A Thesis
"On Variola"
with some account
of the Smallpox Epidemic of 1862-63.

Alfred Lewis
Edinburgh University
March 30th 1863.
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Table of Contents

History of Variola ——— Page 1
The Epizootic 1862-63 ——— 12
Symptoms and Progress of
an Attack of Variola ——— 28
Treatment of Variola ——— 52
On Preventing and Removing
Marks left by Smallpox ——— 62.

Altogether an excellent thesis, showing a
great deal of labourous research, especially
the rates of mortality in various instances at
various stages of life, in different climates and
at home — with elaborate tables.
The choice of the subject of Variola for a thesis may at first sight seem to need some apology, since in the middle of the last century, Dr. Thompson remarked, that at least a hundred authors might be cited who had written on this complaint, but when it is remembered that during the past winter, this frightful disease has been lying in this city, and in Ireland with increased fury, and that consequently a great many cases have presented themselves for observation and study, the necessity for all apology at once vanishes.

History of Variola

Three opinions seem to prevail regarding the origin of Small-pox.

First. That the disease did not exist before the time of Mahomet AD 569, this idea has been for its supporters Doctors Freeman Mead and George Gregory.

 Secondly. That it was known to and spoken of by Hippocrates and Galen, this is the opinion of Phases. Doctors Baron Wilmot Salmasius and Hahn.
And distinctly that it was unknown to the ancient European physicians. But that it had existed from time immemorial amongst the Chinese and Hindoos, this view of the matter has been advocated by Dr. More.

The followers of the first doctrine, viz. that Variola first sprung into existence about the time of the birth of Mahomet, found their belief in this disease not being (as later, say) mentioned by the earlier medical writers, and that if it had existed in those times it would have been known to the fathers of physic, who would have described it with all their accustomed perspicuity and minuteness, however this may be, and I shall presently, give reasons for disbelieving it. Dr. Furnell, Read and Gregory, admit that Variola is propagated only by the contagion produced by a previously existing specimen of the disease, whence therefore could the epidemic they mention have been derived.

Phases and the adherents of the second theory, maintain that Variola was known long before the sixth century, and that the earlier writers described Paralipæus, Measles. Scablatina, and
the plague under one name viz. Doxpos (strange as it may seem that such dissimilar diseases should be thus confounded), yet in the Bills of Mortality for London previous to the year 1660, the flux by which Peculiar Chancrea or Measles were mixed together under one head and stamped alike from 1657 to 1746. The flux and Nubola are arranged together in a similar manner; this Doxpos was characterized in some cases by an Eruption of Arugas.

The first Doxpos mentioned occurred in the reign of Diocletian AD 284; another began in the time of Justinian in the fourth century, Eusebius mentions a pestilence in Syria AD 302 accompanied with an Eruption of Arugas which spread over the whole of the bodies of the sufferers particularly affecting the eyes and in some thousands producing blindness, this epidemic is noticed in much the same terms by Ciconius and Celsus.

In considering all these circumstances direct and collateral, Dr. Willan is inclined to believe that the Doxpos characterized by an Eruption...
of Arqag was the Smallpox chiefly in its confluent form. The word Ὀργός is at present used among the modern Greeks to signify Variola.

Dr. Miller having thus defined the meaning of the term Ὀργός quotes the commentary of Philo, a Jewish philosopher who lived before the middle of the first century; Philo, when expounding on the ninth verse of Exodus the seventeenth chapter of the book of Leviticus, thus describes the outbreak of the Plague of Egypt. "It shall be a boils, festering sores, boils" says "The cloud of dust suddenly falling on men and cattle produced over the whole skin a severe and intractable ulceration. The body immediately became tainted with exucrenaces (Ἐξυχερεναι) or permanent phlegmence which appeared like blisters excited by a secret fire beneath; these necessarily undergoing much pain and universal soreness from ulceration and inflammation suffered not less in body than in mind by the severe infliction: for a continuous ulcers was observable from head to foot; these eruptions, which were at first sprinkled over the limbs and other parts, finally uniting so as to form one uniform appearance over the whole.

"On this statement," says Dr. Miller, "we cannot
fail to remark, firstly, how appropriately it expresses the mode of diffusion, and the circumstances of the confluent smallpox; and, secondly, how nearly it agrees, both in particulars and in the terms employed, with an account given by Eusebius. The observations of Phile are intended as above said on a comment on Exodus X. 9 and it is clear that Phile delineates a known specific malady; the patient Dr. William thinks bears a nearer resemblance to smallpox than to any other disease.

Rufus, a physician of Ephesus, who flourished in the reign of Trajan characterizes the Doçpoj as a disease accompanied with the old dreaded Antisarkodes, which affected the body, trunk, the face and the tunsels. This description is not applicable as some think to the plague-scours Dr. William Galen has not given a distinct history of any disease or set of diseases called entitled Doçpoj and it appears he did not minutely investigate the poems.

He professes however to have seen very many cases of a pestilential disease introduced into Asia Minor, Syria, and Italy, by the Army of Lucius Verus on its return from Parthia about the year 164, as we mention
is made of this disease being accompanied with buboes, or other glandular swellings, Dr. Wiliam thinks it cannot be ranked with the Plague. Galen describes two cases of this malady. De Methodo  

Colenletici Lib. v Cap. 12. "At the commencement of the great epidemic the whole body of a young man broke out with Ἐκφυγὴν ἐκτάτον (translated pestulae by Celsius) Edict. Lib. v Cap. 1.) on the ninth day." He was convalescent on the 15th day. In another part of  

the same work Galen tells us that in cases of this disorder "when the disease is about to terminate favorably numerous black exanthemata appear over the whole body, which in the greater number of particulars are pestulae, but in all without much discharge of matter. When the scales separated the parts underneath were found nearly healed and after a day or two it cicatrized." Observe as these descriptions may be of such a marked disorder as Variola I think that it cannot be denied by any unprejudiced person that no other disease except Smallpox can in any way be made to apply to such a description as the above.

Dr. Wiliam next endeavours to prove that Hippocrates
rigid, and Livy were acquainted were with Variola, but I shall not take up space in quoting and refuting the lengthy arguments by which he endeavours to prove his case, since the diseases spoken of by the above authors under the names of Dourmite, and Typhus Seuer (though Small pox may possibly be intended to be meant), are mere hints as to the occurrence of diseases of an epidemical character and being unaccompanied but by very meagre descriptions, can in no way be with any certainty construed to indicate Variola.

Dr. More tells us that in India & China the origin of Small pox is lost in the obscurity of antiquity, and in a Chinese work entitled "A Treatise from the Heart on the Small pox" we are informed that it was known in China 1122 years before the time of the birth of Christ. In Hindostan according to the traditions of the Brahmans, Variola is of immense antiquity. It has several names in the Sanscrit tongue, and its very early existence is proved by many the sacred books of the Hindoos, and also by their mythology there being a Goddess of the
of the smallpox to whom temples are erected though this can hardly be deemed a proof of its antiquity since according to Lord Macaulay Warren Hastings has had the same honours accorded to him.

