Clinical Notes
on
Fever, and Smallpox.

From cases treated in the Netherfield Fever Institution,
Liverpool.

by

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No doubt every case of fever would present points of interest, if there were time and opportunity for a close enough study of it; but as these necessary conditions are not in all cases available, I have, in the following notes, selected some of those cases which either present features not common to the ordinary run, or else which exhibit in a stronger light than usual, peculiarities which are of great importance of interest, but which are commonly masked by other symptoms, so in this way, fail to excite the attention they deserve.

Frequent reference has been made to the various writers on Fevers and Smallpox, but this paper is essentially upon a personal study of the cases; it has been my aim to avoid wearying repetitions, as far as possible, but while seeking for points of interest worthy of being recorded, I remember that "there is nothing new under the sun," and what to one may appear novel and interesting, will be to another "as tedious as a twice-told tale;" yet it may be hoped that a subject so interesting as the zymotic diseases may
not be regarded in this latter view.

With regard to Smallpox, the clinical notes on this disease, are preceded by a short account of the disease, & are referred to in this account in connection with the various points of interest which the cases exemplify or confirm in their symptoms, course, or pathology. The cases selected are fair average ones, & particular attention has been directed to any points of practical utility in diagnosis, & also to prognosis, at various stages of the disease.

Among others, the following authors are referred to:

Cayley - On Typhoid Fever.
Curschmann - Article "Smallpox". (Ziemsen, Vol 4)
Dwayne - Relapse of Typhoid Fever.
Jenner - Lectures on Typhoid.
Leibermeister - Article "Typhoid Fever". (Ziemsen, Vol 5)
Murchison - Continued Fevers.
Maunoir - Article "Smallpox".
Reynolds - System of Medicine.
Ringer - Therapeutics.
Granger Steward - Lectures.
Taylor - Medical Jurisprudence.
Wunderlich - Medical Thermometry.
Smallpox.

The earliest scientific accounts of smallpox are considered to be those of the Arabin writers about A.D. 600; the outbreak of the disease at Perusium, A.D. 544, is regarded as the first historically authenticated one. It is however supposed that the disease existed long before this, and that inoculation was practised by the Chinese and Indians from a remote period B.C.

Smallpox houses were first generally erected in Europe at the time of the Crusades, and the disease is recorded in England in 1241.

In England, in the 17th & 18th centuries, 7 to 9% of all deaths were attributable to it. In France in the 18th century, 30,000 persons died annually of the disease.

In 1797 Lady Worsley Montague introduced inoculation into Great Britain.

In 1796 Jenner made his first vaccination upon a man.

Etiology.

No period of life is excluded from susceptibility, but it is strongest amongst children.
children after the earlier months of age. It breaks out in any country in which predisposed individuals are exposed to the influence of its contagion.

In the rare cases of intra-uteroine smallpox, the fetus often shows signs of having been infected at a later period than the mother, pointing to infection by simple contact, rather than through the blood.

During attacks of other fevers, the liability to variola is by some considered to be lessened, though any other fever may coexist with it. It may be assumed that in lowered conditions of health, as e.g., during convalescence from any illness, the susceptibility is, exterio se, increased, rather than diminished. In health an occasional diminution of susceptibility is probable. Negroes appear to suffer more severely than white races.

Well authenticated second attacks are rare. Louis XVI of France is one well-known instance.

The disease is caused by a specific virus, of an intensely, permanently, infectious character, existing in a small pox patient, is conveyed to a predisposed person by direct contact, by infected clothing &c., or through the air. inoculation proves that it is principally the pustules which contain the poison.
poison, but powdered crusts have been employed to effect inoculation, being used as snuff. The period of depression, when the specific odor is most marked, is usually considered the stage in which patients are most likely to spread infection, but infection may take place at any time, possibly from the commencement of incubation to the completion of healing, and preventive precautions should be taken accordingly.

Small-pox is rarely, if ever entirely, absent from the large cities; at varying intervals, when by the continued neglect or perfunctory performance of vaccination, the number of susceptible persons increases, it breaks out with appalling violence, selecting as its victims the unvaccinated, the imperfectly vaccinated, or those adults whose infanctine vaccination has, by lapse of time, lost more or less of its effects.

Pathology

Incubation. Most writers agree that the average period of incubation is 12 days, but cases in which one, or only one exposure is known to have taken place, are not often met with. In the two following instances the first symptoms of the disease appeared on the 12th day after a single brief exposure,
exposure, & the eruption appeared on the third day following:—

A. J. & B. J. aged 20 + 22 respectively, both cases of undecisive vaccination for smallpox, were sent to the small-pox hospital, & remained a couple of hours in the ward before they were seen by the medical officer. Both had 3 faint vaccination scars. They were isolated at once, but by an oversight were not re-vaccinated. At the expiration of the period stated above, the disease appeared, but quietly terminated as a mild varioloid in each case. There were no definite symptoms during incubation, beyond malaise which was attributed to measles.

The Initial Stage, or Stage of Invasion, is almost always marked & sudden in its commencement, & nearly constant in its duration, terminating in about 72 hours on the appearance of the eruption. If the duration of this stage is to be reckoned in days, it is clear that the Physician must note the period of the day or night at which the rigors commenced, or he will be misled as to its length.

The symptoms during this stage vary somewhat in intensity, but bear no ratio to the subsequent stages in severity. Rigors usually
usually, when in the disease, are accompanied by a rapid and continuous rise in temperature, which may reach 104° to 107° on the first day. Pulse and perspiration are accelerated. Severe headache, throbbing, or "thunder" in character, is a constant symptom, and very frequently, pain in the lumbar region is severe and distressing. Aching in the limbs is often complained of. The tongue soon becomes coated with a thick, white, moist film, often there is fetor exs, anorexia, thirst, and a common constipation; constipation is common. The skin may be dry and hot, or covered with a peculiar-smelling perspiration.

Convulsions in children, and nocturnal delirium in adults are common. Tonsillitis and pharyngitis, as also albuminuria, are often met with. Menstruation frequently sets in.

Frequently, but by no means constantly, patches appear about the 2nd day of this stage, which deserve most careful attention, as much as their presence will greatly aid diagnosis if their characteristics are known, greatly impede it if their peculiarities are not recognised.

These "initial" or "prodromal" patches are of two kinds, viz., erythematous and hemorrhagic; the two may coexist. The erythematous are the more common, and may
may be either weal or pruriticiform in appearance; the weals, commonly affect the face; both are pop-ped & mottled, more or less diffuse, disappear on pressure, & may be distinguished from the diseases they simulate by their distribution, order, & time of appearance, & by the symptoms which accompany them. Their duration is about 12 to 24 hours, after which they fade or become lost in the more prominent variolous eruption.

The hemorrhagic prodromal rash consists of a number of minute, pin-head, petechiae usually situated on the lower part of the abdomen and the upper part of the thighs, also about the arms & pits. They are true extravasations, resembling old flea-bites, & fade gradually in about 3 or 4 days. It is very necessary to note the greatly different significance of these petechiae & the purpuric spots which often appear at later stages of the disease, & are of very grave omen.

Thus far there are no indications in the symptoms themselves, to furnish any guide as to the subsequent mildness or severity of the disease, but a consideration of the condition of the patient with reference to vaccination furnishes data for an accurate prognosis. The disease may terminate
here, on the one hand as a mild varioloid, in the
development of one or two abortive spots, or, on the
other hand, the rapid development of the pea-
form, purpuric, variolosa, may speedily cause death,
or may even do so ere this stage be reached.

But in the ordinary course of variolacer,
the next step is the

Stage of Eruption.

On the third day from the commencement
of the initial stage, a variable number of pale-red,
elevated maculae, pinhead in size, appear on the
face, shaw, scalp, & wrists. A few hours later
they are visible on the back, breast, & arms,
& still later they appear on the trunk, legs,
& feet. Frequently, they occupy the site of the
hair follicle, sweat, or sebaceous glands. New
papules continue to make their appearance in
the spaces between the old ones for about a
couple of days, during which period those
first developed become darkly-red, enlarged,
& distinctly papular, the surrounding skin
being more or less inflamed & edematous. By
the 6th to the 8th day, in the order of their
primary appearance, the papules are converted
into split-pea sized umbilicated vesicles; this
umbilication being sometimes due to the
situation of the vesicle around a hair
follicle. The papules may vary in number
from
from a few dozens to many hundreds.
At the commencement of this stage, the temperature,
as is fully shown in the chart, falls usually
continuously, & remains low for a variable period,
usually from 12 to 24 hours, during which time
the patient experiences a comparative alleviation
of his sufferings until the commencement of
suppuration.

Suppuration begins about the 7th day,
by a gradual turbidity of the contents of the
vesicles ending in pusulence, while the areola
around the pustule, is the consequence of the skin
increase in a variable degree.
The subsequent course of the disease is largely
determined by the character of the pus which
forms in the pustule at this stage, is an important
prognostic sign furnished by it.

If the pustules, as soon as they reach the
pustular stage, are becoming yellow in colour,
the prognosis as to ultimate recovery is good;
but if on the other hand, they remain chalky
or milky-white in colour, the prognosis is
decidedly bad. Microscopically, there is this
distinction between the contents of the two
pustules, viz., in the white ones, the pus-cells
are far more numerous than in the yellow-
dones, & one even exhibit many more aggregated
mulberry-like pus-cells than the latter, as
of Cases 8 to 13, & 21.
also numbers of loose, chert-like pus-cells.

