1878-79 Taylor.

Thesis

by

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Johnstone

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Some Observations on Small-Pox, with Special reference to the Epidemic of 1870-71-72.

It is not my purpose, in the limits of the present Thesis, to trace the Disease of Variola, or Small Pox, through its early history down to the present time.

Neither will it be my object to examine minutely into it from an Epidemiological point of view: and ask, Why; after so many years Quiescence: After we had lulled ourselves into fancied Security: After no serious Epidemic since 1825: Variola should in the years 1870-72, break out on the Continent of Europe: spread to Great Britain and Ireland, cross the Atlantic to the West Indian Islands, and America, and rival, if not exceed, in severity and fatality, every previously recorded Epidemic?

It may incidentally fall to be considered why it should be so: but such is not so much the object of this paper as to mention the points which struck the Writer forcibly during a careful Clinical Study of the disease in the principal Small Pox Hospital of London, the Hampstead Hospital, during a six months residence there in the winter of 1871-72, in which time upwards of 1400 Cases passed through the Hospital; all of which in a greater or less degree came under his notice. The Medical Staff of said Hospital

consisted of Medical Superintendent and two House Physicians and as it was our Custom to make the morning visit in Company every case in the Hospital came under our personal notice.
Since then I have had repeated opportunities of witnessing the disease both in the West Indies in 1872: and in Private Practice in 1876.
Before going into more minute points it may be worth while to mention that the Epidemic of 1870–72 exceeded in severity any attack of Small Pox since 1826: and if I may so put it, was characterised by the number of Hemorrhagic cases: or cases of what to the older Physicians was known as the "Black Pox". Few living Physicians I venture to say had ever seen a case of Hemorrhagic Small Pox, until the late Epidemic; and comparatively few have yet seen it: Medical men in a General Practice, avoiding as much as possible, and naturally so, all connection with such a virulent, loathsome disease as Small Pox It is expected therefore of those whose duty, or whose inclination leads them more immediately into contact with any particular disease, or form of Disease; or with any severe Epidemic, that they give their experience, and the results of their observations & experiments to the general fund of Knowledge; and this has been done to a considerable extent by those who treated the late Epi-

demic, and in the Hospital Reports. To a few of the leading points which forced themselves on my notice I would briefly call attention.

Contagion of Variola.

The point which I believe we effectually cleared up is the fact that in every case Small Pox occurs as the result of Contagion: by which I mean that in order to have Small Pox a person must be brought directly into contact with the Variolous Virus: and receive it into his system either by inhalation, or inoculation.

There may be times; there are times, when owing to some occult cause not yet determined, an Epidemic wave sweeps as it were over the Country or over part of it; during which time the amount of Virus floating in the atmosphere is increased, and the susceptibility of the individual is also, owing to atmospheric, or other causes, increased: but I maintain and believe, that unless a person be brought into direct contact with the Variolous germs either floating in the air, or conveyed on clothing he will not take Small Pox.

That I hold is undoubted. It is no contradiction to my position to say that a person is not aware of having been exposed to Contagion. We know not in Church: Car; Cab; train, or even on the street where our neighbour, who jostles us, has just come from.

Even in the precincts of a Prison, one is not safe from contagion, as I treated a case where the woman had not been out of prison for three months, till she was brought to the Hospital. A similar case puzzled Sir Thomas Watson, but lately there was a confession by the Surgeon to the prison in which the case occurred, stating that he in contravention of his regulations had inadvertently gone to see a case of Small Pox with his son, & coming directly back to prison had had some communication with the prisoner in whom the Disease appeared. So might it have been in my case: or it might have been conveyed by a Warder; but sure I am that it was conveyed, and did not occur spontaneously.
A most interesting series of cases bearing on this point occurred in my practice in the beginning of 1876: which I will give here.
Alexander McDonald: miner: died at Kilsyth of Small Pox, in the beginning of 1876.
His sister-in-law, Mrs. John McDonald residing in Johnstone, went to Kilsyth: and by some strange carelessness on the part of the local authorities there, got the deceased's clothing away with her, in a bundle, without disinfection.
She travelled from Ivory to Glasgow; then from Glasgow to Johnstone, per trains.
About a fortnight after her arrival in Johnstone

I was called to attend Mary McDonald, sister of 5.
the deceased; whom I found in the premonitory stage of Small Pox; and also learned from her that the clothes were in John McDonald's house. I immediately got them burned: but too late: for besides Mary McDonald, John McDonald, his wife and two children; also Wm. Duff and Mrs. Duff, lodgers also had Small Pox more or less severe, but all recovered.

About the same time I was sent for to a Cottage standing among fields in the Country two miles off: and found a young man there named Ronald Mollison suffering from Small Pox.

On examining him as to his whereabouts a fortnight before I learned that he was in Glasgow: that he came out by the same train as the woman McDonald; that he was in the same Compartment; and obligingly assisted the woman out with her bundle.

Another young man Jas. Allan, bedfellow to Mollison also took it; both recovered. In all I had nine cases distinctly and clearly traceable to the bundle.

But more. I published these details in the Daily papers as a warning; and the result was a Communication from Dr. Jas. B. Russell, Medical Officer of Health, Glasgow, making enquiries re-

garding the train in which the woman travelled from Troy to Glasgow. My answer cleared up some mysterious cases he had then in Hospital; parties who had come to Glasgow by same train & remembered the woman coming in at Troy with her bundle. Dr. Russell had five cases (one fatal) clearly traceable to the same bundle; in all fourteen cases! None of these parties travelling on their ordinary business, or it may be on pleasure, were aware of having been in contact with Small Pox; but there undoubtedly sat the Power of the seed; unwittingly scattering Disease & Death all around her, as surely as the husbandman casts his seed into the Soil.