We can easily understand how the disease was confined to India and China and did not for a great number of years spread to Europe, knowing as we do what little communication took place between these countries and also the length of time requisite for making a journey from India to the more western lands, six months to a year being at that time no unusual time to be spent on the voyage and this would have been ample to destroy all traces of contagion.

Mr. Moore gives to the Persians the credit of conveying the disease from India, for though previous to the sixth century no commercial intercourse seems ever to have been carried on between Persia and India yet about that time the lucrative trade was so tempting that the Persians began to surmount their aversion to maritime
affairs and soon monopolised the entire traffic and as ships coming from India frequently touched at Arabian ports, that country was peculiarly exposed to the first attack of the disease and therefore, it was first observed.

More than this goes on to show that it was about the time of Mahomet that the first epidemic took place in Arabia. This he does by quoting the opinion of Dr Reiske who mentions an Arabian manuscript contained in the library at Leyden, which tells us that the first appearance of Smallpox in Arabia occurred about the year 600 AD.

Bruce & Raffles think that the disease which destroyed the army of Abraham when advancing against Mecca was Smallpox.

From the above abridgments from several authors, we believe that Smallpox was known before the time of Mahomet, because believing and knowing as we are to the disease to be only derivable by infection or contamination from some pre-existing specimen.
of the disorder necessarily therefore we cannot understand how it could first make its appearance among the troops of the immodest Abraham, involving as this belief would the agency of a miracle, unless we wish to be characterized by fiction as "malicious and believers in the Kora" for it is true that the prophecy is recorded elsewhere we must look further for the origin of this malady; and it seems to me to be more probable after carefully weighing the facts above recounted that smallpox was first imported into Europe by the army of Europe from Rome in 150 B.C., and that the Romans obtained the disease from the Hindus who have been proved by Dr. More to have suffered from it for ages before that time. It is easy to conceive that like the Hindus, being nearer to Hindustan than the Arabian had intercourse with that country by land or by sea, and to have suffered from it before the time of Homer, as the Athenians claim their lines on the ocean but as they claim their territory at
some Arabian port transported the
disease disease; the first pandemic epidemic
of which happened to occur when
Abraham was preparing to raise the
sieve of Mecca, in consequence of the
results it citizens had offered to
the temple of his god.

Whereas the Indians obtained the
disease, I am at a loss to discover,
and unfortunately there are no facts
on which to build even a theory.

After smallpox had established itself
in Europe it soon spread through the
surrounding nations and before the
sixteenth century it was known in Britain
and partly in the beginning of the six-
hundredth century. Twelve years after the
death of Columbus it was transported
into the Western Hemisphere by the
Spaniards.
How was this ascertained?

The whole mortality was 283 (p. 21).

The great majority among the malarial cases who probably died, including all aged men, is a proportion from 3 to 5 or 6 per cent. day by day 200 of the 213 cases were 118 500 cases.

Then say 2 per cent of deaths among the 2200, (about the maximum in typhus) 2300

\[ \frac{2200}{300} \]
The Epidemic of Smallpox in Edinburgh and Leith 1862-63. During the past session an epidemic of Variola has been raging in Edinburgh and Leith, and it may I think be calculated that upwards of three thousands persons have suffered from this disease, during the space of six months (from August 1862 to January 1863).

How the epidemic originated it is impossible to tell with precision; by some it has been supposed to have been brought from abroad to Leith and thence to have spread itself to Edinburgh; by others that it originated amongst the military in the Castle; but after careful inquiry I can find no facts which in any way go to substantiate either of these theories, the only suggestion I am able to offer is that the inhabitants of this town on account of the comparative immunity they had enjoyed from this loathsome malady, had been lulled into a feeling of security, and had neglected to provide against its reappearance.
by the easy and certain means of vaccination, and that after a severe case of the disease having been brought into the town perhaps by some fisherman lately arrived from Glasgow, which town it may be observed seems never to be entirely free from smallpox, it is obvious that the vast number of unprotected poor living in the unhealthful courts and closes of this city would fall an easy prey to the contagion of this virulent disease.

If we refer to tables A and B we shall find that in June there was not a single death from smallpox either in Edinburgh or Leith. In July two deaths took place, one in the parish of St George, the other in South Leith. In August one death occurred in St George, three in St Giles' and two in South Leith, and five cases were admitted into the wards of the Royal Infirmary. In September four were in St George, three in the Canongate, four in St Giles', and eight in South Leith, and twenty one
cases entered the Royal Infirmary. During October, there were five deaths in the precinct of St George, thirteen in the Canongate and St Giles, and eighteen in South Leith; thus eight percent of the total mortality in Edinburgh took place from Smallpox, and in Leith nineteen per cent; forty-eight cases were admitted into the Infirmary.

In November three deaths occurred in St George's and St Andrew's; twenty-nine in the Canongate, fourteen in St Giles, four in Newington, one in North Leith, and twenty-two in South Leith; thus 12.8 percent of the total mortality in Edinburgh occurred from Smallpox and 24.7 in Leith; one hundred and four cases were admitted into the Infirmary. During the month of December, nine deaths took place in the precinct of St George, three in St Andrew's, twenty-eight in the Canongate, seventeen in St Giles, five in Newington and North Leith, and twenty-one in South Leith.
of the total mortality of smallpox in Edinburgh and 26.2 per cent in Leith.

From the above particulars we may, I think, learn, that the epidemic first began to show itself about the beginning of August, and was at its height during December, also that it commenced in the parishes of St. Giles' and St. George that in the Canongate most deaths actually took place, viz.: eighty-six or nearly 34 per cent of the total mortality from smallpox but that in proportion to its size South Leith suffered by far the most, seventy-two persons having died in that district alone.

The disease was most fatal among children under five years of age: 73.5 per cent of the total number of deaths from smallpox, taking place among them. This seems to be caused by most of them being unvaccinated by vaccination taken having been done since the last panic of smallpox and passed merely out of
the total number of smallpox cases attended by pupils of the old Town Dispensary, forty-two per cent occurred in children under five years of age.

With regard to the mortality among children of that age, we find that:

In the Edinburgh Royal Infirmary 31 per cent.
In the London Small-pox Hospital 50 per cent.
Attended by Pupils of the Dispensary 46.7 percent.

According to Dr. Gregory's tables 42 per cent. These five the average equals 42.42 percent.

After children the disease was most fatal in persons from birth to six to 11.216 per cent of the total number of deaths.

From small-pox taking place at that time of life, while in those persons from five to ten, 9.31 was the percentage of the total number of deaths from small-pox.

In order to contrast the percentages of deaths more thoroughly, I give the following tables:

For children under 15 years of age:

In the Royal Infirmary, Edinburgh 15 per cent.
In the Parussian Evidence of 1857 15 per cent.

Attended by pupils of Dispensary 24 per cent.
In Berlin during 1858

23. per cent

In persons from five to fifteen, the percentage of deaths from smallpox is,

In the Royal Infirmary Edinburgh, 22.38 per cent.
In the Smallpox Hospital London, 15.5.