This distinctive colour of the pox indicates of prognostic value at the commencement, or within the first few days of suppuration; the healthy, healthy yellow pus-ules themselves ultimately become white, but at the same time wrinkled and scabbed, as convalescence approaches; the yellow thing quite disappears simultaneously with the inflammatory aera, moreover the whiteness of this wrinkled pox is due to the greater opacity of its epidermal covering, due to its contents, which are chiefly serum, with a few epithelium + pus-cells; this can be demonstrated very readily, as it is a common mode of abortion of the pox, frequently seen in varioloid.

With the commencement of suppuration there is a return of distressing symptoms; the pain is especially great in those parts which are pressed upon in lying, also wherever the skin is thick or dense, as on the soles of the feet or palms of the hands. Fever returns, and is often ushered in with rigors, headache, restlessness, or delirium februm. Purulation follows the order of the appearance of the eruption, commencing upon the face, and being usually latest about the soles, where owing to the thinness of the skin, the poxds appear
appear flatter as the pain is greater.

Almost simultaneously with its appearance externally, the eruption affects the mucous membrane of the nose, mouth, tongue, pharynx; from constant maceration, the poxels in the mouth become converted into ash-grey ulcers, having a peduncled base; while those in the nose may completely block it up. Salivation, from irritation of the salivary glands, is frequent.

Stage of Desiccation.

About the 11th or 12th day, a thick, gummy, or honey-like substance exudes from the pustule, and forms a firm, rough, coating on its surface. At this period, the venous odour is very strong and offensive. The coagulated matter soon dries into a firm brownish scab, whilst the dermal inflammation gradually subsides and disappears.

These changes, following the usual order, are latest upon the lower limbs. Pigmented, elevated macules, or more diffuse staining, remain after these scabs drop off, and persist for a variable length of time — many weeks or even months. If the poxels have destroyed the papillary layer of skin, their site is marked by permanent, white, depressed pits or scars; occasionally also, there is loss of hair in patches of variable size. With thecession of suppuration
suppuration, a commencement of desiccation, there is a rapid improvement in the general condition of the patient; pain goes, sleep and appetite return. There is no essential rise of temperature during this stage, but the occurrence of boils, abscesses, puerperal pains or frequently cause febrile interruptions of convalescence. This process of scabbing & scaling, is often very slow & tedious, & frequently convalescence is fully established many weeks before it is completed, & the patient considered to be in a fit condition to leave the hospital.

There are well marked variations from the type which has been described, which must be briefly referred to:—

Variola Confluentes.

The initial stage is severe. The eruption often appears a few hours earlier than usual, & almost simultaneously on the face & body. The aspect of the patient is leaden & indicative of prostrating illness at a very early stage. The face soon becomes uniformly swollen, & studded with large flat papules so numerous as to coalesce, & body & limbs are soon in a very similar condition. Suppuration commences early, often on the 6th or 7th day, & the coalesced

† Cases 1 & 21.
Pustules give the face the appearance of a parchment mask. The mucous membranes of the mouth, larynx, &c., are almost always involved, & frequently there is keratitis. The temperature rises soon, & to a high degree, whilst the general symptoms are very severe. Delirium; vomiting; albumenuria; serous inflammations; abscesses, or vesicles, often occur during this stage. Death may occur at any period; it often takes place from pyrexia, or from exhaustion during desiccation, after the patient has struggled through a prolonged course of suppuration. Convalescence is usually attended by boils. Permanent scars and alopecia are left as a rule.

Variola Haemorrhagica Pustulosa, or Variola Maligna, is a still more fatal form of the disease. The name is given to those cases in which haemorrhagic symptoms manifest themselves at any time during efflorescence. They appear as more or less extensive bluish, bruise-like patches, situated over such prominences as the iliac crests, spine, elbows &c. Extravasations also take place into the pustules vesicles, or pustules over extensive areas of the body, and petechiae, or pimpluric spots, varying in size from a pin-head to a shilling, are scattered...
scattered here and there between them. These changes occur more especially on the legs, and are oftens developed during the febrile stage. The mucous membranes are commonly affected, hemorrhage from the nose, gums, uterus or rectum may occur. Hematuria and hematemesis may be present.

The initial stage is usually severe, but there is nothing to indicate that the hemorrhagic form of the disease will subsequently ensue.

Purpura Variolosa. 

This rare form of the disease is one which is invariably fatal. Extensive hemorrhages into the skin, or from mucous membranes, precede the efflorescence, of death may ensue before there is time for more than a faint indication of the coming papules. This terrible variety is met with most commonly among the robust; collapse speedily ensues, but the patient frequently retains consciousness until death relieves him of his sufferings.

Varioloid. 

The various modified forms of the small-pox process are included under this name. By reason of their mild course and short duration, they bear a marked contrast to the severe forms of the disease already referred to. The degree of modification is Case 7, Page 43. 

Case 8. Page 47.
varies very greatly; the process (perhaps consisting merely in the development of one or two pustules accompanied with comparatively trivial constitutional disturbance, or on the other hand, it may approximate in its course to a somewhat mild variolae vera.

The circumstances which determine its occurrence & degree of intensity are:
1. Naturally slight susceptibility to smallpox.
2. A previous attack of smallpox.
3. More or less efficient vaccination; which is by far the most potent agent in modifying the disease.

In the majority of cases the initial stage is somewhat severe, but shortened. Initial exanthema, especially the erythematous are often met with. The appearance of the pustules both in time & sequence is irregular, & their development may be arrested & healing commence at any stage; if suppuration occurs, although the oedema of the face which accompanies it may be very great, the pustules are buttery-yellow, healthy looking, & speedily become paler, wrinkled, flaccid & shrivelled from absorption of their contents; the covering gets peeled off & an elevated, reddened, non-ulcerated base is left. The cuticle immediately around it peels off, while the staining becomes coppery, coloured 

and
and fainter, & gradually disappears.

Names have been employed to distinguish the prominent characteristics of the eruption in varioloid, e.g. V. verrucosa, a common form in which the pustule passes into a warty elevation before dropping off; V. milium; V. acuminate &c. Forty such varieties are described by the Chinese.

The mucous membranes are frequently affected in varioloid in a similar manner, though in a much less degree than in variola.

Complications & Sequelae.

These are intimately connected with the local affections. Prominent among them are permanent scars & cicatrices; tubercles; phlegmonous processes; acne &c. Mental disturbances; aphasia; paralyses. Ulceration of the cornea, commencing always at one edge & progressing over it, resulting in blindness. Otitis. Inflammation of joints ending in suppuration. Inflammation of serous & mucous membranes; diphtheritic processes &c.

Anatomy.

The eruption, in the various forms of variola, & varioloid differs only in degree.

& Case 22, Page 58.
The first simple red spots which appear, are due to circumscribed hyperemia of the papilla & adjacent cutis. The papilla develops from them by a granular swelling of the cells of therete Malpighii, especially those intermediate cells between the outer epidermis, & the layer immediately covering the papilla. An exudation of clear fluid into & between these swollen cells results in a vesicle, partitioned by some compressed altered cells; this exudation pushes up the outer epidermal layer still further, while the adjacent papilla become infiltrated with serum, and surrounded by new cells. The embolization is due to a hair-follicle, sweat-duct, or epithelial cells binding down the centre of the pock, which rupture as the extension of the pock increases. Meanwhile, as pusulence advances, the papilla themselves may slough from compression of their vessels by this accumulation of pus-cells, & piercing results.

The contents of the pock instead of being serous or purulent may be bloody. It frequently happens during very favourable convalescence, a more especially in varicoid when the pocks are aborting early, that their contents rapidly assume a brownish, iodine-like & dis-colouration; this common mode of abortion of the pocks is due...
due apparently to effusion of blood into the flesh, which quickly dries, so the contents of the pockets can be picked out whole, as they are situated between the layers of cuticle. Oxylic ether and guise demonstrate the presence of blood.

Bleeding into the pockets is considered to take place by diapedesis, i.e., not by rupture of capillaries.

Pustules occur on mucous membranes; and various inflammations of mucous & serous membranes arise. Granular degeneration takes place in the liver, kidneys & spleen. Also hemorrhages & ecchymoses into various parts, as into the pleurae of the kidneys, connective tissue of the mediastinum, & into the serous membranes.

Diagnosis.

The prevalence or otherwise of the disease, also the individual condition with reference to vaccination, will be considered in conjunction with the symptoms. Any initial exanthem will be looked for, but an erythematous one may add to the difficulty of diagnosis, unless the observer carefully note the time & order of its appearance.

Variolae, or varicellae is very commonly confused with measles, especially when ushered in
in with a closely prodromal rash, attended with a copious, ill-formed eruption. The points of distinction most necessary to note are the following:

**Measles.**

Early eruption of oneous membrane.

Macules are larger, appear on the 4th day, and are developed almost simultaneously on the back & face.

Purple in colour; soft & velvety to the touch.

Temperature rises rapidly to 103° to 104° F. and continues to rise, or remains high when the eruption appears.

Frequently, diffuse, purplish patches of congestion on the oneous membrane of the mouth.

**Variola.**

Late eruption.

Macules are smaller, appear on the 3rd day, first on the face and head, then on the wrists, and subsequently descend to the back & trunk.

Darker red, hard & soon becoming shotty to the touch.

Rapid rise in temp. to 105° or 106° F. and falls on appearance of the eruption.

Frequently, small roundish, ash-colored spots of ulceration in the mouth.