Many such examples could I give. I have traced scores, and scores of cases as clearly and as surely as the above: and though Fear: Filth Bad health: Peculiarity of Constitution &c, may all be accessory causes; Yet I maintain as the result of my experience that before a person can have Small Pox he must be directly exposed to the Contagion; in other words the Germs of the disease must be implanted in his System.

Another point regarding which there has been some little difference of opinion, and one which I endeavoured while I had opportunity & clear ev-

The Period of incubation

This I think we clearly demonstrated to be 14 days. Rousseau mentions 8 to 11 days: but that is to the period of invasion, for which he allows three days; making 11 to 14 days of incubation till the appearance of the Rash. I believe it hardly if ever varies but in the immense majority of cases is exactly 14 days. The practical advantage of this we will state bye & bye. The above Series of cases illustrated this most clearly, and many others that I could quote. In fact in Hampstead Hospital it was part of our routine Practice to ask a patient to go back a fortnight and say where he had been 14 days before the Rash appeared. The day the rash appeared on the above named Ronald Hollison was a Saturday. In answer to the Query, Where were you this day fortnight? Glasgow! I got a clue at once to the case. What train did you return home by?

The 4.40!

What Class?

Third!

Did you see a woman with a bundle in the train?

I did she was in the Compartment with me! & so on. Exactly 14 days after the Small Pox

Rash appears. almost to an hour.
While endeavouring to prove this point in London I put myself to a good deal of trouble to satisfy me of the correctness of my opinion: one case I will quote.
Case. 380. (in my note book). Wm. Crump; æt. 34. Bricklayer. was admitted into Hospital on the 24th. March 1872. Rash began to appear on the night of 19th. or morning of 20th. inst: not aware of ever having been exposed to Small Pox contagion. Questioned as to where he was on the 5th. or 6th. inst: said that he had been whitewashing a house in Blackwall. on the 6th. inst. I went to his master, and to Blackwall, and learned that three persons had died of Small Pox in that house, and that without letting him anything about the deaths, he was put into it to whitewash it.
One very interesting case I find in my Note book which at first sight seems to discredit my view of the period of incubation being 14 days. I will give it.
"Case 199. Baby Hodgkinson; æt. 4 days. This baby was admitted with its mother (Case. 268.) on Jan. 28th. 1872. being then 4 days old. It was vaccinated the following day Jan. 19th being then 5 days old. On the 21st the child being then 7 days old. the

Small Pox Rash became apparent. It gradually got worse and died on the 25th. inst: æt. 11 days. 9.

note. This case is interesting from the fact that the child had a very copious Small Pox Rash appearing on the 7th. day of its existence: which proves conclusively one of two things either that the period of incubation is Not 14 days; or that it was infected "in utero". It was born full time. "

In reference to the above case I may mention that since then I have seen a child born with the Small Pox Rash on it: clear evidence that a child can be infected "in utero": so that the above does not invalidate my position whatever. at all

Having now considered the Contagion of Small Pox: and the Period of Incubation, I will mention the principal varieties met with in the late Epidemic

Varieties of Small Pox.

In text books: and monographs ✱ on the subject of Variola; many fanciful divisions have been made, as Glass Pox: Horn Pox; aborting Pox; Black Pox &c &c on. Taking Small Pox pure and simple, by which I mean the disease unmodified by Vaccination (of which we shall have more to say anon) the only varieties worth considering, are the Discrete, e

Semi-Confluent; Confluent, and Hemorrhagic. 10.
I have used the term "Varieties" deliberately, as I hold Small Pox to be one disease of which the varieties differ only in intensity.

(a) Discreet Small Pox.

Is the mildest form of the disease, in which the Pustules are few in number: distinct from, and as a rule do not run into, each other; runs its regular course, and as a rule ends if uncomplicated, in recovery.

(b) Semi-Confluent Small Pox.

Is a more severe variety of the Disease, in which the Pustules as they increase in size unite in twos, and threes or half dozens in many instances, and in others remain discreet.

(c) Confluent Small Pox.

Shows an unusually large number of Papules on the 4th day after infection, these as in the other varieties run their course; daily enlarging until they form into Pustules: becoming each one umbilicated about the 5th day and increasing in size run into each other, until about the 8th or 9th day of the rash no distinct Pustulation is seen: the whole face is swollen: features distorted & tumified;

eye closed: skin looks as if it were sodden; lachrymation: and salivation are profuse, and patient generally delirious. Many of these cases end fatally: about 9th or 10th day of Rash: and then appearance then with pieces of the cuticle torn off it may be; & features quite unrecognisable is truly piteous. Those terminating favourably have a distinct fall of Pulse & Temperature about 9th day: from which time the symptoms abate: the Pustulation dries up: the cuticle comes off in huge scabs: in many cases seems to "cake" off: appetite rapidly returns, and in two or three weeks patient is able to be about the Ward.

(d) Haemorrhagic Small Pox.

This frightfully fatal form of the disease well deserves a special classification: and I may mention the prevalence of a very large number of Haemorrhagic cases as one of the distinctive features of the Epidemic of 1870-72. No age (unless mere children) seemed exempt from it: nor sex; though it was more particularly common in those who pursued an irregular life: and contained large quantities of Alcoholic stimulants. The variety of the disease was characterised by

the papules appearing of a purplish colour: more a rubeoloid Rash: resembling Measles: and often mistaken for it at its commencement: and vice versa: and several cases of Measles were sent to Hampstead Hospital, even after Consultations, in mistake for Hæmorrhagic Small Pox. The skin had an unhealthy dusky hue: and the Papules did not go on to Pustulation: Death occurring before they had time to maturate. In mild cases this dusky hue: with the slightest subconjunctival Ecchymosis: and a peculiar odour, were all that was noticed: and such cases generally ended in recovery. But in a severe case there was Hæmorrhage from almost every mucous surface in the body: subconjunctival Ecchymosis: Epistaxes: Hæmoptysis: Hæmatemesis: and always in severe cases Hæmorrhage from the Bowels & Hæmaturia. In short there seemed to be a complete rupture of the Capillary system throughout the body. Ecchymosed spots appeared every where: a general dusky hue over the body: & Glazed eyeballs.

