annihood is complement and making agained bus shootheentaten not ut not metales -hould dady executant areas at hemistraine es of comp" modificate words but smaller sout between as door easyteen " out told year be regarded on the exception, not the "rule, Sindlerly there hear then energency has remited Independ a to modificate was every it as east wooding on all "the a populate analytocontine and and a minof one of beselfe on your notify telicate you exhain "the hounded to construction, therefore, of charges To once out at Insigned work stoof from to beering to" sil it mail to own , alastened sornis stante , footmertal story has acuse xoullain comes antition ores the print "In northern are of the hearthold (Form Hill) for a pluebles out to susted out to pricer of emps to between .viedum emis at binetien politice educa beviecer" "would, if satablished, he not only perticularly interestovismonial be add at dud , adalpolotmebige of pri" Indianon mogliane of anhancement of histor ofcomes" ", pelsitadepa"

repulation resident within the area of half a mile from

My personal belief, if it be desired that I should state it, is that serial convection probably operated in the case of each Liverpool hospital. The data-placed at my disposal by Dr Hope give little suggestion of support to the proposition that infection had occurred in the neighbourhood of any of these hospitals as a result of communications or traffic with the hospital. At most two or three instances of possible infection in this way have been traced. The assumptions required to explain the excess of incidence and the graduation of incidence in each instance by a prolonged series of unsuspected communications between the hospital and its neighbourhood, undetected by Dr Hope's staff, are it seems to me, assumptions altogether without warrant.

In view of Dr Hope's repeated references to Fazakerley Hospital the following notes may be useful,

The Fazakerley Smallpox Hospital is erected on a site outside the Liverpool City Boundary, and at the time of the Board's inquiry in 1898 as to the loan for this hospital site the surrounding population was given as -

0 - 2 mile = 4 houses 9 persons.

ta - ta mile = 74 houses 377 persons.

or $0 - \frac{1}{2}$ mile = 78 houses 386 persons.

and it thus complied with the requirements of the Local Government Board with regard to the population resident around such Hospital.

The number of houses in 1905 had increased as follows :-

0 - ½ mile = 9 houses.

1 - 1 mile = 166 houses.

 $0 - \frac{1}{2}$ mile = 175 houses.

Ity personal besides, if it so desired what I should state it, is that maried occavelous proposed in the case of each at the that desired at the case of each at the that is the proposed by it most that give little states at the desired of the proposition that infection had cooursed in the neighbourhood of each of clease heapitelle. In an easily of continuous at the first the instance of continuous of the the horses of possible infection in that we have been transmose of possible infection in expected to the states of each the createst of the instance of incidence and the createst of the instance of incidence and the createst of the continuous, and to better the bounded by it hope's staff, are it assumed to the same altered by it hope's staff, are it assumed to me, assumptions altered by it hope's staff, are it assumed to me, assumptions altered by it hope's staff, are it assumed to me, assumptions altered by it hope's staff, are it assumed to me, assumptions altered by it hope's staff, are it assumed to me.

Ference of the repeated the following notes and to become the following the Foundation of the following the follow

a alte outdide the Liverpool City Boundary, and at the time of the Heard's inquiry in 1898 as to the loan for this heaptenl site the surrounding population was given as -

O - \$ mile = 4 houses 8 persons.

\$ - \$ mile = 74 houses 877 persons.

or O - \$ mile = 78 houses 288 persons.

and it thus pospiled with the requirements of his local such to the population resident around such Hespitel.

Description of houses in 1908 had instrumed

. accuract = ofin d - o

\$ - \$ udle = 166 houses.

0 - 1 mile = 175 houses.