The shotty sensation which the incipient papules afford to the touch is definite earliest, & best, upon the soft arium on the flexor surface of the wrist; it commonly arrests attention when
when examining the radial pulse, the aspect of the small-pox patient is usually indicative of serious constitutional disturbance.

During the first two days there may be difficulty in distinguishing small-pox from typhus, but the eruption & course of temperature on the third day will remove all doubt.

The symptoms elsewhere enumerated are sufficiently characteristic to distinguish small-pox from other fevers.

Modified small-pox has frequently been confounded with varicella. The points characteristic of varicella are the following:—

1. Mildness of the initial fever; 2. The spots are scattered, do not begin on the face, are not hard & shotty. 3. They rapidly develop into very superficial, clear, Zoster-like vesicles, sometimes with a faint areola, but no nodular or puffed base. The vesicles are unilateral. 4. The disease is one of infancy & early childhood, & occurs in epidemics when there are no cases of varicella. It affords no protection against varicella, nor does it ever give that disease. It is difficult of inoculation, but readily disseminated & capable of infection.

Acne varicelosa, & syphilitic affections will be very readily distinguished from varicella by the history, duration, course,
of temperature & other symptoms.

Prognosis.
The points to which attention must be directed are the following:
1st: Is by far the most important, is the condition of the patient with regard to vaccination. 2nd: The age, constitution & previous habits of the patient must be considered. 3rd: The amount & character of the eruption; this has been already referred to. It must be remembered, that erythematous rashes often precede varioloid, & petechiae often precede variole; but this is by no means a frequent or constant order of things. Excessive, bloated, edema of the face frequently accompanies mild varioloid, it is by no means an unfavourable sign.
The possible occurrence of complications would lead to a guarded prognosis as to duration of illness in varioloid.

Treatment.
This may be referred to as hygienic, dietetic, & symptomatic. Unlimited air supply, at about 59° Fahr.; regular administration of appropriate diet; careful nursing, especially in delirium, are essentials.

Alcohol
Alcohol must be administered as the condition of the patient necessitates, the state of the heart and pulse being the great guide in its use. Opium, & other analgesics must be given to relieve suffering or procure sleep, with the usual precautions in regard to such drugs.

Throat sprays, steams or medicated inhalations, greatly relieve the distress arising from ulcerated conditions of the mouth & throat. After the first application of the spray, children will readily submit to its subsequent use, and indeed often ask for it. A tepid solution of Pot. Permangan. gr.5 ad.3; chloride of jatash, or carbolic acid, with a little glycerine may be employed with advantage.

In hemorrhagic tendencies it is usual to employ astringent, such as Tincture of worm, e.g., tincture of gallic acid &c. but unfortunately their use is attended with little, if any, benefit in these cases.

Ulceration of the cornea must be watched for, especially during suppuration. The eye must be kept clean, & frequently bathed with weak solutions of sulphate of copper and sulphate of zinc; when the edge of the cornea commences to ulcerate, a little colomel blown into the eye, will usually stop the process if perfect cleanliness be ensured.
Cold compresses to the feet & hands will relieve pain.

The numerous symptoms which may arise must be met upon the ordinary principles. With regard to the eruption it is of evident importance to avoid as far as possible its destructive effects upon the face. Pitting is due to destruction of the papillary layer of the skin, & this may in great part arise from the pressure of the contents of the poxct upon it; it would appear that if this pressure be prevented, one probable cause of the pitting would be removed; hence it is more reasonable to expect satisfactory results from making punctures in the poxct as soon as it commences to protrude, & evacuating the contents, than by binding it down by solutions of caustic or, collodion &c. Application of this kind may be beneficial in varioloid, when the poxcts are not deep-seated; their effects are shown by such experiments as this:—I have painted one-half the face with a solution of caustic, & left the other half alone; the result has been that the poxcts on the painted half have gone through their course to absorption than the other poxcts, but in a couple of days these latter have overtaken them, & in the end there has been no appreciable difference of any kind between.
between them. I have frequently tried this, but it seems to add to the discomfort of the patient. Oily applications, especially those containing oxide or carbonate of zinc or bismuth, relieve irritation and are evidently soothing so that the patient is less disposed to rub himself; the covering of the pock is also kept softly by these means, so this may help to prevent pitting.

A great deal depends on the comparative depth or superficialness of the pocks. If they are superficial, pitting will be slight, but if the skin is deeply affected pitting is certain to result. My impression is that puncturing of the pocks and evacuation of their contents as soon as suppuration commences, is in any case, the best plan to adopt if time and circumstances permit, and after this to apply some oily and sedative substance. It must be remembered, however, that puncturing is not only a tedious but an exceptionally unpleasant task, but it affords present relief and ultimate benefit to the patient.

Prophylactics.

Vaccination.

There is probably no fact more fully proven, nor any scientific phenomenon supported by more convincing evidence, than is the efficiency of vaccination.
vaccination in the prevention of smallpox. In exact proportion to the efficiency with which vaccination is performed in any community, will smallpox be robbed of its terrors; but when this simple prophylactic is perfunctorily carried out, or altogether neglected, then, sooner or later this most merciless & repulsive enemy regains its footing.

Anyone who has had any experience of smallpox must feel that the half-educated & mischievous opponents of vaccination should be severely dealt with; they who seek to gratify their obstinacy & vanity at the cost of the lives of their unfortunate dupes cannot be too strongly blamed. I affirm that a visit to a smallpox hospital would demonstrate the efficacy of vaccination to its most dogged opponents. I would prophesy that he would never again seek to expose children to the pitiless disease & cruel death which may be the terrible sequel to hisshare-brained denunciation of one of the greatest benefits which Medicine has conferred upon man.

It is not necessary to review statistics & proofs which are to be met with in the various reports upon vaccination, but I add one additional grain of evidence from my own hospital, in the accompanying extract from
With regard to small-pox, a consideration of the last 312 cases shows that the protection afforded by vaccination against that disease entirely depends upon the efficiency with which the vaccination is performed.

In most of the cases referred to, vaccination had been more or less imperfectly performed. The subjoined table shows the effect of this vaccination in modifying the mortality. It must however be borne in mind, that amongst the non-vaccinated the illness was in every instance long and severe, and recovery was accompanied with great permanent disfigurement; but amongst the imperfectly vaccinated the severity of the disease diminished in proportion to the efficiency, as evidenced by the scars, with which the vaccination had been done:

<table>
<thead>
<tr>
<th>Number of Scars</th>
<th>Died</th>
<th>Mortality per Cent.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Not vaccinated at all</td>
<td>58</td>
<td>28</td>
</tr>
<tr>
<td>2. Having one imperfect scar</td>
<td>57</td>
<td>9</td>
</tr>
<tr>
<td>3. two scars</td>
<td>120</td>
<td>9</td>
</tr>
<tr>
<td>4. three scars</td>
<td>64</td>
<td>1</td>
</tr>
<tr>
<td>5. four scars</td>
<td>13</td>
<td>0</td>
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</tbody>
</table>

Almost all the fatal cases amongst the vaccinated occurred in adults, showing the necessity for re-vaccination as adult life is approached. No patient had ever been re-vaccinated, while no nurse or servant of the Institution (all of whom are re-vaccinated) took the disease, although many of them were in constant and close attendance upon the small-pox patients.

This table confirms previous observations upon the subject.
As regards the best means of vaccinating, I have found calf-lymph, preserved on points, to be as effectual as any. If the lanced be moistened with tepid water, & then pulled gently on the point, there will be no fear of over-diluting the lymph. With the lanced well covered with lymph, scratches should be made it at least 4 distinct places, more lymph being taken from the point as it is required. The lymph must not be used sparingly, or in a migueally manner, or it will not "take," & the patient will be deluded into the idea that he is insusceptible to vaccinia & variola.

Adults, who are vaccinated, or re-vaccinated, must be enjoined to have a care of their health whilst suffering from vaccinia.
Case I. Variola Confluens.

Joseph Mala, 3 D. Order, Indian; speaks no English. No vaccination scars.

Admitted March 22. He was taken ill on
of all of them March 19 from not so well since then we will given
He charted March 22 5 1/2 days of illness.

They have the patient does not feel ill at present but thinks he is
numbness or getting better.

The tongue is pale, flabby, nearly yellowed & teeth
-indented; a few white spots upon it & over the
centre of the palate.

Heart-pauses are fair; impulsive & pulse weak, 80.
Irresolute cough but no physical signs in
chest to account for it.

The skin is hot & dry; pustules cover the face
ears and scalp, coherent in threes & fours in many
places, raised, some umbilicated, some large as small
split peas; about the lower lip they seem to be
becoming vesicular. The dull brown, sunken
tint of the face, renders the, pocks less distinct
than usual. Over the trunk are several hundred
of pustule, or late-coloured pustules from split pea
downwards, very many umbilicated, some vesicular.
The larger ones surrounded by a small late area on
chest, belly & back are equally affected; arms in
a similar condition; the branded hand-backs have
dull-pointed, ill-defined, patches of pustules, composes
of
of which are split pea size; same condition on the palms. The lower limbs are covered with rather larger deep-bate papules, with a few besides there & there; one the feet are many dull pink, non-painful, irregular blisters, composed of papules similar to those on the hands.

There is no oedema except about the eyelids; she can open them readily; the eyes are slightly congested & watering.

March 23rd 6½ day of illness.

Lips & tongue are dry & brown, covered with black words.