The following is an almost typical case:

Case 21. William Marshall. 17. Porter.

Dec. 5th. (1871). Patient admitted yesterday. 3 Vaccination marks: 3rd. day of illness: Eruption

copious: vesicular, flattened. Patient looks quite blanched from profuse Hæmorrhage. Hæmorrhage commenced on the night of the third inst: and still continues. A Quantity of Blood comes in expectoration. Hæmaturia; Urine almost black. Hæmorrhage also from Rectum: Blood not mixed with Fæces, but quite distinct. Coughs very much. Pulse. 140. Respirations very irregular: Cannot be taken on account of the Cough. Temp. 103.8.

℞ Ice. ad libitum, d. ℞ Mist: Sulphuros. ℥vi". Sig. ℥i. every 3 hours.

6th. Patient died at 6.30. A.M. after passing an agonising night."

I never have Experienced the same Sensations as before a case of Hæmorrhagic Small Pox. In almost every other Disease, or form of Disease, Medicine can do something, if not to cure, at least to alleviate the patients sufferings: but in the presence of Hæmorrhagic Small Pox, we were literally, absolutely powerless: all we could do was to predict that in 12, 24, or 36 hours, as the case might be, death would terminate the painful Scene.

I should have said that Hæmorrhagic Small Pox was a surely fatal Disease, had I not seen two cases of recovery after active Hæmorrhage from several mucous surfaces. Why these should

recover I cannot explain but the fact that they did recover leaves a gleam of hope, that something may yet do good.

In the wards more immediately under my superintendence in Hampstead Hospital, there occurred in all during my residence 514 cases of Small Pox: of which I have notes of every case. I find that of these, there were 32 cases of Hæmorrhagic Small Pox, in which active Hæmorrhage took place from one or more of the mucous membranes: of which 30 died and 2 recovered: a death rate of 93·4 per. cent. !! perhaps the most fatal disease on record. But it may fairly be argued that mild cases ought to be included also; cases in which there was Hæmorrhage: either Subconjunctival, or Sub-Cutaneous without active Hæmorrhage. Including such cases, there were in all 84 cases tending to the Hæmorrhagic type, among the 514, of which 50 died: a death rate of 60. Per Cent. My own opinion is that all cases where there has been no <u>active</u> Hæmorrhage should be excluded, and the term "Hæmorrhagic" limited to those cases in which there has been really active Hæmorrhage: and if we do so, we stand appalled at the awful fatality of the Disease. Besides those mentioned above, I had the opportunity of seeing very many other cases; as we

made it a rule to make our morning visit in Con-
cert: each House Physician keeping a record of only
his own cases. I may safely say that I saw upwards
of 70 Cases, and I believe there were no recoveries
saving the two already mentioned: making the
death rate even larger. I subjoin my notes of one
of the Cases as they are extremely interesting.

Case. 121. Albert Grammar; 23: Labourer.
Dec. 11th (1871). Patient admitted yesterday. Three
vaccination marks: 10th day of illness. There is a
very copious vesicular rash, with very great lividity
of the Skin. Rash aborting. Strong Hæmorrhagic
fator; and Hæmorrhage from Lungs. Coughs a
good deal: Sputum almost pure Blood. Sub-con-
junctival ecchymosis. On the arms are distinct
ecchymosed Spots quite independent of the Rash.
Bowels costive.

Pulse. 96. Temp. 100°. Resp. 20.

℞. Ac. Sulph: dil. ℥i
℞. Ferri: perchlor: ℥iij
Liq: destd: ℥viij
Sig. ℥ss every 3 hours.

12th. Patient feels much better this morning: has
not had so much Hæmorrhage. Though the Hæm-
orrhagic fator continues, and the lividity is
much more marked. Right eye quite closed:

Left open, and almost no remains of the Subcon- 16.
junctival Ecchymosis. Tongue dry and brown.
Pulse. 78. Temp. 100. Resp.ns 20.
9. P.M. Do. 100.2.
13th. Hemorrhage much less. Patient a great deal better and much more lively this morning. Tongue clean and moist. Rash aborting.
Pulse. 92. Temp. 101.4. Resp.ns 20.
9. P.M. Do. 99.4.
14th. Still improving; Swelling and hardness much less, though Hemorrhagic factor still continues. Tongue clean & moist. Subconjunctival Ecchymosis has Quite disappeared. Takes food very well, and has had a good night.
Pulse 72. Temp. 98.6. Res. natural.
9. P.M. " 99.4.
15th. Continues to improve. No Hemorrhage nor any Hemorrhagic factor
Pulse. 84. Temp. 99.2
16th. Doing well. " 90 " 98.8
17th. Improving " 84 " 98.6
18th. Do. " 72
20th. Convalescent.
Jan. 4th. 1872. Discharged well.
This case was milder than the General run of such cases & was well vaccinated; to which probably

recovery was due.

These Hemorrhagic cases caused us a great deal of anxiety, and thought and many experiments were made with a view to discover their cause. I personally made over a dozen Post mortem examinations; and also microscopical investigation; and found in all the cases Complete rupture of the Capillary vessels.

It may readily be believed however, that in the height of an Epidemic; cases pouring in at the rate of 20; 30; and occasionally 40 a day; together with the regular routine work of a large Hospital; that there was very little time for careful Scientific investigation. The most likely Hypothesis as to the causation of these Hemorrhagic cases seems to me to be; that the amount of Variolous virus, acting on the nerve Centres of enervated individuals; or individuals of a peculiar idiosyncracy of Constitution through the Vaso-motor nerves; caused Paralysis; dilatation and rupture of the Small arterial extremities and Capillaries. The mucous surfaces being softer than the Cutaneous, yielded more readily; Consequently from the former, it was poured out; and poured under the Cutis.