Attended by Physicians of Dispensary, 12.8.

The severe cases were sent to Infirmary.

In persons from fifteen to thirty,

In the Royal Infirmary Edinburgh, 8.21.
In the Smallpox Hospital London, 11.5.

In persons over thirty,

In the Royal Infirmary Edinburgh, 28 per cent.
In the Smallpox Hospital London, 30.

In persons over fifteen,

In the Royal Infirmary Edinburgh, 12.00.
In the Smallpox Hospital London, 13.22.

In Russia during epidemic 1858, 7.0.
In Berlin, 5.0.

Among persons of all ages,

In the Royal Infirmary Edinburgh, 12.07.
In the Smallpox Hospital London, 16.0.

In Russia during 1858, 9.24.

With regard to the percentages of the total number of persons vaccinated we find that
In persons under fifteen,
In Royal Infirmary Edinburgh 28.60 per cent of all those admitted were vaccinated in France during 1858, 72.00 per cent among persons above 15.
In Royal Infirmary Edinburgh, 73.2.
In France during 1858, 90.0.
Among persons of all ages,
In Edinburgh Royal Infirmary, 68.67.
In Small Pox Hospital London, 63.45.
In France during 1858, 85.00.
The following table shows the percentage of persons vaccinated in Royal Edinburgh Infirmary.

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Under 1 year</td>
<td>90.00%</td>
</tr>
<tr>
<td>1-5 years</td>
<td>72.00%</td>
</tr>
<tr>
<td>5-10 years</td>
<td>68.67%</td>
</tr>
<tr>
<td>10-15 years</td>
<td>63.45%</td>
</tr>
<tr>
<td>15-20 years</td>
<td>63.6%</td>
</tr>
<tr>
<td>20-25 years</td>
<td>71.1%</td>
</tr>
<tr>
<td>25-30 years</td>
<td>75.0%</td>
</tr>
<tr>
<td>30-35 years</td>
<td>83.3%</td>
</tr>
<tr>
<td>35-50 years</td>
<td>95.0%</td>
</tr>
</tbody>
</table>

At first sight from the above tables since
the mortality in the London Hospital is the
most and in Russia the least one would
be apt to conclude that the practice in the
former is not so successful as in the latter
place, but this difference merely goes for
to prove the great efficacy of vaccination
in preventing the deadly ravages of variola
for in the London Hospital although the
mortality was as high as 13.22 per cent
yet only 5.324 per cent of all the persons
admitted were vaccinated; and in Russia
the percentage of the deaths was as low
as 9.24, yet the 45 per cent of all the
persons attacked by the disease were
vaccinated; therefore in order to compare
the success of the treatment of small
pox in those countries, it is necessary
to discriminate the percentage of the mortality
in the vaccinated and non-vaccinated
separately, the following table shows
that in the vaccinated:
In the Edinburgh Royal Infirmary died 1:94 per cent
In smallpox hospital London 4:34
In Russia during 1850 7:00
We, from the above table see, that, among
the vaccinated the treatment of smallpox
in Edinburgh was more than twice as fatal as in Prussia.
Among the nonvaccinated on the other hand:
In the Royal Infirmary Edinburgh died 32. 10 patients
In the Small pox Hospital London 33. 7...
In Prussia during 1858 22 0
Here we see that in Prussia the smaller percentage of deaths took place.
As regards the frequency of different forms
of the disease and their influence on the
mortality, I am sorry that I am unable
to give any comparative tables but in
the Edinburgh Royal Infirmary during
this epidemic out of 224 cases in which
the characters of the disease were specially
mentioned

29.20 per cent were Confluent
0.40 .. ... Semi-confluent
62.210 ... ... Discrete.
Of the confluent 40 per cent were vaccinated
Of the Semi-confluent 63.15 ... ...
Of the Discrét 70.2 per cent were vaccinated from this table we learn, then, the great power which vaccination has in assuring the absence of small pox. Yet how lamentable it is to find that more than forty persons in a hundred neglect to take advantage of this benefit either for themselves or for their children and it may be I think calculated that if instead of ninety-eight per cent of the persons attached which small pox all had been vaccinated then instead of 253 human beings dying of this malady, in the short space of six months not more than fifty would have fallen victims to the disease.

With regard to the peculiarities presented by the late epidemic it may be stated that different complications of a phthisic-nature were common especially in the poorly clad and fed children, in many many instances the eruption of the skin pentook of nature in which the vesicles were aggregated together in spots and patches, in many cases the preannun-
erythematous eruption was so marked that many were mistaken at first for cases of scarlatina.

Since the month of December the virulence of the epidemic has been gradually declining for we find that in January only thirty-three deaths from smallpox took place in Edinburgh and eight in Leith and in February eleven deaths in Edinburgh and seven in Leith were from smallpox.
Through the kindness of Dr Saunders one of the physicians in the Royal Infirmary I am enabled to give the following tables constructed with the assistance of Mr Crossly (Clerk).

**Form of the Disease.**

<table>
<thead>
<tr>
<th>Confluent</th>
<th>Vaccinated</th>
<th>42 month vac.</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td></td>
<td>66</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Semi-confluent</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>7</td>
<td>19</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Descelé</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>110</td>
<td>31</td>
<td>141</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Unknown</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>62</td>
<td>22</td>
<td>104</td>
</tr>
</tbody>
</table>

**Results of Vaccination.**

<table>
<thead>
<tr>
<th>Age admitted under 1 year</th>
<th>vac.</th>
<th>not doubtful</th>
</tr>
</thead>
<tbody>
<tr>
<td>26</td>
<td>115</td>
<td>6</td>
</tr>
<tr>
<td>33</td>
<td>5</td>
<td>14</td>
</tr>
<tr>
<td>34</td>
<td>5</td>
<td>18</td>
</tr>
<tr>
<td>66</td>
<td>15</td>
<td>212</td>
</tr>
<tr>
<td>106</td>
<td>20</td>
<td>68</td>
</tr>
<tr>
<td>52</td>
<td>25</td>
<td>37</td>
</tr>
<tr>
<td>6</td>
<td>30</td>
<td>5</td>
</tr>
<tr>
<td>12</td>
<td>35</td>
<td>10</td>
</tr>
<tr>
<td>4</td>
<td>40</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>45</td>
<td>3</td>
</tr>
</tbody>
</table>

**Total** 206 124 20

Of the 206 vaccinated 1 died, of the 20 doubtful 0 died, of the 124 non vaccinated 41 died.
Admissions according to Age and Sex.