Noisy, grating respiratory sounds over both fronts & both backs. In the last 24 hours she has spat up about 12 oz. of limpid fluid like cocoa, shown to contain blood by ordinary ether & guaiac.
Pulse 84; 1 pound 4 impulsive weak.
The face is more covered with papulo-vesicles, from increase in their size & number; they are also increased elsewhere. On the trunk they are mostly vesicular, umbilicated, & surrounded by a bright, lake-coloured ring, as if the centre of the spot were vesicular & its circumference papular, the whole being split pea sized; here & there are confluent patches.
The hands & feet are like the face, but the spots are not umbilicated nor lake-coloured as elsewhere; the palms & soles, fingers & toes have
have scores of subcutaneous pocks.
There are olive-green patches, like bruises at
the corners of the nape, face, ears and chin
creases.
There is a little more edema of the face, and
the eyelids are closed, but he can open them.
Urine deposit test tube contains a faint trace
of albumen.
There is occasional twitching & tremor of the
entire body.
March 25th 8th day.
The pocks have increased in dimension, but the
blush is less; they are cohering in patches over the
body, & on the face are becoming converted into
masses of milky pustules; the parts not obscured by
them being bluish; some vesicles appear dryish and
depressed; scalp, trunk & limbs are covered with
umbilicated vesicles & pustules. There is very little
edema anywhere; the eyelids are open.
(10 P.M.) cannot swallow, pulse imperceptible, face
leaden, shaking all over; revived after Brandy, &
Lips & tongue, dry, brown & poured, cannot examine
mouth.
9th day.
Face is drying up into a scabby condition, especially
on forehead, nose, lips & chin; neck, limbs & trunk
well-covered with hundreds of umbilicated, milky,
pustules, mostly discrete & pea-sized, but many
cohering
cohering or confluent, most are surrounded with an area of bright-red congestion; a peculiar appearance results, as if the body were covered with pearls. On the thighs, back, and loins are confluent patches, a couple of inches in diameter. 10th day.
The face is completely smeared with a scabby, drying, covering which is bleeding, i.e., in many places where the hair rubbed it. Hands and feet are covered with cohoerent or confluent moisty patches, leaving scarcely any intermediate skin. There is no oedema, excepting very slight of eyelids.
Violent rigors, screaming as if in great pain preceded death, which occurred about 8 P.M.

Free stimulation was resorted to in this case; nourishment was administered in concentrated forms. Glycerine tincture were employed for the mouth and tongue.

On the 7th day, specific treatment was tried, i.e., Sulphuric Acid 37, every 3 hours, but as its effect seemed to be evil, the brandy, a mixture of ammonia, ether, and camphor was returned to; this certainly improved the general condition for the time.

To relieve pain, the Lod Lip. Opini sed. 3 Fr. & the 4 Fr. at night. Wet compresses relieved the feet and hands.
At the sectio, 14 hours after death, the right ventricle was collapsed & flabby; it & the aortic valve were occupied by a large, perfectly-decoloured clot, projecting into the vena cava inferior, & pulmonary artery. Left ventricle contained a small firm clot like "ovis" in consistence.

Lungs very congested; pneumonic consolidation of base of left upper lobe, almost black on section.

Spleen enlarged & soft; liver & kidneys normal.

Case II. Varicella Vera. (Dissect.)


Jan. 23rd. Taker ill about midday with pain in the back, churning, headache & vomiting.

Jan. 25th. Many small shotty pustules on face, upper limbs, trunk & limbs, most numerous on the back.

Jan. 29th, 7th day.

Tongue pale & flabby, many pustules on it and palate; mucous membrane of cheeks & lips.

Heart weak; Lungs normal.

Vesicles are well out over the entire surface, especially about the face & upper limbs where they are interposed with smoky white umbilicated pustules; on the lower extremities many of
the spots are in the papular stage still; they are almost all umbilicated. There are a few papulo-vesicles on the fingers & palms & a great many on the soles. As regards the number & distribution of the spots, they may be estimated at about 800 on the back, 150 on front & trunk, a couple of hundred on each limb, & about the same number on the face.

There is slight oedema of the eyelids.

Feb. 1st 10th day.

Tongue dry. Sore on lips. Takes nourishment well.

On the face the nausea, pimples are drying, losing their umbilication, & exuding an amber tinted dry scurfy oozage which coalesces into a scabby mass.

On the trunk, the pimples there & there are oozing & drying, most are losing the umbilication; on the back their areolas diffuse into a general redness.

On the lower limbs many of the vesicles have still clear contents.

He is much exhausted; pustules papular & scabrous.

Odour from this is very offensive & characteristic.

Tepid bath was followed by soothing sleep at this period.

Feb. 6th 16th day.

General condition much improved; The left wrist is surrounded by a zone of large pustules.
blebs, granulated in the centre. The spots are chiefly dry & scabby; many about the trunk & limbs are pulled off, leaving an ulcerated base; others are wrinkled & flaccid.

Fevr 24th: Progressed well; tardy appearance of blisters above, which were opened early, but which continued to come in crops of 6 or 8 for many days.

Case III. Varicella Diverta.
Alice Richardson, 14. Not vaccinated.
This case was very like the preceding; the spots early assumed the ominous smoky-white colour, & the patient died from asthena & the "smell of poison" about the 13\(\frac{1}{2}\) or 14\(\frac{1}{2}\)th day.

Case IV. Varicella Confluentes.
The autopsy in this case revealed hemorrhagic tendencies; indeed the colour of the skin would soon become hemorrhagic into it.
Illness commenced on March 10\(\frac{1}{2}\) with violent headache, & pain in the lumbar region, there was no chill nor shivering.
Admitted March 14\(\frac{1}{2}\); 5\(\frac{1}{2}\)th day of illness. Aspect indicative of collapse. Tongue covered with a thick, moist, creamy fur; several white spots.
Post-like confluent projections about amid palate.
Eyes & eyelids normal, face feels gruffy to the
patient.
The heart pounds are good; pulse & impulsa
weak, 128.
Dullness, & varying moist rales over left lung
behind; slight cough.
Hair smooth; papules cover almost the entire
body; on the face they are confluent & becoming
ascertinent, scarcely any part free. On the back
& limbs, excepting the poles of the feet, they are
crowded together in enormous numbers; on the
chest & belly they are more thinly scattered.
March 15th:
Restless, delirious, & occasionally
vomiting during the night. Faces & urine
passed involuntarily. Great dyspnea &
difficulty in swallowing existed during the day.
Towards evening he bled a little at the mouth
& soon after died.

Examination 15 hours after death:
Both lungs deeply, & nearly equally congested
all over; they are heavier towards the bases, yet
no specific resists in water. In the lower lobes
there are numerous large sized pitch black spots.
Heart flasky; a large de-colourised clot in the
right ventricle; blood otherwise dark & fluid.
Value & pericardium all right.
Spleen dark & soft. Kidneys congested. Bowels
congested
congested; purifications of vessels well seen.

Case V. Varicella Hemorrhagica Rectal.
Mr. Burgos, 21. Merchant. Vaccinated one
from cicatrix. Admitted Dec. 7th.
Dec. 7th. In the evening, after travelling from
London he felt not well.
Dec. 8th. Headache, sickness, nausea, and dizziness,
attributed to the smell of guano. Able to get
up.
On the morning of the 8th. He was sweating profusely;
restless and delirious, howling, wanting to get out
of bed, unable to stand. Sent home on
Dec. 7ft. 8th day.
The face and lips are dry; covered with clot-
like pustules. The tongue is green, brown-like, very
dry, covered with a black, clot-like layer.
The cavity of the mouth is quite dry.
Heart weak; pulse 110. Respiration 33.
The skin is warm and perspiring, covered
everywhere with a small pin-point red clot-
pustule, very little exudation, mostly disappearing
on pressure. There are also numerous small
shotty papules scattered over the body; most
numerous on the face and upper limbs, less on
the trunk, none found on the lower limbs.
The palms and soles have a few papules visible
beneath the surface. Several burn-like blue
blotches.
March 8th

Very restless all night, notwithstanding mytudning
opiates & bromide. Constantly trying to get out of bed. Cannot swallow, spassus wine
insolently. He has been getting soutinue
& stimulating enemata.
The nose & mouth have been bleeding, & appear
to be clogged with blood-clots
Pulse is much fuller than yesterday; respirations
rattling.
The spots are everywhere more advanced and
the face is more covered with them & is somewhat
bloated; on the chest & upper limbs, they are
accentuated & undilated, & are more developed
on the extensor than the flexor surfaces of the
upper limbs. On the lower limbs, the spots are
more numerous. The pectoral-scarlet rash
is much less distinct; the trunk is occupied
with an irregular petechial eruption; no more
papules have appeared on this part. The umina-
white patches have considerably extended and
are now also on the knees, & about the
ankles
antiles. There are no signs of haemorrhage into the joints themselves.
Death occurred at 12. 10.
No Post Mortem was allowed.

Case X. Varicela Haemorrhagica Paroxysm.
Richard Murray, 2 b. cler. Vaccinated in infancy; 2 small joints years on left arm. He is usually healthy & strong, though of somewhat intemperate habits. Admitted Dec. 21st.
Dec 16th. Quite well all day, but awoke at night with severe pain in the back, shivering violently, aching all over. On the morning of the 17th these symptoms had gone, & headache occurred. He went to business as usual, but felt ill. He had a disturbed night, & on the morning of the 18th he noticed some little red spots on his face; throughout the day there was headache, nausea & vomiting, but no severe pain, “but for the spots he would never have thought it more than bile.” Temperature 100° on admission on Dec 21st. 5th day.