Professor Lister in his Lectures on the action of nerves in Controlling the vaso-motor System, lays down the following rules. (24th Nov. 1868. Class Lectures).

Normal nervous action.	The function of the tissue is normal.
Nervous action increased a little.	Function increased also.
Nervous action increased still more	The function is increased in Quantity; but impaired in Quality.
Nervous action still greater	Inflammatory Congestion; in which functions of tissues are diminished, or suspended altogether
Nervous action still further increased	Death of the part concerned.

In these rules I believe we have the Key to the action of Hæmorrhagic Small Pox, and on these principles did we treat it.

Let us imagine a case in which a small Quantity of the virus is introduced: and introduced into a healthy individual. According to above rules while Papule was running to Pustulation, and Pustules maturating we ought to have a certain amount of active Congestion, approaching to Inflammatory Congestion! And is it not so? Even in a moderately mild case of Small Pox are not the Eyes Congested; the throat sore; the mucous surfaces Congested, and even an Inflammatory; Erythematous, or Erysipelatous blush between the

Dec^r 5. 1874

Dear Mr. Kendrick

Dr Leuchman and I, though we do not place Mr. Matthew H. Jayle's thesis above the high line of original and novel research, are still inclined on the whole to give it "Commendation" as a

well written account of personal work, showing good knowledge of details & powers which, if duly cultivated & encouraged may prove capable of advancing the science & art of medicine.

J. B. Sanderson

papules in discreet cases? It is so. Carry the rule 19
a little further. Apply a larger Quantity of the Poison,
or what is tantamount to doing so, apply the same
Quantity to a person, the Coats of whose arteries, and
whose general System are weakened, either by Id-
iosyncracy; Alcoholic Stimulation; or over fatigue
& it not as we would expect; increased nerve
action causes death of the part; increased nerve
action causes rupture of the Capillaries; Haemorr-
hage; Death.

These Haemorrhagic cases occurred almost, if not
entirely in persons, whose habits of life tempted
them to over indulgence in Alcohol and to inclem-
ency of the weather such as Cabmen; Porters;
Costermongers; Labourers &c.

The treatment in these cases consisted as a rule
in the administration of Strychnia in combination
with Iron: the Strychnia being intended to act
on the nervous System, the Iron as a Styptic. How
far this treatment was successful I can only
repeat that where active Haemorrhage had set
in before the treatment was adopted only 2 Cases
recovered; so far as I know: if we include the
Sty, cases which tended to the Haemorrhagic type
the recoveries were 34.

I have purposely dwelt at some length upon the

Hemorrhagic variety of Small Pox, as, though it falls to the lot of almost all Physicians to see the other varieties of Small Pox; Comparatively few have had the opportunity of seeing this variety to any extent. Another point to which I gave a good deal of attention, & on which I made many observations is;

The Temperature in Small Pox.

Aitken in his "Science and Practice of Medicine" gives a typical chart of the Temperature in Small Pox. In modified Small Pox, on the third day the temp. is 100·5°; fourth day A. 104·4°. E. 106·7°. then coming down to normal temp; gradually.

Watson in his "Practice of Physic" gives the temp; at 102° to 104°; in fatal cases running occasionally up to 107°.

Hebra does not mention the temp.

Trousseau gives the temp; of premonitory fever at 40·5° to 41°·5 C. (= 104·9 to 106°·7 F.) &c. &c. Adding figures and in secondary fever he says "in slight cases within 3 days the temp; rises to 38·5 C (= 101·3 F.) while in the more severe cases it may rapidly ascend to 40·6 C. (= 105·08 F.) and even to 41·2 C." (= 106·16).

In the premonitory fever we had few opportunities of observing the temp; as the Rash was generally

out before we saw the Patient: but in the second 21.
any Fever I have no hesitation in saying that both
Lupton and Rousseau place the Temp: too high.
After the premonitory Fever passes off the Pulse &
Temp: fall to nearly normal then increase with
the maturation of the Rash, rising, the Pulse freq:
nearly to 140: the Temp: to 102° then to 104° and
in severe cases, more rarely to 105°. It very rarely
even in fatal cases exceeds 105° and so far as my
experience in Hampstead went, in no case did
recovery take place when the Temperature exceeded
105·5. In several instances recovery took place
when the temp: went up to 105·5: but never when
it went over: so that as an important Prog:
matic indication we fixed 105·5 as the extreme
limit of Temp: in Small Pox, Compatible with
life. I am not aware of this being noticed
in any work with which I am acquainted,
but we were never in a single instance deceived
in it. Rarely in fatal cases even did the Temp:
exceed 106°. In only two instances in my Ex-
perience, comprising as it did several thousand
thermometric observations did I see it over 107°.
In one instance it reached 107·4 and in the other
108·2: the highest temperature that ever it has
been my lot to record in any disease. In both

cases Small Pox was complicated with Pneumonia and I need scarcely say, both were fatal.

Respirations in Small Pox.

A most important point to notice is the Respiration rate. Rising from 14 to 16 per minute in severe Cases the number of Respirations exceeds 30: and in very severe Cases may touch 40: but as we fixed 103·5° as the limit of Temp: so we fixed 40 Respirations per minute as the maximum compatible with recovery. In fatal cases they reached often 60, and 80 per minute: often higher. Complicated with Pneumonia some cases did recover after a higher Respiration rate than 40. but in pure uncomplicated Small Pox, we had no recoveries where the Respirations exceeded 40 / or the Temp. 105·5.