<table>
<thead>
<tr>
<th>Age</th>
<th>Males</th>
<th>Females</th>
</tr>
</thead>
<tbody>
<tr>
<td>Under 1 year</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>1-5</td>
<td>13</td>
<td>13</td>
</tr>
<tr>
<td>5-10</td>
<td>13</td>
<td>20</td>
</tr>
<tr>
<td>10-15</td>
<td>12</td>
<td>22</td>
</tr>
<tr>
<td>15-20</td>
<td>32</td>
<td>34</td>
</tr>
<tr>
<td>20-25</td>
<td>68</td>
<td>38</td>
</tr>
<tr>
<td>25-30</td>
<td>30</td>
<td>22</td>
</tr>
<tr>
<td>30-35</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>35-40</td>
<td>7</td>
<td>5</td>
</tr>
<tr>
<td>40-45</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>45-50</td>
<td>3</td>
<td>1</td>
</tr>
</tbody>
</table>

Admissions

<table>
<thead>
<tr>
<th>Month</th>
<th>Males</th>
<th>Females</th>
<th>Died</th>
</tr>
</thead>
<tbody>
<tr>
<td>August</td>
<td>3</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>September</td>
<td>9</td>
<td>12</td>
<td>3</td>
</tr>
<tr>
<td>October</td>
<td>26</td>
<td>22</td>
<td>6</td>
</tr>
<tr>
<td>November</td>
<td>66</td>
<td>38</td>
<td>16</td>
</tr>
<tr>
<td>December</td>
<td>60</td>
<td>57</td>
<td>13</td>
</tr>
<tr>
<td>January</td>
<td>25</td>
<td>30</td>
<td>7</td>
</tr>
</tbody>
</table>
Table showing the number of deaths in the months of January and February of the year 1863 in each of the largest towns of Scotland. Deaths from Smallpox only.

<table>
<thead>
<tr>
<th></th>
<th>January</th>
<th>February</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glasgow</td>
<td>16</td>
<td>2</td>
</tr>
<tr>
<td>Edinburgh</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Dundee</td>
<td>10</td>
<td>4</td>
</tr>
<tr>
<td>Aberdeen</td>
<td>16</td>
<td>0</td>
</tr>
<tr>
<td>Paisley Gilmour</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Leith</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Perth</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smallpox</td>
<td>22</td>
</tr>
<tr>
<td>Total</td>
<td>50</td>
</tr>
</tbody>
</table>

\[\text{Table showing the number of deaths from Smallpox, January and February, 1863.}\]
<table>
<thead>
<tr>
<th>Column</th>
<th>Below five years of age</th>
<th>From five to 20</th>
<th>From 21 to 60</th>
<th>Above sixty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>6</td>
<td>6</td>
<td>3</td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Month</th>
<th>January</th>
<th>February</th>
<th>March</th>
<th>April</th>
<th>May</th>
<th>June</th>
<th>July</th>
<th>August</th>
<th>September</th>
<th>October</th>
<th>November</th>
<th>December</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2</td>
<td>2</td>
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**Table showing the number of deaths each Month of the year 1862 in eight of the largest towns in Scotland.** NB. Deaths from Smallpox only.
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In the table, the total number of students from each house 1862 calculated by the number of students from each house.
From *Lancet*.

Table showing admissions and mortality with reference to age in Smallpox Hospital, London.

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Total: 356
Symptoms and Progress of an Attack of Variola.

In order to illustrate the Symptoms and Progress of an attack of Variola, I think it best to give the daily notes which I took of two specimens of the disorder, these are each of them typical cases the first of the severe form, the patient not being vaccinated the second of the mild form the patient being vaccinated, afterwards will follow a commentary on those, in which I shall endeavour to point out any peculiarities or differences which may have existed in these or in other cases which I have observed during the late epidemic.

Case I. Isabella Fraser aged 22 A nursery maid. The patient was admitted to the Hospital November 23\textsuperscript{rd} 1862, on account of an attack of Scarlatina, of which she made a good recovery, while emaciated and on December 14\textsuperscript{th} the 26\textsuperscript{th} day since the commencement of the Scarlatina, she went out into the garden of the Infirmary for about twenty minutes, on returning to the ward she experienced a rigor which
lasted from one to five hours previous to this, however she had been suffering from a severe headache, since the rigor she has experienced considerable nausea.
Pulse 120 of good strength. Tongue slightly furled. Bowels have not been relieved for three days.

Dec 15. Second day of disease. The patient slept but little during the night being troubled with an almost constant feeling of nausea. About 9 A.M she experienced a second rigor, after which she became hot and thirsty, and complained of a pain in the lower part of the back.
Dec 16. A dose of Castor oil was administered last night but however had no effect on the bowels. Patient did not sleep well last night. Pulse 144 strong and regular. Has no cough. Tongue thickly furled but moist. Complains of an unpleasant taste in the mouth, and of the throat being a little sore. She is now free from headache, but is troubled with vertigo, and ringing noises in the head. Has no longer the pains in the back. Skin hot and dry covered with a reddish blush. Temperature of the mouth 106.5 of axilla 107.3.

Prescribe. The patient is troubled with slight attacks of vomiting.

Dec 17. Patient was very restless during the night. Pulse 128 strong and bounding. Has a slight dry cough. Tongue much coated with a white moist, creamy film. Has vomited a little bread cream and some sour smelling yellowish liquid.
Appetite very bad, but is very thirsty.
Bowel action relieved to some extent.
On the face and hands and neck a reddish papular
eruption has made its appearance.
Eyes suffused and painful.
Temperature of the
mouth 105° C.
Arms 106°.
Urine 5.4.

December 18.
5th day of the fever. Patient slept
but little, she is in very low spirits, a Sister
but a short time before leavingschool of this
disease.
Pulse 120 strong and bounding.

Tongue covered with white pus but rather dry.
Bowel action relieved to some extent.
Cough still slight but she is in very expectorating
posture position.

The eruption 1st day of
consists of slightly elevated papule of a
purplish red color, very closely placed
together on the face, scalp, back and exterior
surfaces of the arms and legs, there are
but few on the thorax, none on the nipples
or their areolae.

They do not itch.

Urinalysis.

S.G. 1020.

Slight urine is not present.

A small quantity of albumen is present.

Chlorides almost entirely absent.

Temp. of mouth 105½.
Temp. of axilla 106°.
Dec 19. 6th day of the fever. Pulse 92, rather weak. Tongue furrowed and fissured. The bottoms of the fissures and edges of the open red. Bowels still unrelieved. The eruption (3rd day of) is becoming more abundant and on the face and limbs has a tendency to become vesicular, the apices of the papules being of a lighter red than the bases which are of a brighter red color than yesterday. Skin moist. Temp of mouth 100°, Temp of axilla 101°. June 5. 4

1922. Sunbath with water, same as yesterday. Oil is being brushed over the face.

Dec 20. 7th day of the fever. Patient passed a better night, and states she feels better than she has done since the commencement of the fever. Pulse 100 of good strength.

Tongue not so stinkly, covered with the pur Bovels still unrelieved. Diet consists of Beef tea and Milk, the appetite is very small but the thirst very great. Skin moist. The eruption (4th day of) is entirely vesicular. The apices of the vesicles on the face are slightly depressed. Temp of mouth
of mouth 98\textdegree\textfrac{1}{2} of axilla 101\textdegree. A mark consisting of the sweat of Carbolated of Lime and olive oil is ordered to be applied to the face.