Seems to be well nourished, & fairly muscular.
Alimentary System:— Lips swollen, numerous circular red & grey spots upon them, extending onto the mucous membrane of the mouth, they are in patches resembling burns from a corrosive fluid. Teeth brown & eroded. Tongue coated with a smooth
moist white fur, no protus on it. Swallows liquids readily. Bowels opened by enema; previously constipated.

Heart: Pumps observed by noisy respiration. Pulse 140, full, but compressible.

Respiration hurried; 36. Large coarse piles, no expectoration, occasional cough.

Skin moist; face slatey-blue, as if recently and uniformly bruised; scattered over it are a dozen or so of slightly raised pea-sized papules, faint yellow in colour, indistinct, not umbilicated nor gritty; unaffected by pressure or pricking.

A diffuse, bright-red, 2-cm-latentiform, erythema extends over the upper part of the back, shoulders, arms, fading on the sides, elsewhere the whole skin has a leaden, or faintly-blue colour as if from defective oxygenation. The papules described above, which resemble drops of melted tar, are very numerous (many hundreds) on the arms & trunk, the back especially. They are also present on the legs, but here they are fainter, fewer, smaller; they are mostly discrete, but here & there, more especially over prominences, cohere into irregular patches a couple of inches in diameter, of which the component papules are peadily made out. These patches differ from the isolated papules, being slatey-purple in colour; they are moreover rendered more distinct
distinct upon pressure, since this temporarily removes the adjacent erythema, the purple spots consequently is more apparent. This shows that the morbilli or has taken place into the spots themselves in these localities. On the front of the trunk there are many papules, redder than those on the back, & each with a small red areola. On the intermediate there are numbers of small reddish spots. The hand-backs & fingers are completely covered with dotted confluent spots, producing an appearance not unlike petechial rash; there are also one or two purple bleeds about the wrists. He is very restless, it seems to suffer much pain & general discomfort.

12 P.M. He has been very restless all day, it is now terribly delirious; he requires food & much constant watching; any attempt to do anything to him increases his excitement. The nose has been bleeding, there are unseen blood about it. The cuticle is pulled from the forehead in patches, & the whole face is more proportionate, pulse very weak & compressible, 140.

Temperature 101°.

Dec. 22nd. 6th day.

10 a.m. He has been restless delirious and troublesome all night, sleeping very little, after Lp. opie Lek. on OE; Ip. bath on OE Augment Br. The
The face is now bind + irregularly swollen, cuticle adhered about the forehead, from peeling.

The trunk + extremities are bluish & beginning appearance. The purple patches of hemorrhagic spots are everywhere more numerous, especially about the lower limbs, where there are also several circular purpuric spots, rendered temporarily more distinct by stretching, this act removing the bluish congested appearance of the surrounding skin.

The pulse is 120, feeble + thready. Respiration moving.

46. Temperature 100.

Tongue white + dry. Cannot examine further.

Urine contains a trace of albumen + blood.

Towards the afternoon she became comatose, & died somewhat suddenly at 3 P.M.

Sect. about 20 hours after death.

Naja taricis fairly enquired. Pustule of adhered cuticle on the forehead arose + life.

The purplish appearance of the skin is hypertatic; the upper parts of the trunk are normal in colour + exhibit great number of hard white papules, + aggregations of purple ones interspersed among them. On section these purple spots are seen to be purple throughout their whole thickness. The sinuses are red + meatty.
Acros membranes normal.

Unoes membrane of trachea is blatey-purple
throughout & down to the cartilage; the longer
bronchi are in a similar condition. Several
small black spots in the lungs, 8 or 10 in 1 case
one in left upper.

Heart very acute sternum in pedflex stethes. Both kidneys are much congested & present
small bloody points about the calyces.

Case VII  Purpura Varicella.

Henry Hilton. 28. Clerk. Admitted June 22nd

Said he have been vaccinated in infancy, & has
one very doubtful-hostling scar on the left arms.
He is well-nourished & innocuous.

He has been 'out of sorts' for a day or two but
went to town each day.

On June 21st while at brownine (about noon) he was
sick with violent pain in the bones, intense headache
soon came on, & he vomited food & bile. Soon
after his removal home he vomited matter which
was said to be 'the dark blood,' which stained
the lips & tongue. His pain & headache did
not diminish. His urine was dark-coloured.

His state on admission on June 22nd was as follows:

Face, leaden + blotched-hostling; eyes closed, conjunctive
bloodshot. Teeth, lips bloodstained; tongue
moist, thinly furred, bloodstained, protruded with
difficulty.
difficulty. There is weakness and tendency to vomit. Occasional hiccupping.

Heart-pounds are soft & feeble, pulse 138.

Respiration is jerky & irregular, about 20 per minute; there is occasional cough & expectoration of frothy, blood-stained mucus. Few loud moist rales to be heard.

Skin dry & hot. On the face, neck, arms & upper part of the trunk, is a bright-red patch, somewhat like scarlatina in appearance, but it does not so completely fade on pressure. Lower down on the trunk, on the abdomen, loin & sides almost as far as the thighs the patch is much darker & purplish in colour while it is still darker over the lower part of the abdomen & about the groins. There are also dark purple patches on the neck & left temple. The thighs have an extension of the very dark livid patch from the abdomen; lower down on the legs but just it gradually assumes a scarlatiniform character, but here also there are irregular patches of purple.

The scarlatiniform patch everywhere disappears momentarily upon pressure, but the other, a darker patch existing on the other parts of the body consists of extensive areas of extravasation & is unaffected by pressure; this extravasation is greatest in the abdominal region, is hemorragh...
intensity from this area.

On the face, chest, & abdomen are two or three faint yellowish spots about ¼ inch in diameter. These are slightly raised but soft & smooth to the touch; none on the back or legs. The patient is somewhat confused but speaks coherently; he complains of pain in the back & head, an extreme thirst; says he feels “burnt up.”

Temperature 104.6

8 P.M. He rested quietly for about two hours after a tepid bath, & took an investment of brandy without difficulty. About 2 P.M. he became restless, & trembled with shiver, which ceased after vomiting bile. At 4 P.M. he passed 1b. oz. of blood-stained & albuminous urine which contained a large sediment chiefly of blood corporals. He was able to swallow until about 7 P.M. when the perspiration became profuse, shallow & stertorous in character; short puffs, & p. irregul. and barely perceptible; Patient rapidly becoming comatose.

Haemorrhages into the skin were innumerable, some developed; new patches had appeared on the face, near the eyes, & almost surrounding the left eye; also on the legs; these first formed had increased in area. The faint yellowish spots above described were more distinct, and
brownish in the centre.

Death occurred about 7.45 P.M.

Sectio; about 16 hours after death.

Rigor mortis very slight. The paired, yellowish spots previously noted, are barely discernible; the erythema has also disappeared. The large livid patches of extravasation upon the abdomen, chest, legs, arms & face are brought into great prominence. There is post-mortem congestion of the back.

On sectio, the hemorrhage is seen to affect the whole thickness of the skin.

Theorrhages of the chest & abdomen are unusually large, like the centre of an imperfectly cooked steak, but there is nothing like localized hemorrhage. The connective tissue about the aorta has the appearance of extensive burning extravasation.

The serous surface of the pericardium is dotted over irregularly, with pinhead spots of injection. The heart is flabby; cavities dilated, containing a little dark, fluid, blood. Spleen dark & soft.

The pleurae are like the pericardium. The trachea & larger bronchi are injected, & contain a good deal of mucus. Lungs seem to be healthy.

The kidneys are large & soft; they have several small, dark patches on the surface, & soft dark clots in the calyces. The mucous membrane of the stomach is much congested; the intestines are
are similarly affected line others; this latter condition appears to be hypertonic.

Apparently the severity of the disease killed, before there was time for any great development of local lesions.

**Case VIII. Varioloid.**

Alfred Watten. 17. Clerk. Vaccinated; one ear cicatrices.

Initial symptoms were severe. There was a nearly prognominal rash upon the face & arms.

The spots mostly aboured; those that pustulated became blunting yellow, and speedily wrinkled & flaccid.

The characteristic fall in temperature upon the appearance of the eruption, is well shown in this, & the following 5 cases.

**Case IX. Varioloid.**


Very great oedema of the face & neck was one prominent characteristic of this case. This condition, viz., extreme oedema, much more commonly accompanies mild cases than severe ones, & in consequence may be regarded as a favourable sign rather than otherwise.

**Case X. Varioloid.**

Matilda Baker. 11. Schoolgirl. Vaccinated; two
two firm cicatrices.
Very scanty eruption; mild symptoms after the third day.

Case XI. Varioloid.
The illness may be said to have terminated with the fall of temperature on the third day.

Case XII. Varioloid.
Sarah Norris, 34. Vaccinated; two good scars.
Some initial symptoms: hype, rigor, vomiting, headache, "terrible" pain in the back. A very thick purpuric rash appeared on the face, arms, and back, almost threatening convulsion; the chest and legs also were thickly spotted with Quinsy.
However, almost the entire eruption aborted at the pustular stage; there was a little vesication here and there, but very few pustules went on to pustulation. Convalescence was very rapid.

Case XIII. Varioloid.
Henry O'Conner, 21. Vaccinated; two good scars.
In this case also the initial symptoms were severe; there was great prostration at this period: A quinsy vesical, initial eruption appeared upon the second day; faded about the 5th day; it was situated on the lower front of the abdomen and
and about the gums & upper part of the tongue, also about the axilla & sides.

Very rapid improvement followed the fall in temperature.