Another point to which I would call attention and on which I made many observations is;

The Influence of Vaccination on Small Pox.

It is not my intention here to enter upon the much vexed Question of Compulsory Vaccination on that point I have very strong opinions which I have expressed on more than one occasion. The whole Question in my opinion resolves itself into two points (a) What

is the influence of Vaccination (1) in preventing Small Pox: if any (2) or in modifying the attack should a vaccinated person take Small Pox: and (3) Is there danger of Communicating Syphilis, or other infectious diseases by means of Vaccination.

The latter part of the Question lies beyond the scope of this paper. I will simply dismiss it with one word viz; that in my opinion it is possible to communicate other diseases: but practically the danger is so slight; and occurs in such an infinitesimal number of cases that it is not worthy to be weighed in the balance, against the Value of Vaccination. Let us Consider.

(1) What is the influence of Vaccination in preventing Small Pox: if any.

That Vaccination is a prophylactic there can be no manner of doubt. It is indeed proved to a demonstration. On some four occasions it has been my good fortune to see as it were a race between Variola & Vaccina for the possession of a patient. Suppose a person is exposed to the Variolous Virus. We have laid down the belief (page 7.) that 14 days will elapse before the Rash appears. If a person be vaccinated 9 days will elapse before the maturation of the Pustule and consequent protection of the body.

therefore if a person be exposed say on the 1st of the month to Small Pox, the rash will appear on the 14th. Suppose he were vaccinated on the 2nd 3d or even 4th of the month, the vaccination will have run its course, and the body be under its protection by the 13th and I am safe in saying that the person will not take Small Pox. Suppose he is not vaccinated till the 5th it will be very doubtful which will obtain mastery: after the 5th not: Vaccination would have no effect.

In illustration of this I subjoin notes of.

"Case. 49. Henry Denton. 12. Errand Boy.

Dec. 15th 1841.

Patient admitted yesterday: unvaccinated: 5th day of illness. Has four recent vaccination marks on his arm which were done on Dec. 4th owing to Small Pox having broken out in his house: his mother and sister having taken it: the latter proving fatal. Moderately copious vesicular eruption at present: left eyelid swollen and ecchymosed but looks like the result of a blow. No subconjunctival Ecchymosis: but urine loaded with Blood: and Blood mixed with Sputum.

Pulse 120. Temp. 104.4

4. Pm. " 104.2.

16th Very restless and delirious night has not spit so much Blood: but Urine is still loaded

with it. Pulse. 116. Temp. 105·4

9. P.M. " 105·2; Quite delirious.

20th. Very restless and delirious night. Strong Hemorrhagic factor this morning. Tongue brown; dry; & thickly coated. Eye suffused, but no Subconjunctival Ecchymosis. Urine still loaded with Blood but no other Hemorrhage. Bowels costive; takes food well.

Pulse 108 Temp: 104·8. Resp.ns 30.

9. P.M. " 105·2 " 40.

21st. Patient had a better night; rather delirious in former part of night; but slept afterwards. Urine still loaded with Blood. Questionable Hemorrhage from rectum: bleeding from Conjunctivæ of both eyes very copious: slight Epistaxis; and actual Hæmorrhage from mouth: at present he is Semi-Comatose; breathes heavily.

Pulse. 124 Temp. 104·2. Resp.ns 40.

9. P.M. " 104.

22nd. Had a very bad night; shouting and disturbing all the ward. Hæmorrhage not Quite so bad in Urine, or from Conjunctivæ; but Quite as bad from nose, and mouth.

Pulse. 112. Temp. 104·4. Resp.ns 40

9. P.M. " 106° " 96. moribund.

Midnight. Patient died.

Such is the record of a most interesting Case: Sabeul admitted on the 18th inst; 5th day of illness in other words Rash appeared on the 13th; was vaccinated on the 4th; Vaccination would be protective on the 13th!! Had he been vaccinated one day earlier I am convinced the boy would have been saved! as it was Small Pox had the mastery first; & Vaccination was of no avail; & the sequel shows that the Boy had an unmodified fatal attack of Hæmorrhagic Small Pox. Vaccination in the course of the disease, though lauded by some; even hypodermic injection of vaccine Lymph; I have found of no avail. Vaccination if properly performed we believe to be a safe, and sure protective at least till the age of Puberty; though no one can affirm, or does affirm that it is an absolute protection. When we see Small Pox occurring in a person deeply pitted with Small Pox, as I have seen two cases, we cannot affirm that Vaccinia, or even Variola itself is an absolute preventative: but, speaking generally, Vaccination, when well performed (and not in the slovenly; slipshod manner I have frequently seen it performed; as if the Operator had no faith in what he was doing, but did it as a mere matter of

routine: Vaccination & repeat is in general a sure preventative up to the age of Puberty; and in most of cases more or less a Protective during life. If Vaccination be so, I have no hesitation in affirming that in Re-vaccination we have a sure protection. In proof of this I may mention that in Hampstead Hospital, which was open as a Small Pox Hospital for nearly two years, an absolute rule existed, that every official from the Superintendent to the board Scrubbers should be Re-vaccinated. While it was open over 200 officials: House Physicians; Clerks; Porters; Visitors; Nurses; laundry women &c; passed through the books; and of these every one was Re-vaccinated with 2 exceptions. Of the Re-vaccinated cases, Not one took Small Pox; The same is true also of the Highgate Small Pox Hospital, lately under the care of the veteran Mr. Marson: who has seen more Small Pox than any other living man.

Of the two cases who were not Re-vaccinated in Hampstead Hospital; through some inadvertence on the part of the Superintendent, who as a rule was most particular on that point; both took the Disease; and unfortunately both proved fatal. These two cases were all that occurred am

ing the Hampstead Hospital Officials during the Epidemic of 1870-72. If Re-vaccination were not put through a Crucial ordeal in that Epidemic when we were living in an atmosphere which must have been impregnated with Germs; often 20 hours in not to be outside the walls for a week at a time; and with often upwards of 400 variolous patients in, I know not what an ordeal is!