Dec 21. 8\textsuperscript{th} day of the fever. Patient slept very well last night. Pulse 116 of moderate strength. Thorax clean but dry. Bowels once relieved to day. Computation (5\textsuperscript{th} day of)

Peculiar apices are more depressed than yesterday. Temp of mouth 99\textdegree of axilla 101\textdegree. Urine 5 g. 102 g. no albumen otherwise same as yesterday.

Dec 22. 9\textsuperscript{th} day of the fever. Pulse 104 of good strength. Is quite free from the cough.

Thorax dry and of a dirty yellow colour. Bowels unrelieved to day. Computation (6\textsuperscript{th} day)

The pustules are as large as small peas and are surrounded by red with just a very narrow red ring; the centres are much depressed. A sourish smell is given off from the patient's person. Temp of mouth 97\textdegree. Temp of axilla 99\textdegree. Urine lines the same character as yesterday.

Dec 23. 10\textsuperscript{th} day of the fever. Pulse 120 of
jood strength. Tongue covered along middle with a little white fur the edges are red. The mucous membrane of the mouth is besprinkled with a white soft eruption. Bowels still unrelieved. Eruption (9th day) much the same as yesterday. Urine same as before. Temp. of mouth 99°. Temp. of axilla 101°. The skin is fibrous.

Dec. 24. Patient was rather restless during the night. Pulse 156. of moderate strength. Eruption (9th day 9°) has much the same character as before. The face and neck seem swollen. Temp. of mouth 100°. Axilla 105°. Urine S.G. 1022. Loaded with urates no albumen. Chlorides abundant. To relieve the feeling of soreness about the face the following was ordered

P. Potas. Chlorate 2j

Pulver. 2j

Aqua ad 2j

Sunt Gargarismum.

Dec. 25. 12th day of the fever. Pulse 140 strong. Tongue and Bowels came as yesterday. Eruption (9th day 9°). A dark spot has made
its appearance in the centre of each pustule.

Urine S.G. 1014. Densely coloured with urates.

Albumen is present in small quantities.

Chlorides deficient. Port wine 20 g.

Dec 26 (13 day of fever) Patient passed a very restless night. Pulse 120 of good strength. Tongue of a dirty yellow colour.

Scurves more painful than yesterday.

Bowels once relieved to day. Temp. of mouth 95° Temp. of axilla 104°. The patient is in very low spirits to day. Eruption (18th day of) the black spots are somewhat larger than yesterday. Urine passed with the stool.

Dec 27. (14 day of the fever) Pulse 116 of moderate strength. Tongue and Bowels same as yesterday. Eruption (11th day of) the pustules are considerably much flattened to day. Temp. of mouth 99½° of axilla 103°. Urine S.G. 1022 Acid. Densely coloured with urates. No albumen. a few phosphates.

Chlorides almost entirely absent.

20 g of Brandy is being given in addition to the wine.
Dec. 28. 15th day of the fever. Pulse 156 of good strength. Patient says "she is a good deal better," she is troubled with a slight dry cough. The breathing is hurried 46 inspirations per minute. On auscultation anteriorly dry sounds were heard with inspiration. No further examination was made. Tongue dry and yellow. Bowels are relieved 15 days. Eruption (10th day of) pustules are commencing to dry up. Temp. of mouth 100° of armpit 105°. Dried 2 oz of wine 2 oz of bran, and two quarts of strong beef tea in the 24 hours.

Dec. 29. 16th day of the fever. Patient experienced a severe rigor during the afternoon accompanied with vomiting. Pulse 160 below the average. Strength Limp is a little worse but still without expectation. Patient complained of pain below the right mamma increased on taking a deep breath. On auscultation nothing remarkable can be detected except the dry sounds mentioned above. Eruption (13th day of) many of the pustules are dried up.
Temp. of mouth 102° of axilla 107½

urine S.G. 1017. Amber colored containing a mucous cloud. No sediment No albumen
A few phosphates. Chlorides abundant

Dec 30 17th day of the fever. Patient did not sleep well last night. Pulse 160 of good strength. Cough is better. Is free from pain Tongue yellow and fissured.

Bowels twice relieved, motions passed were solid. Ecchymosis (14 day of) nearly all the pustules are covered with scabs.

urine S.G. 1005. Albumen present in small quantities as also phosphates.

There is a small cloud of mucus and phosphates. The swelling of the face has gone down.

Dec 31st. 18th day of the fever. Pulse 152.

Hardly any cough. Breathing very hurried 60 inspirations per minute. Tongue dry yellow and cracked. 20y more wine ordered 15 day. Bowels three times opened, stools were of a flatus consistence

January 1st. 19th day of the eruption

Pulse 1240 stiff and bounding, Debecan
still continues, some chalk mixture and
catechu were ordered. From this time
my notes (which I am afraid have already
extended too far) go on to say that the
patient on the 20th of January became
delirious and troubled with shortness of
breath, but in spite of stimulants and
every attention the patient expired on
the morning of January 24th, the 22nd day of
the Fever.

Case II. Jane Gibson, age 16. Domestic Servant
of Dunfermline. Admitted January 14th 1863.
The patient states she experienced a
vomiting accompanied with pain in the
back number of vomiting on January
11th. On January 13th an eruption made
its appearance. On January the 14th or
fourth day of the disease she entered
the Infirmery. On admission the
pulse 76 of good strength. The patient
is in good spirits and states she feels
perfectly well. Complaints of an unpleasant
taste in the mouth, tongue covered with
a white film. Throat sore. Bowels regular
June 10th, 1820. Present: a clear yellow amber color. Eruption (2nd day of) consists of scattered red papules about the size of mustard seed, some blisters on the face are almost vesicular and one on the right cheek is distinctly umbilicated. Temp. of mouth 99° of axilla 96°. There is a badly defined vaccinia at the top of the left arm.


Feb 18th. 8th day of the disease. Pulse 94 strong. Bowels once relieved to day. Eruption papular
have not shown any tendency except in one instance to embolisation, they are commencing to dry up.

Jan 19. 9th day. Eruption nearly cleared up.

Jan 20. 10th day. Eruption quite cleared up.

Jan 21 12th day. Of the disease. Scabs have nearly all fallen off.

Such are the details, notes slightly, abridged of two typical cases of the severe and mild forms of Variola.