This fall in temperature is very characteristic of varioloid. In severe varioloid, & especially in \( \text{V.} \) confluenus the fall is much more gradual.

It is \( \text{V.} \) confluenus cases that are most frequently mistaken for measles, & in such cases the course of temperature or appearance of the eruption is enough to confirm diagnosis. In severe cases, where the fall is more gradual, the severity of the symptoms elsewhere enumerated should (prevent) error.

**Case XIV Varioloid.**

**Josy Smith.** 15. Schoolgirl. Vaccinated; two years since.

This case was rather more prolonged and severe than the preceding, & is given in more detail. The patient was not at any time in a dangerous condition.

The illness commenced, with shivering, headache, nausea, spasm in the back on \( \text{July 16}^{\text{th}} \).

A few spots were noticed on the face and wrists on \( \text{July 18}^{\text{th}} \).

Admitted \( \text{July 20}^{\text{th}} \).

Face well covered with dry, scaly, elevated shotty papules.
closer on life + cheeks where they cluster in three & fours; among are umbilicated & a few burrles, also umbilicated are scattered among them. The intermediate dote is uniformly red & swollen; the eyelids are sodden, there papules about their edge; eyes suppurate. Feet & scalp, hands & trunk are also affected; hands & feet being thickly studded with papules; trunk affected in a much less degree.

On the lower part of the abdomen & about the groin a thumb ("eremal triangle") is a copious and well-marked eruption of red or pimples & pustules; the soles exhibit a similar though less distinct rash; there are only one or two pustules in these localities. There is no diffuse erythema.

The lips are swollen, there two or two small bluish ulcer (pustule) on their concave surface.

The tongue is smooth, coated with a yellowish film; there are several ashy pustules upon it, & also upon the palate. Tonsils congested. There is on nausea, but some dysphagia.

Bowel have been acting every day.

Intense headache's complained of; she feels "very ill."

July 23rd: Many butter-yellow pustules on face, ears, upper trunk & about fore-arms & hands. Bedema of face is considerable, eyes cloud owing to it. Many of the pustules are abainting, i.e. the
the papules are losing their inflated appearance, while the vesicles + pustules are less in these, becoming shrivelled. On the fingers + palms many pustules, once especially those just getting beyond the papular stage, are getting almost purple or brownish in colour & are also hard + dry; the pustles on the toes + others exhibit the same change. The Gutechick rash is almost entirely gone but there are still faint indications of it upon the abdomen.

July 26th

Some of the pustules upon the face & elsewhere have oozed a little yellowish, honey-like substance from their centres, I have subsequently dried into a scab; the majority however have become quite shrivelled & placid, without oozing; there are else, as well as the oedema has disappeared; in many cases the cuticular covering of these shrivelled pustules has been pulled off, leaving a slightly pockmarked but non-eroded base. On the legs are chiefly white shrivelled placid pustules without centres. The fingers + toes, palms + soles are covered with hard, brownish-coloured, papular elevations; they are quite dry, & the contents of some can be very readily (pierced out whole from between the layers of cuticle) that surround them. The Fingres is clean, appetite good; Pulse good,
July 20th. Scabs are dropping off the face in little flakes, the skin below being red & tender, but in one place elevated. No edema. Elsewhere the pustules are nearly all peeled off, leaving (passed through the white pustule) stage. The lesions colored papule on the fingers and toes are unchanged, except that they may be a little dryer.

August 6th. The epidermis is peeling off around the reddish elevations, peeling from the clinched pustules, especially on the hands & trunk. The face is almost free from scabs; the hands & feet are desquamating in small dry flakes, the lesions masts gradually getting peeled off.

General condition good; strength rapidly returning.

Sept 14th. Scabbing & peeling entirely finished; there is some covering (temporary) upon the face, & a number of espargy ralms around the site of the pustules upon the body. These also are temporary. There are also a few small pus-sized spots on the cheeks. Patient left hospital today.

Case XX. Varicella & Orthia.
Sarah Robinson, 37. Vaccinated; two grain marks. The illness commenced on June
18th with headache, vomiting, lumbar pain &c, the rash appeared on the evening of the 20th. The eruption was moderate in amount, most of the spots did not proceed beyond the papular stage, the few which protruded became lattuce-yellow, & subsequently shrivelled rapidly.

On admission on June 22nd there were the usual signs of breaking down of left aper, & of a cavity at the right aper, there was also a pleuritic pain audible over right iliac.

June 28th Rash fading; there has been diarrhoea the last two days; menstruation set in yesterday.

Patient died towards midnight, & the autopsy showed extensive destruction of lungs, thymus.

It will be seen that the temperature in this case deviated markedly from the usual type, a circumstance of itself sufficient to indicate the presence of complications.

Case XVI Varile Divesa

James Cross. 7. Unvaccinated.

Symptoms: moderate; fretting on face, wrists, back & feet; somewhat peevish elsewhere. Secondary fever proceeded with moderate intensity. At the end of the second week; the temperature then ran up, & assumed a different type. This rise occurred when desiccation
derivation was advancing, was accompanied
with bronchitis, laryngitis, and with extensive
occurrence of boils in various parts of the
body. Death resulted from exhaustion.
As the post mortem, the larynx & trachea
was much congested, the former having small
greyish ulcer which looked like the site of
spots. No very extensive examination
was made owing to the deteriorating smell
of the subject.

Case XVII. Variola + Delirium Tremens.
John Pacey, 39. No vaccination year.
His wife says he is an habitual drunkard,
and has been drinking heavily the last week.
She says that on
June 20th he went to work as usual, but
soon returned to bed, with pains in the head
and limbs. On June 21st and 22nd he worked
for a few hours, but was complaining of pain
in the back, headache, and vomiting several times.
On June 23rd the spots were noticed on the
face.
Admitted June 27th
Expression frightened and wild-looking;
pupils dilated; very tremulous.
Tongue large, tremulous, coated
with a moist, creamy film; one or two spots
appear.
upon it & also on the movable membrane of the mouth. Bouts have been constipated.
Heart: pulse 70i; pulse full; 12 8.
Respiration hurried & irregular.
Skin moist; thinly covered on the face and arms with slightly umbilicated papules, a few
visible here & there; on the trunk & lower limbs are numerous papules. The eyes
are suffused; often in some cases conjunct., the erythematous base of the papules adds to
the appearance of needles which the face
suggests.
He is very excited just now, exclaimed. To
be more.
Urinal Phosphate, with faint trace of albumen.
June 29th
He has been sincerely delirious the last two
nights; constantly trying to get out of bed
unless watched. He succeeded once, & made a
push for the window & pulled down the
window-panes. He frequently refuses to
take anything from the nurse, believing it
the poison which he is to be murdered.
He is now shouting all over, & covering down
in the bed from imaginary pests which terrify him. The pest is on turning; a
few punctures are forming on the face, many
are vesicular. The face tends to a yellow
colour.
July 20th. Many Influenza are dying & settling; others advancing. Bulla forming on wrists. Influenza procure slumber occasionally, but when awake she watches the movements of people in the room, occasionally becoming frightened & "getting quite wild" as the nurse says.

She is very "low" just now; tongue glazed & tremulous; tremor of hands & arms, with occasional grinding with the bed clothes.

July 30th. Patient died today; he was not conscious at any time, a very innoxious circumstance in ordinary uncomplicated small-pox.

Cases XVII & XIX. Varicella
Sarah Pennington 9.
Louisa Hanton 11.
Both cases were unvaccinated; in both the eruption was copious; the symptoms were of almost equal severity in the two cases until intubation occurred. The jaunty in the one case assumed a healthy yellow color, & in the other became ashy white. The charts are indicative of the subsequent course of the disease in the two cases; in the first the prognosis was favourable, very unfavourable in the other.
Case XX. Varicella.
He was admitted about the 8th day of the disease, his body covered with many hundreds of spots, varying in development from vesicles and blisters on the face, to papules vesicles on the upper extremities.
The points of interest were the extent of the suppuration, & the unhealthy character of the pus. The pain was greatly relieved by baths, & the patient was constantly begging for them.
But they appeared to increase the suppurations to add to his exhaustion; the variolous odour was exceedingly strong.
He was perfectly conscious throughout, but bore a very storming view of his case.

Case XXI. Varicella Confluens.
She was quite well up till 6 a.m. on Feb 10th, when she awoke with a violent fever; during the day there was intense headache, pains in the limbs & back, nausea & vomiting; menstruation set in unexpectedly.
On Feb 11th, 2nd day of illness, her aspect was indicative
indicative of collapse. The face was pallid a
leaden, eyes dull, conjunctive bloodshot. The
l tongue was of normal size, coated uniformly
with thick white fur. The mouth had been
congested for several days.
The skin was wet with profuse clammy
sweating. The hair being quite wet with
it. There were one or two "dyspeptic-looking"
blotches on the nape of the neck, they were
painted, soft, & about as big as a bean. On the back
were about a score of slightly elevated, pin-
head, macules, faint pink in colour; on the
wrists were faint indications of the same spots.
The points of special interest are, 1st
the early indications of eruption; 2nd the very
gradual fall in temperature, extending over two
or three days, & the brief period it remained
down; 3rd. It was shown that 12 days before
her initial rigor, viz., on Jan. 30t, she washed
clothes worn by a small poor patient. She
was then told by her employer that she
should get vaccinated, but declined this, as
the "did not believe in it." She was vaccinated
on Feb 11, but the effect was nil.