(3) What influence has Vaccination in Modifying an attack of Small Pox, if a Vaccinated person should take it.

Very great influence indeed. That Vaccination even when imperfectly done has a powerful influence over the System is undoubted. Compare the mortality of Vaccinated with unvaccinated cases in Small Pox. In the Hampstead Hospital, where every one was classed as Vaccinated even if no Vaccination mark were visible on their affirmation that they had been vaccinated in infancy the mortality among the Vaccinated was 11.40 P.C. and among the unvaccinated 51.12.

Dr. Robt. Grieve; late Superintendent Hampstead Hospital, in a paper read before the Epidemiological Society. 18th May 872: the Statistics

which I assisted him in preparing, from the Hospital records, says. "Vaccination. To show that the mortality among Patients suffering from Small Pox, and who have been previously vaccinated, is very much less than it is amongst those who are not so protected, is, at the present day but repeating a truism: still, additional figures can do no harm, so I give them. Of 6221 patients admitted, 1248 were without marks of Vaccination and of these 638, or 51.12 per Cent, died; whilst among the 4973 who showed proofs of being vaccinated in only 567 instances did the disease prove fatal, giving a percentage of mortality of 11.40. From these numbers it is seen, that although the number of Patients received into the Hospital of the vaccinated class exceeded the number in the unvaccinated, a fact of which the Anti-Vaccination League, has made vigorous use, the larger number of deaths occurred in the unvaccinated.

The General percentage of mortality is 19.36 which is above the average of late Epidemics. This has been ascribed by Mr. Marson, who has noticed the same circumstance at the Small Pox Hospital and whose long-tried experience entitles him to speak on this point with authority

not only to the form of the disease Generally being more severe, but also to the large proportion of cases of the malignant and hæmorrhagic type which have come under treatment."

Not only do we see by these figures that the death rate is not above one fourth in vaccinated cases, but the disease in a very large proportion of cases, runs a different course, Rarely in vaccinated cases have we the pure Confluent or even Semi-Confluent cases; the disease as a rule is milder, and very frequently ends in abortion of the Rash.

Let us look at a typical case of unvaccinated Small Pox. For about 12 days after exposure to infection, Patient is sick; not nearly well; suffering from General Malaise. About the 11th day he is seized with severe lumbar Pains; sore throat; acute pyrexia; Pulse over 120. Temp: 102° to 105°; Vomiting, and sickness, continuing for two, or three days when the Rash makes its appearance, and the Febrile symptoms subside. Rash appears principally on the face; arms & chest; fully less about trunk of body & legs. At first there is a general redness, gradually minute vesicles appear, these from larger becoming Papular, the

papules often tuberculated, with inflamed intervening 31.
Areola: in another day or two the Papules become
Pustular, still increasing in size; flattening and
running into each other: all having umbilicated
centres. With the maturation of the Rash the febrile
Symptoms disappear, producing the Secondary
fever, which increases in intensity daily until
it reaches its Acme on the 9th. day of the rash.
Before then, the face, head, arms, and feet are
very much tumified: So much is the face swollen
that the eyes are closed and Patient is unrecog-
nisable to his nearest friends: throat is sore
deglutition painful, and difficult; and mucous
surfaces Congested: Lungs also are congested;
Patient probably delirious; Scratching and tearing
at himself and in many instances requiring to
be put under restraint.
After the 9th. day Symptoms abate: Pulse & Temp:
fall: the rash dries & Scabs: Cuticle takes off
and if unattended by Sequelæ, of which more
afterwards Convalescence progresses favourably.
Such is a fair type of unvaccinated Small Pox
of which in late Epidemic 51.12 P.C. had a
fatal termination.
Vaccinated Small Pox.
In these cases Premonitory

Symptoms are much the same: often Quite as sev-
ere. Rash appears sparsely, or often Copiously.
Macular; Papular, and even becoming Pustular.
then without any Secondary fever, in a nights time
it begins to dry. The pustule dries gradually up
with a small brown scale on it: which after a
few days scales off, leaving few if any, Pits.
One instance will illustrate the course of most Cases.

Case. 266. Caleb Morgan. 32. Draper.
Dec. 25th 1871.

Patient admitted yesterday; one Vac-
cination mark. 6th day of illness. Very Copious
Rash all over him: Macular becoming Pustular.
with inflamed; reddened areola. Face very much
swollen. Tongue brown and dry. Eyes much swollen
but no Subconjunctival Ecchymosis. Profuse Secretion.
Pulse. 108. Temp. 101°. Res. nat.

9. P.M. " 103.4.

℞. Mist. Ferri: Co. ℥ss every 3 hours.

26th. Doing well. Rash maturating. Face and
head not so much swollen: Tongue dry; takes
food well. Pulse. 108. Temp. 101.4. Res. nat.

9. P.M. " 101.4.

27th. Rash aborting: doing very well:
Pulse 108: Temp 100°

9. P.M. " 100.2.

28th Rash almost gone.
Pulse. 84 Temp. 99.4
9. Pm. " 100.2.
29th Rash Quite aborted.
Pulse. 84. Temp. 99.4.
9. Pm. " 100.4
30th " 72 " 99°.
9. Pm. " 100.2
31st " 72 " 99°
Jan. 1st " 88 " 99.2
2nd " 84 " 99°.
7th Convalescent
Feb. 15th Discharged well.

Such then in brief are my views as to the effect of vaccination on Small Pox, after extensive & careful observations on the subject. Vaccination is a preventive to a great extent; Re-vaccination to a much greater, so much so as to be nearly an absolute preventive: while in Small Pox occurring in Vaccinated persons the disease in the vast majority of cases is very considerably modified, and as a rule ends in Abortion, while the Death rate is not one fourth.