With regard to Case I. The disease was without doubt derived from the contamination of a pre-existing case of Variola in the wards, and was not as Miss Hightingsale who however is no authority, thinks derived from some malaria spontaneously produced; the patient while convalescent from Secundina went out into the Hospital garden the cold winter air to which she was then exposed acted doubtless as an exciting cause bringing on the eruption sooner than perhaps it would have otherwise occurred; the period of incubation e.g. the time between the reception...
of the various poisons and the rigor averages about fourteen days but it may extend itself to three weeks or be shortened into one week. The rigor was accompanied with pain in the back, nausea, and vomiting symptoms which almost always indicate the commencement of an attack of variola; the pain in the back was low down towards the sacrum. Dr. Heberden says is prognostic of a severe form of the disease, however I am sure that this is not always or nearly always true. As to the cause of the pain in the back, no reason as far as I can ascertain has been assigned except by Naples, who says 'that in smallpox it is the quantity rather than the quality of the blood which is hurtful and hence causes the pain of the back, from the distension of the large vein and artery which are situated along the vertebræ of the spine.' Here the question arises whether the exhibition of an antitoxin would stay the further progress of the disorder, on this point authorities differ, and it is impossible to phrase this question in the affirmative since
after the emetic is given and no disease follows
the objection can always be raised as to whether
any disease would have followed had no
emetic been given; as in my own case while
attending this patient, I, one afternoon
experienced a severe rigor of about three
quarters of an hour duration, I did not take
an emetic, but no disease followed; in a
second instance another of the clerks was
seen with a rigor he took an emetic and
no disease followed; in a third case one
of the patients experienced a rigor an
emetic was administered, but the patient
became ill of Typhus fever. I, therefore,
believe that an emetic has no power in
stopping the progress of fevers. I am
inclined to believe that this idea of an
emetic staying the onward course of acute
febrile disorders, has descended to us from
the dark era of Arabic medicine.
On the fourth day after the first rigor the
typhus commenced to manifest itself
this is certainly an exception to the general
rule, for according to all authorities and
In nearly all the cases which I have observed, the eruption has commenced to appear on the third day of the fever, and I feel confident that in this case no mistake has been made with regard to the actual line of the manifestation of the papules. This lengthening of the interval between the fever and the eruptive phenomena may be caused either by the previous weakness of the constitution or by some exciting cause inducing weakness, thereby preventing the system holding out as long as it might have done against the effects of the poison circulating through it, in all probability. In the above case the lengthening of this period and I have no doubt the shortening of the period of incubation, was due to the debilitating effects of the cold air on a constitution already weakened by disease. The papular eruption was preceded as is often the case by a scalatina like blush on the skin. The papules showed themselves first as minuscule on the face and hands, this may be owing to these parts being
more exposed than others to the external air which we know has the effect of inducing or hastening many suppurative phenomena. The eruption was most thickly placed on the face and external surfaces of the body; this is not however a rule in other cases, for in the smallpox variants, I observed, that there were as many cases where the eruption was universally diffused and on the flexor aspects of the body as on the extensor. The papulee were very closely placed together on the face, whether ultimately became confluent there. I am unable to state, as the mark which was applied prevented any observation from being made; on the limbs and back many were semi-confluent, and I am inclined to believe from the general symptoms, such as the swelling of the face, eruption on mucous membrane of the mouth, dysphagia and dysphonia, that this was certainly a case of confluent small-pox.

In the third day of the fever there was eruption it was vesicular. In the fifth day of the eruption
pustules had formed. On the ninth day they were covered with scabs, which began to fall off on the twentieth day of the disease.

The urine on the fifth day of the fever became much loaded with urea, albumen commenced to appear, the chlorides to be deficient. The urine continued very much in this state throughout the course of the disease. The turbidity of the urine until late, which I have generally observed from the commencement of an attack of variola, may perhaps be due to the patient being able to take but little nourishment the waste of tissue is more rapid than the supply of nourished food, and also the disordered function of the stomach prevents the proper assimilation of whatever nourished food was taken.

The albumen is due in all probability to the cutaneous function being suspended, a convalescent state of the kidney follows.
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albuminous urine is the result.
The pulse increased in frequency from the first
to the third day, from that day until the
first it decreased, when it rose again and
attained to maximum on the eleventh it
then again gradually began to decrease until
the eighth of the eleventh.

In the page opposite I have constructed a
table showing the days of the disease most
fatal to patients labouring under small-pox.
The first column refers to the days of the
disease, the second to the number of patients
dying on any given day in the Edinburgh
small-pox wards during the late epidemic,
the third to the same circumstances in the London
Small-pox Hospital during 1828-29. The
fourth column shows the stage of the eruption
and refers to the London statistics, which
have been calculated in the same manner.

It will be seen from the table that the
12th day of the disease is the most fatal
while in London it is the eightieth day of
the eruption, or tenth of the disease, I believe
a most early stage of this disease seems to be the clue.
to what I consider the feebly mode of constructing the London statistics, for instead of reckoning from the clamy of the eruption, their calculations are based on the uncertain period of the commencement of the eruption for both the patient and friends are very liable to overlook the first appearance of the eruption and to state it as it appeared a day later than it really did.

Death during the first week is sure to be due to malignant fever. During the second week death is liable to take place from apoplexy due to the swelling of the face and veins under the caustic caused by the irritation of the pustules about those parts. During the third week death takes place from some complication caused by some affection of the brain or lung. At a still later period death may take place from mere exhaustion.

The sequence of confluent smallpox are sloughing of different parts of the body, furuncle abscesses and injuries to the
eyes, I have never seen any sloughing of the limbs as mentioned by some authors, but the furuncles and abscesses have been exceedingly common during the late epidemic, they give but little trouble merely requiring at most simple evacuation of their contents. The injuries done to the eyes are more formidable lesions and when as in most instances the ulceration and sloughing of the cornea commences during the disease, the patient is almost sure hopelessly to lose the sight of the eye or eyes.

Case II affords us a very excellent example of the milder form of Variola, in this case the patient was vaccinated, on the third day of the disease which was ushered in by a severe irritant pain in the back or vomiting the eruption made its appearance, it was scattered diffusely over the body, scarcely any constitutional disturbance manifested itself and the patient might have followed her avocation as usual if it were not for the fear of infecting the disease to others.
On the sixth day of the disease the eruption was particularly noticeable. On the eighth day the eruptions commenced to dry up without showing any tendency except in the case of one patient to umbilicate. On the 12th day the scabs were nearly all fallen off, therefore the length of the disease in this case was only about half as long as in the one previously mentioned, this shows I think the great power of vaccination, for I do not remember having seen a single case in the non-vaccinated nearly so mild, and it may be noticed that the majority of the specimens of the disease in the vaccinated were of this case type, in some even it was less severe. I may add also that when the mark of vaccination was removed from the face of Fraser case I no appearance of scars could be detected.

As to the Merribel Anatomy of Smallpox little writing of notice can here be mentioned the knife of the anatomist reveals nothing as yet of the lesion which causes the disease. I think however as the knowledge of the
pathological changes in the human body advances, we may discover this great desideratum; just as at the present time the fever of pneumonia is known to depend on inflammation of the lungs, the typhoid fever on inflammation and ulceration of Peyer's patches, and as in typhoid fever the rose-colored papules are symptoms of the lesion taking place in the ileum so in varicola I have no doubt that its eruption in like manner is a symptom of some lesion affecting some part of the region, to us as yet unknown.