The marked enfeeblement of the eruption, & its early
a gradual development were terribly effective
in bringing the patient to a condition
indescribably ghastly & horrible, more marked
by
by contrast with the previous pre-processing appearance.

Case XXII. Varioloid.

Henry Higlett, aged 26. 2 vaccination marks. The chart of this case shows curious exacerbations of temperature, due simply to boils which appeared in great numbers for several days. This chart commences about the 14th day after the suppurative fever had entirely subsided.
Clinical Notes on Fever, &c. (continued).

by

E. W. Hope M. B., B. Sc.
The use of Baths in Fever.

There can be no doubt that baths furnish one of the most useful and important therapeutic agents we possess; their employment must however be guided by a careful consideration of all the symptoms of the patient, as there can be little doubt that their indiscriminate and routine use must in many cases be attended with results the reverse of beneficial.

To be guided in the administration of baths by one symptom alone, i.e. to lay down a rule that because the patient's temperature is 102° or 103° or 104°, therefore he is to be put into a bath, is to assert furthermore that this treatment must be had recourse to as often as the rise in temperature shall indicate a supposed need for it, is not only unscientific, but, if adhered to, must be very frequently prejudicial to the patient's chances of recovery. There are many instances in which the temperature may reach 105°, and yet a "cooling" bath be quite unnecessary, whereas we may be able to say that in a few hours the patient will have a normal temperature, if left alone; and again on the other hand cases with a temperature as low as 102° or 101° may be very greatly benefited by rapid bathing.
Baths certainly ought not to be administered as a routine practice, on the contrary, the conditions and indications for their use are as clear, and need as careful consideration, as those for the administration of food, alcohol or drugs. Many of the reports which from time to time appear in the journals relating to series of cases in which the routine use of the cold baths has been attended with extraordinary benefit are open to objection; for example, the Lancet 1869. II 439 records as the result of the cold-water treatment of typhoid, a mortality of 5.7 per cent. (847 cases, 48 deaths.) But Dr. Cayley, who, at the London Fever Hospital, has every facility for carrying out the cold-water treatment under the most favourable circumstances, gives very different figures. Dr. Cayley aims at systematically keeping the temperature below 102.2, and his mortality in a series of 130 cases (mostly severe ones) is 13.8 per cent. It may be assumed that these figures, so far as they go, give a better idea of the results of systematic bathing than many accounts do. Exceptional mildness of type, or even error in diagnosis may in part be answerable for discrepancies; cases, or series of cases occur again and again, in which typhoid runs a mild and benign course; and in most such, the employment
of cold baths is not only unnecessary but dishonorable & prejudicial. But, it may be said, that in typhoid we cannot tell whether a case which is mild at the commencement will run a mild course throughout; therefore it is advised by some that the temperature should be persistently kept below 102° by means of baths. I do not see how this can improve matters; it seems better to "let well alone," or not to interfere unless there is some evident need for interference. Anyhow, an experience of a few scores of cases is not enough to dogmatize upon, many hundreds need to be impartially studied before any absolute assertion is laid down; & this circumstance alone shows one thing, & that is that the advantages of the "cold bath treatment" cannot be so distinctly great as some observers think. Unfortunately, cases are only too frequent in which baths, like other remedies, are inapplicable & ineffectual.

In many cases direct & speedy cooling of the body is essential to the preservation of the patient's life; & in very many more it lessens the urgency of the symptoms, & thereby removes factors which tend to prolong the disease, or which threaten ultimate recovery. Obviously a temperature remaining persistently
at or above 105° for many hours, calls for a rapid depression, and in most such cases a tepid bath, cooled to the required degree, can be administered with the best results; it must also be remembered that cold sponging will always produce temperature as far as is needed; if also serious constitutional disturbance arise with a temperature of 108° or 104°, it may be lessened or removed in many instances by recourse to the same means.

Some examples may be given of cases of fever in which the temperature alone, is no guide whatever to the necessity of bating.

The normal fall of temperature at some definite stage of a febrile complaint, may coincide in its commencement with a morning remission, or it may commence at evening when otherwise a rise would be looked for, and continue through the night.

For example, in the case of small-pox there is a steady rise until the eruption appears, when a more or less sudden fall occurs quite irrespective of the period of the day or of the treatment adopted. No doubt a tepid or warm bath, say about 98° to 100° F. may be given with benefit at any time during this critical stage, but if the temperature of the patient is to be the guide it would be deemed
deemed necessary to give, not a tepid but a cold bath, inasmuch as the patient's temp. would probably be about 105° at the beginning of the third day. This would cause short discomfort to the patient, increase of temperature in the internal organs as shown by the rise in the pectoral coincidental with the fall in the axilla, & moreover it appears this initial fever notwithstanding that the temperature speedily resumes its normal course, & if no harm have resulted from the bath, will soon fall in the ordinary way.

Warm & tepid baths & sponging are of great benefit in small-pox. In excessive suppuration sponging is preferable to baths, inasmuch as these latter seem to increase the suppuration, a circumstance which, apart from the necessity of avoiding any effort on the part of the patient, contra-indicates their use. During convalescence they are obviously a necessity.

Except in the rare cases of unusual hyper-syphian with proportionate constitutional disturbance, or in cases of early delirium or tendency to come, it does not seem that much benefit can be expected from cold baths in this disease. If it appear desirable to employ cold baths in the later stages of this
This disease, or indeed, in the later stages of any fever, there is a very important point to be noticed in connection with them, viz., their effect upon the temperature of the internal parts of the body, as indicated by that of the pectoris. This should if necessary be ascertained while the patient is in the bath, or if it be found that the circulation is so disordered that there is a rise of temperature in the pectoris, coincident with the fall in the axilla, the patient should be at once removed. In cases such as those of advanced typhus about to end fatally, this condition may be observed, a rise of temperature preceding death by many hours; the temperature is high because the patient is dying, but the patient is not dying because the temperature is high; it is a consequence of dying, but not the cause of death.

With regard to typhus, my impression is that cold pack, or cold sponging are preferable to moving the patient into a bath; by these means any effort on the part of the patient may be avoided; the strain upon the heart obviated; in typhus it is of paramount importance to husband the strength. Quinine may be used, but its effect is sometimes almost nil, while salicylate of quinine is apt to produce violent headache.
Headache, & delirium.

In Scarletina tepid warm baths & sponging can be employed with advantage in most cases. If cold baths are deemed necessary, the patient should be placed in the water at a temp. of about 98° & it should be gradually cooled down to the required degree; by these means shock & fright will be minimised. The temperature of the patient is only one of many symptoms to guide the employment of cold baths, too much stress must not be put upon it alone. Cases 34 & 35 are instances of the many examples in these, that extremes in temperature, regarded alone, afford no clue whatever to the severity of the disease, or the necessity for barking, or employment of other therapeutics.

The instance, not to say cruel practice of employing a cold bath whenever the temperature reaches 103° has its advocates, but very inconceivably questionable evidence is forthcoming in its support. In this hospital warm baths & sponging are freely prescribed to, but cold baths only under circumstances in which there is evident need for them; the mortality of the last 600 cases is 6.7 per cent, which is certainly not unduly high, & there is no reason to suppose that
that a free use of cold baths would have lessened it.
The temperature of every bath should be determined by the thermometer, & in no case should the hand alone be put into water.

Subjoined are cases of typhoid which present points of interest.

Case 1. Venous Thrombosis.
Louisa Brown, 21. Nurse in the hospital. She has been employed during the last two months with cases of typhoid, several of whom had considerable diarrhoea, consequently a good deal of soiled linen passed through her hands.

Her illness commenced very soon after Christmas day; languor, depression, loss of appetite & a little diarrhoea being the chief symptoms. She painted on Dec. 27th & observed an evening rise of temperature on that day, but made no complaint until Dec 30th.

Dec 30th. Well-nourished; moderate colour in cheeks; lips, gums & conjunctive pallid. Tongue pale & moist, indented at the edges. Abdomen
Abdomen full + tympanitic; bowel motility open since 28th

Acute bilious bruits at base, heard also over cardiacs; venous hum in neck. Pulse 100, full, soft.

Respiration 32; somewhat harsh at apices; no cough.

Breath foul.

Skin dry & hot; no perspiration.

Urnie 1024, clear, no deposit; no albuminuria. Catamenia is usually variable.

Rosacea appeared on Jan. 29th; worse & diarrhoea. Pulse was noted on Jan 30th.

The disease followed the usual course of typhoid, the symptoms being somewhat severe; but no untoward symptom occurred until January 22nd, (about the 28th day of the disease) when the gradual & favourable deference was interrupted. For a day or two the head complained of slight "pneumatie" pains in the leg, now the does not hurt nor feel so well. The cheeks are sunken, & flushed in circumambient patches; buttock & hips are dry. Tongue moist & pale; no spotting; Pulse 120.

Jan 29th. He was complaining last evening of aching & shooting pains in the left thigh and iliac region; & had a restless night in consequence of this. Today the whole leg is uniformly swollen & tense & painful; pain is greatest in the upper part; it is aching in character. No hardness can be detected in the veins, but the
the limb is tender, & there is considerable congestion of the superficial veins on the outer side of the thigh. The temperature is elevated, & constitutional disturbance corresponds with it.

The leg was raised, & warm fomentations, spritzed with Ty rosin, applied to it.

Jan. 26th. 32nd day. There was very little change until today, when pain & uneasiness diminished, & the swelling commenced to subside from the more elevated parts. The temperature which is markedly remittent in type, approached more nearly to the normal. Heart fair; Pulse 116.