To Quote again the opinions of Dr. Greve. In the paper previously referred to he says. "Of Small Pox after Re-vaccination I have not seen much among

I believe to the rarity of its occurrence. Out of the 6221 cases above mentioned in only three could any satisfactory proof of previous re-vaccination be discovered. et good many of the Patients said, on their admission that they had been re-vaccinated; but on pressing the inquiries, it was found that while the operation had been performed no after effects were produced; and that thereupon the Doctor had assured them that as they were not susceptible to the vaccination, there was no fear of their taking Small Pox. Their presence in the Hospital was sufficient proof of the fallibility of this doctrine; one which is inculcated yet by many members of the profession. Our nurses, and servants in close and constant attention on Small Pox, when protected by re-vaccination do not take the disease; and in this respect the experience at the Hampstead Hospital coincides with that of the older institution at Highgate. I wish it were possible to bring home to the minds & belief of the General public my conviction regarding re-vaccination; viz: that it is a sure protection against Small Pox. To ensure this protection; re-vaccination producing some local effect must have been performed after the individual had reached 15 years of age. Cases of Variola subsequent to re-vaccination are merely the exceptions that prove

the rule: they are more uncommon than second Small Pox, and differ also in this way, that whereas the latter are frequently severe, and sometimes fatal the former are very mild indeed."

Sequelæ in Small Pox.

Generally speaking if we except "Pitting" the Sequelæ are not so important as in many other diseases. Pitting occurs in almost every case of unmodified Small Pox to a greater or less extent: its treatment will be noticed afterwards.

Another of the Sequelæ of Small Pox is destruction of one, or both Eyes. I have mentioned before that in severe cases the Eyes are closed: often there are rows of Pustules along the palpebral Conjunctiva and the whole Structure of the Eye shares in the General inflammation to such an extent that on several occasions in spite of every remedy the Eyeball actually burst: causing permanent Blindness. More frequently, we have long continued Conjunctivitis, getting chronic & troubling the Patient for many months: tho' ending in Recovery. This we might expect from the fact that in every case even of moderate severity we have profuse lachrymation.

Another not uncommon, but troublesome Seq.

net is the formation of abscesses in different part of the body. These by careful antiseptic treatment were generally got rid of.

Perhaps next to pulling the most common sequelæ were crops of Boils. These were exceedingly Common, and very annoying, and often tended to retard recovery and keep up a febrile state of the system after the febrile symptoms should have disappeared. Treatment was the usual treatment for Boils. Carbuncles were less frequent but still occasionally met with. I shall now in the last place, mention my opinions, & observations, on

The treatment of Small Pox,

Here I must confess we enter upon very unsatisfactory ground: and in the Positive treatment of Small Pox have advanced very little on the treatment of our Progenitors. True, in the Prophylactic treatment we have made gigantic strides; and were Vaccination, and Re-vaccination strictly carried out. I had almost said religiously carried out, Small Pox would soon be a thing of the past. But so long as we have an unvaccinated residuum in our midst, we have a pabulum for Small Pox, and every now and then we have an Epidemic wave, sweeping over the country

predecessors

as in 1870-72. appalling as, and giving occasion 37.
for the Enemy; the Anti-vaccinator; to reproach us
and ask, Where is the good of Vaccination? Where-
as, he all the while, and those who directly or in-
directly aid and abet him are standing in the
way of giving vaccination & Re-vaccination a
fair honest chance of doing its work. Then they
reproach it if the work is not done. One thousand three
two hundred, and forty eight, unvaccinated people
were admitted into Hampstead Hospital! so that
the laws are traded in too many cases.
But that is not the positive treatment of Small
pox; and standing at the bedside of a Patient
suffering from the Disease, what can we do to
cure him, or alleviate his sufferings? Mean
very little! I live in hopes, and believe that an
antidote will be discovered, which will nullify the
poison and cut short the attack, but as yet we have
not discovered that antidote. Among the new Anti-
Septic Medicines the Carbolates; Sulpho-Carbolates;
Borates, and preparations of Salicine I owned
experimented extensively; and am of opinion, that
attached to these immense Hospitals there ought to
be an Experimenting Physician, whose sole duty
it was to watch the effects of different Medicines on
the Diseases, for with the multifarious duties of the

regular staff, time for real scientific investigation, 38
is almost out of the question. But, failing an anti-
dotal treatment I must say that a modified
Hydropathic treatment seemed to me to give the
best results. We treated many cases in this manner
chiefly by means of hot packs; and hot bathing;
with the result of keeping down febrile symptoms;
and I believe in several instances causing abortion
of the rash. The results of that treatment I have not
tabulated, as it did not receive fair play; our Superintendent being averse to it, & consequently not entering into it heartily; but from what I have seen of it I should give it a more extended trial had I another opportunity. The tendency of the disease is to congestion of internal organs; chiefly the kidneys and lungs; with congestion of mucous surfaces. The Blood is not sufficiently aerated owing to the destruction, or temporary impairment of a large extent of Skin. The skin is not all destroyed; and by producing & maintaining a healthy action by warm bathing; hot packs; hot air or Turkish Baths, in the earlier stages I am convinced that very much could be done to check the severity of the disease.
Great attention should also be paid to the light; ventilation & temperature of a ward; or sick room;

It would hardly be credited what a difference the Temperature of the atmosphere makes in the death rate. If one studies the Registrar Generals returns he will find as a rule that as the Temperature goes down, particularly in Zymotic diseases, up goes the death rate. Great attention ought therefore to be paid to the Temperature, a difference of 20° is a serious matter to a man with Congested lungs; and how often do we see rooms & Wards over 60° during the day and under 40° in the night time. I believe 55° to be about the best Temperature for Small Pox, that temperature to be maintained with as little variation as possible night, and day.