As yet the morbid changes discoverable after death are chiefly confined to the lungs and pharynx, which are in some cases covered with a brownish purulent secretion these parts also are in the severer forms of smallpox besprinkled with its characteristic eruption. It has been a disputed point as to whether the mucous membrane of the intestines displays the variculous eruption in all the cases examined in the invasion during the late epidemic; no eruption was
there found, except in one, the small intestines of which were covered with an eruption said by the pathologist and physician there present to be that of smallpox; I have a small piece of these intestines in my possession but owing to the action of the alcohol in which it is preserved a great part of its original beauty has been destroyed.
The Treatment of Variola

Abu Beer Mohammed Ibn Sacariya, the earliest write, especially on smallpox gives voluminous directions for treating this malady. First we are to undertake he seems to cut short the disease as soon as its promonitory symptoms have manifested themselves; this is to be done by bleeding and giving the patient large quantities of cold water to drink, nor it seems for the express purpose of occasionally vomiting yet unless the stomach be so full as to be incapable of holding any more, then vomiting is to be induced so that more water may be given; if these means do not cut short the disease and the eruption makes its appearance, then it is necessary to assist it in easily breaking forth, by wrapping the patient in warm clothes rubbing his body, and keeping him in a warm room, if the paste do not then readily come out a decoction of ignis and Rasnin is to be administered or what was said to be more efficacious some sweet gum or beeswax, and small pome added to the above, thus it may be remarked from
a mixture of a red colour.

The eyes, throat, nose, ears and joints are to be taken great care of; this is to be effected in the case of the eyes by dropping Rose water into them; if pustules appear on the conjunctiva a collyrium composed of Gallis and Rose water, or of the pulp of the acid pomegranate is to be used; the eyelids have a special treatment they are declared to be washed with an infusion of the Red Poppy, the juice of European Grapes, Peas, Alces, and Poplar.

A poultice for the throat is to be used consisting of the juice of the acid Pomegranate, or of the unsuspended juice of the white Mulberry.

If the bowels be relaxed, a liniment is to be administered composed of Gum Arabic, peeled Almonds, the seeds of the serpent cucumber, Wheat starch, and the muceilage of Gum. The joints are to be bathed with Sandbox, red from Poppy, American buli, Roses, Camphor, Arsenic, and Rose water.

The pustules are to be maturated by fomentation of hot water or after a decoction of the urinum Violeta, Mililot, Marsh Mallow, and the bran
of wheat.
The pustules which are large are to be pricked, emptied of their contents, and the matter is to be soaked up with rags.
The pustules which are small are to be fumigated with dried Rose leaves, Myrtle, or Lily leaves.
If the small pox abounds, with too much moisture let the patient sleep on a mattress, stuffed with pounded Roses, Rice, or Millet meal.
If the patient's body be excreated, lie is to be besprinkled with an aromatic powder Roses and Myrtle.

When the desiccation of the Smallpox has been effected, on the scabs which remain, deep, warm oil of Sesamum, but on those which remain on the free raps, dipped in oil of Pestachios are to be placed; some of the larger pustules are liable to contain moisture, these should be cut out, and the eschar dressed with aromatic powder.

The diet is to consist of Barley water mixed with acid Pomegranate juice, if the bowels be relaxed, and if the patient be restless with the Poppy.
a. Bambusa arundinacea, (reeds found in parts of)
b. Rhus  ——?
If the barks be relaxed we must give an infusion of Red Roses, Cæsarea, Brunel, Leaves, Dock seeds, Senna, Lemman Carlos, Poppy Seeds and Pomegranate flowers.

Such is the treatment of Varicola recommended by the renowned Pliny II. It has been followed more or less closely by all the physicians prior to the time of the immortal Sydenham. They all endeavored to force out the eruption by subjecting the patient to warmth.

The celebrated John of Gaddesden tells us in his work entitled "Rosa Anglica" that when called upon to treat John, the son of King Edward the second, he had him put into a bed surrounded with red hangings covered with red blankets, and a red counterpane, poppins and caused him to purge his throat with mulberry wine and to suck the red juice of pomegranate, a double dose of which was given to him because he was rich. "Duplum sit si penitus.

When Sydenham called by Le Tourneur "l'Hepparata anglais" directed his attention to this disease, he changed the treatment altogether, and
introduced the cooling method of cure, he was followed by the two Suttons.
During the earlier part of the present century the following treatment was recommended: In persons of a middle age, good constitution and phlegmatic habit a moderate quantity of blood should be taken away, the exhibition of an emetic will be advisable provided there be no material tenderness of the stomach, atonie and other diarrhoeae should be employed and the antiphlogistic regimen strictly enforced. It is particularly useful in this disease during the eruptive fever to expose the patient freely to cold air, and sponging the surface with cold water may be proper where there is much heat and redness of the skin unless the lumps be weak. After the eruption has come out the eruption symptoms are usually as much mitigated that little medical interference is necessary. In imfluent small pox the princepice should be first evacuated. Barks should be freely given to promote the process of suppuration, and opium to relieve the irritations in the skin, when the eruption has come out
it will be generally proper to direct a full dose of this remedy every night to procure rest, being proper precautions to obviate the conjuring the bowels or determining to the breast. Where alarming convulsions occur apopns is the medicine chiefly to be relied upon taking care to remove any source of irritation from the prime rick. Sometimes the tepid bath may be useful under these circumstances and from the appearance of the eruption where the skin is pale cold the pulse weak. Where at a more advanced period the pustules flatten and alarming symptoms follow the most powerful cordial and antispasmonic remedies must be tried as the confectio spirit ulter wine &c. To prevent the eyes being injured a cooling lotion may be applied and blisters behind the ears or leeches to the temples.

Lately a new remedy has been recommended for this disease and as usual with most of the new medicines it comes from America. On November 2nd 1861 a paper was read at the Epidemiological Society from Mr
Herbert Miles Surgeon to the Royal Artillery, Halifax, Nova Scotia. This credulous gentleman says that early last winter small pox was
committting fearful ravages among the Indians after some time however the pestilence was
seen to be stayed by means of a preparation
brought into the disease stricken camp. An
old colored Indian woman was the fortunate
possessor of the remedy in question.
The medicine was given as follows: to a person
suspected to be under the influence of the
Small pox, but with no distinct eruption
a large wine glassful of an infusion of the
root of the Sarsacenia Perurema is to be given.
the effect of this dose is to bring out the erupin.
After a second and third dose are given at
intervals of from four to six hours, the
pustules subsides apparently, loosing their
vitality. The patient feels better after each
dose and in the graphic expression of the
Memanac, knows that there is a great change
within him at once. In a subject already
covered with the eruption of small pox in
the early stage a close or two will disprove
the eruption and subside the febrile symptoms. The urine is kept in a bottle and kept cool. When the disease is under the influence of the remedy, in three or four days the prominent symptoms of the constitutional disturbance subside, although the skin remains red or scarlet. In some cases, a precautionary means is kept in camp until the scurvy abates.