Taking an average of 5 persons per house, the population resident within the area of half a mile from the hospital would in 1903 be 875 persons, a number which exceeds the limit fixed by the Local Government Board. The Board requires the areas surrounding smallpox hospitals that are built under their sanction, to be sparsely populated with a view to minimise as far as practicable the amount of smallpox spread from these hospitals. Redidence within half a mile of a hospital erected under such conditions obviously in no sense guarantees immunity from smallpox infection to those persons liable to attack by this disease; but the paucity of resident population allows of ready control of smallpox arising from proximity to the Mospital. The Foerd is in no way responsible for any increase in smallpox the population resident around such hespitals hospitals subsequent to the Board's approval of the site.

areas within one mile of the Fazakarley Hospital contained 1,425 houses, and that of these no more than 35 houses were, in two years, invaded by smallpox.

Mumerically therefore the amount of smallpox disseminated in the mile area around it by Fazakarley Hospital was insignificant, and should have been correspondingly easy of centrol. Hevertheless relatively to their number these houses in the Fazakarley area suffered, as did the houses in the neighbourhood of the other two smallpox hospitals, a higher rate of invasion by smallpox then the houses in the City as a whole.

Considerable stress has been laid by Dr Hope on the fact that although the Hospital site at

Teldne an average of 5 persons per house, the mort elle a tied to see est midthy dueblact moldeluged the heaptest would in 1905 be 875 persons, a musber Snessraved Level and to bext? Sint! out observe deline Board. The Posrd requires the areas surrounding molyange wheat wehms office one send alestquod monthema as saiminime of weiv a ditw beislowed viewters as of morn heavys moglians to impose out eldetiness so well a to alie a then ministry complibed . what toward exemion al visuolvao amalilance dous rehau bedoern initgeon of noiseant modifica mort without mochasteus cames ends jud teasealt alids vo mbadas of eldsid amounted enough lordnos viser to awolls noldslugog duebtest to vitoung of smallpox erising from prominity to the Hospital. The Heard is in no way responsible for any increase in alediquod elessessi dona bount suchter moldelmoor end .edi: edi to Levorque a brasel edi od drespendire

Is people of the teach out the teacher to be posited coneres within one mile of the Teacherley Houseted conteined 1,483 houses, and that of these no nore than 55
houses were, in two years, invaded by enelipox.

Theserically therefore the encumb of enclipox disseringted in the mile area eround it by Teacherley Housetel
was insimiffeent, and should have been correspondingly cary of central. Heyertheless relabively to
their number these houses in the Passkerley area
suffered, as did the houses in the merkerley area
the other two meetipox houses in the meishbourhood of
the other two meetipox houses in the mither rate of inwhich by meetipox them the houses in the Other rate of the

de edla fedigael and discoults dend deal and no

Passkorley complied with the requirements of the local Government Board at the time the lend was purchased, yet nevertheless it has been shown by me in my report that the houses in the area around the hospital ware not only not impuse to invasion by amilipox out suffered a greater rate of invasion than the houses in the City of Liverpool teleen as a whole; and from this it is wrongly inferred that I disapprove or condem the Pasakerley Hospital site forthe treatment of smallpox and that I differ from my three colleagues, who have had officially to report to the Board on this Hospital sits. The answer to this is obvious. It is hardly necessary to point out that a house invasion rate of & per cent. in the case of a hospital like Fasakerley, which goes far to fulfil the Local Government Board requirements as to population, is a trifling matter administratively, by contrast with the bulk of smallpox erising from the same invasion rate in populous areas such as these eround Priory Road or Park Hill.

> (Sgd) Richard J. Reece, 6th. July, 1905.

Isoni od to atmostrator od div belicto vertedene Covernment Host and and and and an President Swoner was not early swone about the sectorioreven day e sreader rate of invasion than the houses in the Oilly at it with north has teleday a as needed too merty to te washing to everyonath I does berevial viscour Pandistrioy Toughtes to Touris of the Last tree of the La and time I differ from my bires colleagues, who have The smawer to this is obvious off a to east solaryal esuad a sant suo salou os vanancoen per sent. in the case of a boastist like Farmistley, which coss for telfil the Local leveluent beend beend redding galfilms a mi , noiselegon of me minimum manber addition to the out the view outs of wellers eriging from the sens investor rate in populous areas angle as thous eround Priery Head or Perk Hill.

(Sgd) Hobert J. Heede,

Stin, July, 1905.