The Throat requires careful attention. There is always more or less Congestion, and even ulceration of the mucous membrane of the Pharynx. Large doses of Chlorate of Potash internally; in fact as much as the Patient can imbibe of a Saturated Solution, are here of great benefit. along with this Chlorate of Potash Gargles; or better still as often the patient cannot gargle; injection of Chlorate of Potash solution down both nostrils has a very good effect in relieving the Congestion of the mucous Surfaces. I am not in favour of Stronger remedies, as the mineral acids, nitrate

of Silver &c applied to Tonsils, but put great faith 40
in the Chlorate of Potash, either alone, or Combined
with Quinine, and washing throat with the
same. In the Hæmorrhagic cases as I mentioned
before, we employed an Iron & Strychnia mixture.
How far it was the means of preventing active
Hæmorrhage, I am not prepared to say; but
I know nothing better that could have been
employed; and moreover we had many cases
threatening active Hæmorrhage, which the Iron
& Strychnia seemed to keep in check.
Complications, as Pneumonia; Abscesses; Con-
junctivitis require the special treatment they
severally yield to.
One important point, especially to the Fair Sex;
is the Pitting after Small Pox: Can we do
anything to prevent it? Many things have been
tried, as Collodion; Oils &c: The latest treat-
ment, recommended by a writer in the "Lancet,"
is to open every vesicle and introduce a little
Carbolic acid so as to cause abortion of the
Pustule. Another writer recommends the use
of Nitric acid in the same way. On reading
the articles in Question I came to the conclusion
that the writers had never seen a case of Small
Pox! For, they many have seen a case, modified

by Vaccination: but never a typical case of Unvaccinated Small Pox. How many Lymph drops would require to be introduced in a real Semi-confluent case? And would not the introduction of so many Cubic Cause absorption of a large Quantity of a violent, irritant Poison? The writer of the article in Question acknowledged that when after introducing a Small Quantity, Hæmaturia was the result!

Granting that it was practicable that a House Physician could in addition to his multifarious duties find time to treat his patients so (and if so an operation he would not wish to delegate) I fear the effect of it would be to kill his Patients with an irritant Poison, while endeavouring to Cure them of Small Pox.

But Carbolic oil: 1 & 10: 15: or 20, applied as it can be by any nurse with a feather: possesses a Soothing, antiseptic action; relieves intense itching and Consequently the desire to Scratch, and gives as good results as with the pure acid: and, a very important matter especially in the Childrens' Wards, keeps Medicinal under.

In the above, and in several papers which I have written to the "Lancet" on the Subject I

hold that Vaccinated Small Pox is not Small Pox; and in any new method of treatment the disease pure & Simple, unmodified unvaccinated, should be experimented upon. Every now and then, in our Medical Journals we read of wonderful cures, following this, that, and the other line of treatment. Investigate these cases, and we find that they are all cases occurring in Vaccinated persons. Now we know for a certainty, that if left alone such cases will end in abortion of the rash, in the great majority of instances, and we gave up any active treatment contenting ourselves with light, air, ~~and~~ warmth, and nourishment. In severe cases, they were treated as unmodified.

It is in these aborting cases that all the wonderful cures occur, so much vaunted in Homeopathic, Hydropathic, and all other Quack Journals, as due to their particular line of treatment: whereas if left to themselves they would end Quite as well. Pitting to any extent rarely occurs in these cases.

Such in brief are a few Observations on the Epidemic of 1870-71-72; an Epidemic, as I

said before characterised by the intense severity and malignancy of the cases: and by its wide spread nature. Travelling from East to West, as most of our Great Epidemics do, it attacked almost every country in Europe, and crossed the Atlantic to North, & South America, and the west Indian islands. Since then we had a slighter Epidemic in 1875-76. which has not yet spent itself in South America, as within the last six months I read in a private letter from a Gentleman there of the havoc it was making in some towns where vaccination was almost unknown.

Why the Hemorrhagic variety should be so prevalent especially in large cities is owing I believe to the intemperate habits of many of the lower classes. The vitality of the system is lowered; In our fever Epidemics we ~~then~~ see how an Intemperate class is swept down as grass before the Mowers Blade! and is it any wonder that Small Pox should show itself in a more virulent form in them than in others! That it was not due entirely to intemperate habits we admit; as we found it occasionally in persons of robust health, & so far as we could judge of good moral and

temperate habits. Individual idiosyncrasies must account for these, as why do we find so many different shades of intensity in Small Pox, as in all other infectious diseases.

And, let us not delude ourselves into fancied security with our vaccination laws. These occasional Epidemics teach us, that in our midst is still this dire Disease Small Pox: ready; waiting to pounce upon us: as violent; as virulent; as dreadfully fatal; Aye! owing to the altered habits of the people, more dreadfully fatal than ever. The number of unvaccinated cases we find in these Hospitals proves that the Vaccination laws are not Carried out properly, or we would have no unvaccinated person in the Community.

The time may come, and why should it not? when every City shall be a Hygeia a city of health! when Temperance; Cleanliness, Virtue shall be the rule, but that time is not yet!! Then Epidemics will be as they ought to be, unknown, and Vaccination will be a Superfluity. Our duty is with the present: and while we have Drunkenness; overCrowding; Dietetic errors; myriads; the Masses living in direct violation of every

Law of Nature we need not be surprised at Epidemics and ought to take every means to prevent them. As we have no means of curing Small Pox; let us endeavour to prevent it; let us on the slightest appearance of it; isolate the patient; destroy their clothing; thoroughly disinfect the house, and vaccinate all in it, or near it, and above all let us teach the people that it is for their good; for their children's good; and for Society's good; that vaccination, and Revaccination should be Compulsory and most strictly enforced.

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