No marks of the eruption (as regards pitting) have been left in those cases treated by this remedy. With regard to the medicine acting (as is believed by the Indians) in the way of a preventative in those exposed to infection, it is curious to note that in the camp where this remedy has been used, the people keep a weak infusion of the plant prepared and take a dose occasionally during the day so as to keep the antidote in the blood. Such is the first account we received of the alleged virtues of the Sanbecina Purpurea. Strange though it may seem, some medical practitioners in this country and in England...
finding, I suppose, that their former treatment of smallpox was unsuccessful tried the new drug, then putting goose quill to paper, and burning with the device of handing down their names to posterity, told the medical world that they had found that panacea as efficacious as it was said to be by the forlorn Miemac Indians, but as will be seen by anyone who takes the trouble to read their worthless productions these experimental therapists were not thoroughly conversant with the course of the uncontrolled disease through which their patients passed unimpeded by anything else besides the soothing power of Jenner's great discovery, namely, vaccination, also the fortunate termination of their patients' maladies were I have no doubt much aided by the freedom they enjoyed from the beneficent treatment such as phlebotomy, tartar emetic, and purgatives which notwithstanding these empirical practitioners had exercised on former clients for their medical skill
and I am sure that the cures ascribed to the Sanadaevia Purpurea ought wholly and solely to be attributed to the vis medicatrix nature; however to satisfy the minds of all parties the physicians in the Royal Edinburgh Infirmary, in a series of carefully conducted experiments conclusively proved that the drug had not the slightest effect in staying the progress of Variola extenuant disseminate or confluent.

The modern treatment of small-pox may be said to be almost entirely ectopic & expectant, a mixture consisting of small doses of the Aqua Ammoniaci Acetata in water is administered every three or four hours, and if the pulse be weak wine in quinaria, from two to eight ounces daily, is prescribed, the bowels are generally at first constipated but they are not in that case interfered with, but if they should prove to be very relaxed some of the compound chalk mixture of the pharmacoceum is ordered
If the fauces become inflamed and painful as they did in nearly all the cases both mild and severe during the late epidemic, their relief may be afforded by a simple composed of Borax and Honey, or what I formed to be quite as efficacious, the breathing of the steam of hot water.

The affection of the eyes does not seem to be amenable to treatment if I may judge from the cases I myself observed, palliative means must however be used, such as shielding the eyes from the light, and the application of a weak solution of nitrate of silver three or four times a day.

And last but not least some preparation should be applied to the face and neck to prevent the formation of scars. This subject is treated on in the ensuing chapter.
In Preventing and Removing the Marks left by the Smallpox.

The Arabian physicians seem to have directed their attention more to the removal than to the prevention of pitting, however some of their prescriptions if applied at the proper time would have doubtless, some power in preventing against the production of scars caused by Variola.

The following substances differently combined are contained in the many receipts given by Masenjewadi, Serapion, Alジェマンディ.

In Musawishe, Washe and Rasses.

Littrape, the oil of the Pistacia Vera, Rice Miller and Bean meal, Saffron, Rhubarb seed, Asses' fat, Chips of the willow tree, the Salsola Halii, Melon seeds, Alcyonum pears, albumen of eggs, barley water, the oil of the Lilium Candidum, Sial Pannella Gum Commorcanum, a preparation obtained from the Borovolca three per cent. soap, white sugar candy, Wheat Starch, sweet and bitter almonds, Anilklendera Cortex, Sarcocot Pomegranate water, Old white Drug, Burnt...
limes, Reed roots, Cress Lupines. Peas
the seeds of the Hyperanthera Moraya, the
Aristolochia Longa, Violet, Brassica luna
Pepper, Ginn Sagraanta, the frequent
use of the bath, and the attempt to prow
fast as soon as possible.
Passing on to more modern times we find
that Cobol cream has been recommended
to prevent the intolerable itching, which
causes the patient to scratch and tear
their faces, and thus to ensure the formation
of scabs.
A solution of common salt applied lukewarm
or a lotion made by mixing a drachm of the liquor
Vodka Chloromatic with half a pint of water,
or a liniment composed of equal parts of
olive oil and lime water smeared from line
to line over the itching surface by means of
a soft camel’s hair brush, have been used to
prevent the itching and thereby prevent the
putting. Other methods have been devised
leaving a more direct cure towards the
prevention of last scabbing of the face
which says Dr. Wallen is only less dreaded.
by many patients than the threatened extinction of life itself. Finally, powdered camphor dusted over the surface is believed by Mr. George to obviate the disfigurement. Mr. Stewart and according to Dr. Bennett, Sorens, Bayonne and Velp eson, cauterized each vesicle with nitrate of silver. Mr. Stewart has more lately proposed the plan of forming a little spot of vesication by touching the apex of each pustule on the exposed surfaces of the body with the acetic caustic, or the help of a camel’s hair pencil. Dr. Cillie of Paris recommended the use of plaster of the French Pharmacopeia to be applied to the pustules. Mr. Baquer used mercurial ointment thickened with starch. Mr. Hey in bottom like Velp eson touched each distinct pustule with the solid stick of lunar caustic previously moistened; but when the spots are confluent he washes the whole face with a very strong solution of the nitrate of silver, using eight scruples to the ounce of water. A similar practice has been adopted independently, it would seem by Dr. Alexander Howard of Quebec.
except that his solution is somewhat less strong, an ounce of water containing a drachm only of the salt. Dr. Bennett tried several of these receipts, but without finding that they were of any service. Dr. Wallace ascertained that the Structure Tonicum which had been recommended had also no effect. Mr.Bird, one of Dr. Bennett's clinical clerks, after several experiments found that the most efficacious preparation was a mixture of the Carbomate and Oxide of Lime ointments diluted with olive oil, and in the proportion of one part of the former to two of the latter, this smeared on the face forms a mask which certainly prevents the formation of scars, but the appearance of the patient while covered with this preparation is loathsome to all observers. Dr. Graves of Dublin recommended a solution of Luptia percha in chloriform. This was tried in the Clinical ward in the Infirmary here during the past session, but it was found impossible to be kept on the face owing to its nonelasticity, every movement of the muscles of the face
causing the mask to split up and peel off. Mr. Compton, one of Dr. Bennett's clinical clerks during the session 1862-63 proposed the substitution of Caoutchouc for the Gutta percha, this, Dr. Smart the Resident Physician after several experiments found to answer admirably the electricity of the Caoutchouc allowing of the patient moving the face at pleasure, it effectually prevented any putting, and far from being unseemly it rather took away from than added to the distasteful appearance which is presented by one covered with the characteristic eruption of variola. Dr. Willing by acting when serving with the East India Company's Native army in Native dress at ascertained from a native doctor that the Charcoal made of the Minezzer leaf prevents putting, this may be but wherever a saturated solution of Caoutchouc and chloroform can be obtained I am sure that one trial will prove that it is incomparably the best application that can be used to prevent the formation of scars.
Authors from which extracts have been made in the preparation of this thesis:

Dr. More - History of Smallpox
Baron's - Life of Jenner
Thompson - Varioloid Evidence
Gregory - on Smallpox
Norton - Practice of Physic
Phrases - translated for the Sydenham Society
Bennett - Clinical Medicine
William - on Smallpox
Golding - Bache on the urine
Grossem - Clinique Medica of l'Hôtel Dieu

Alfred Lewis
March, 1863.