On Jan. 30th. 36th day of illness, & about the 10th day of the phlegmazia, the temperature was normal. The leg was still swollen; but hard, pulsatile knots could be distinctly felt at intervals along the femoral, popliteal & saphenous veins, from the inner side of the calf up to Poupart’s ligament.

From this date convalescence was satisfactory but slow. Rest was ensured, & careful attention paid to the state of the bowels; motions & easily digested diet was given, also b.o.p. of pepper, & the citrate of iron & ammonia.

On Feb. 14th, ordinary diet & Bland’s pills were ordered, & on the 20th she was allowed to get up; the venous about the knee, & inner side of the calf can still be felt, & the joint tends...
to swell if she walks, or even stands much.

March 11th. Very much less illness; general condition good. At visible the size of a small pea can still be felt in the saphenous vein; the leg will swell unless locomotion is restricted, but not to a great extent. She leaves for Brighton today.

March 29th. Doing well; improved in every way.

Venous thrombosis in typhoid is not common; Murchison & Liebermeister respectively note it in about 1 to 2 per cent. of their cases; the latter has once with it most frequently in women. In 3 cases which have come under my own notice, it occurred in endemic women with weak, feeble, pulse; the left leg was affected in each case & closely resembled the phlegmasia dolens of peripheral women, except that it was more tedious.

The following is an instance in which all the members of a family, 7 in number, were attacked with typhoid, owing in all probability to the escape of sewer gasses into the house.

A diagram of the drainage construction is appended, & an explanation of it is given on pages 71 & 72.
Explanation of diagram:

The house is situated at the head of the sewer J, which serves both sides of one half of the street. The whole house had been closed, every window fastened for some weeks, during the absence of the family.

The water-closet A, is situated between two bedrooms, the size of which is about 12 x 12 x 12 feet; one is without a fireplace, both are close & stuffy. A consists of a simple pan with a cistern Q attached to it below; it is supplied from a separate cistern. There is no provision for ventilation between the closet & the 6-inch soil pipe D. C is a one-inch lead pipe to ventilate D, which had got bent upon itself, & almost if not entirely occluded.

B represents the closet, which was seldom used; it is connected with the soil pipe by means of the waste-pipe C, on which is a siphon trap E. F is usually plugged with a cork, as a foul smell issues thence.

H is a drain-pipe opening into the house-drain I; it is blocked up with refuse & dirt; rain flows over the roof-gutters.

J is an unventilated circular sewer, receiving D. D is placed outside the house.

K represents a pantry sink which until
until lately was connected directly with the sewer S; the bell for the trap M being lost, a foul smell came through M, & the earth waste-pipe was disconnected between N & O, outside the wall P, & an open gutter, O, made.

The arrows show the only course the sewer gases could take, into the house; the defective traps, dry from disease, being no obstacle, & the insufficient ventilating pipes & H being practically valueless.

The whole sewer may be said to have been ventilated through the bedrooms of this house.

It appears that a clerk named Betty, 30 years of age, & in fairly comfortable circumstances occupied the house, which was situated in the middle of a respectable street. His wife, 5 children & a female servant lived in the house; the latter, occupying an attic apartment from the rest of the family, was the only one who escaped the disease.

During August, the family were away for a holiday, every door & window of the house was closed. On returning, they noticed an abominable smell pervading the house, but as they had frequently observed a similar though less intense one, they contented themselves with
with airing the rooms by temporarily opening the windows.

Almost 3 weeks after their return, a child, 2 years old, became ill with "diarrhoea", a died of that (?) complaint a week or two later.

After the lapse of a few more weeks, another child aged 1 year became ill with similar symptoms, & she also died.

Almost the time of the second death, the father & another child became ill, & these two, as also the mother who was thought to be acting, were sent to this hospital, the two other children following in about a fortnight, each of them affected with typhoid fever.

Some of the symptoms in connection with the course of the fever, in one or two of these cases, are interesting enough to be recorded:

(Case 24.)

Alfred Betley, 30, Clerk.

Has been ill about 9 days, with headache, languor,

fever in the limbs; he has been in bed since the commencement of the illness.

Admitted Nov 19th. Well nourished, face flabby;

hot,""

pression anxiouo; circumv""

flush on left cheek.

Lips & breath dry; tongue clean & moist; there has been slight diarrhoea. Abdomen full, gurgling on auscultation. Heart
Heart fair; pulse 84, weak & compressible.
Respiration tranquil, occasionally uneven in character.
Skin moist; a couple of pox-like on belly, one on chest.

Very respiratory & apprehensive.

Nov 28th, 1st 18th day of illness.
Expressiv vacant, face irregularly flushed. Pupils contracted; saccus inarticulate & tremulous.
Lips on chest & lips; tongue dry & brown, tending to glaze along the centre. Abdomen tender.
Shock increasing, the last 6 motions were stained with blood.

Pulse feeble & diastolic, occasionally 'jumping'; 75 sound very faint at base.

Respiration 32 to 36; occasional cough, without any expectoration; few dry pills in chest. Breath foul.
Skin moist & greasy; one or two new spots have developed & faded.

There is marked tremor, relaxation of the sphincters, restlessness, a quiet delirium, at night.

Since admission the diet has consisted of 5 oz. of milk, alternately with 5 oz. of beef tea, every 2 hours ("typhoid" diet), also 2 eggs, 4 oz. of brandy in the 24 hours.

He is now ordered 3 oz. of brandy every 2 hours. An infusion of starch, opium, & astrinvent, sometimes every 4 hours. If hemorrhage recurs he will

[Signature]
have the pernicious fever.

Unusual 2.

Aug. 20th, 1871.

On Nov. 30th, hemorrhage, (about 10 oz.) occurred, it was checked by the turpentine, which imparted a strong odor to the stools, subsequently passed during the next few hours.

Urines and stools are still passed involuntarily, & the general condition is bad. A little urine drawn off by the catheter is alkaline & phosphatic, but free from albumen.

Dec. 3rd. Face pulsed, eyes closed; marked tremor & substundus.

Tongue dry, brown, creased & contracted; tremulous & protruded with difficulty; abdomen a little full. Diarrhoea is diminishing; there is no trace of blood, but the stools smell of turpentine given last night on account of hemorrhage. Heart-pounds are barely audible; pulse irregular, diastolic, wavy, & compressible.

Respiration 28; noisy. Varying pulse, dry musc; occasional slight cough.

Skin dry; pulsed over the temples. No new spots.

He swallows whatever is given him, but as to the nature of it, he takes no notice of anything. He sleeps fairly at intervals, restless & thwarting his legs when awake.

Urine contains a faint trace of albumen.
From Dec. 5th to 7th there was slight improvement; trouble diminished, and he occasionally made his wants known.

On Dec. 8th (28th day of disease) a severe rigor preceded a sudden rise in temperature; with it all the serious symptoms returned. No new complaint was made, two new symptoms appeared; but two days later several proceed appeared; the temperature followed a somewhat pelagic-like course, attaining its maximum on Dec. 12th, the 32nd day of illness, and 34th day of supposed pelagee. The next three days, it fell a little, it then became irregular, the condition of the patient being very critical. The urine of this time was albuminous.

On Dec. 18th the condition was briefly as follows:

Face dusky, sticking a little about the nose 

Forehead; expression dull, eyes vacant & glassy.

Tongue dry, brown 

Tremulous; discharge less.

Pulse rapid & feeble; heart-pounds barely audible.

Respiration irregular 

Noisy; about 30.

He lies helplessly on his back; eyes + mouth half open; muttering inarticulately & tremulously.

There is occasionally an extreme shaking tremor of the jaw, & body; restless movements of the legs, 

dephlogistic 

depherin are almost constant.

Asthma & tremor were prominent up till the 20th, when he died, on the 40th day 

of the disease, without any new symptom.
such as pain, sweat, or more unmarked collapse.

 Sectio:

Considerable loss of flesh, but there is still abundance of subcutaneous fat.

Heart contracted; joints partly decolourised, clots in the left ventricle & aorta.

Lungs congested & oedematous, especially at bases. Spleen large, dark & soft.

Liver pale & firm.

Gall bladder & stomach; full of irregularly shaped & mottled gall-stones, 105 in number, varying from a pea to pin-head in size.

There was no history that gall-stones had ever been passed; some were observed in the stools passed during the illness, but were not found in the intestines; from their minute size it is however quite possible that some may have been passed unnoticed, and, by irritating the ulcers, have contributed to the fatal issue.

From the ileo-celcal valve, up to 8 or 9 feet of small intestine, there was extensive & deep typhoid ulceration; the patches in the 3 or 4 feet nearest to the valve were completely ulcerated away, leaving a smooth, thin peritoneal layer; one of these, about 18 inches above the valve, had given way, & a perforation about two lines in diameter resulted; the great exhaustion of the patient
patient probably prevented the manifestation of any new symptom when this occurred. Higher up in the bowel, there were many large yellowish stools separating in the usual way.

Cold damp sponging was frequently resorted to in this case, & the patient undoubtedly benefited by it. Haemorrhage, & feeble heart contra-indicated cold baths; so an example of the effect of the sponging, upon the temperature I give the note of one sponging on the 37th day of the illness:

<table>
<thead>
<tr>
<th>Temp. before</th>
<th>Temp. after Sponging</th>
</tr>
</thead>
<tbody>
<tr>
<td>Axilla</td>
<td>104.2°</td>
</tr>
<tr>
<td>Rectum</td>
<td>105.2°</td>
</tr>
<tr>
<td></td>
<td>102.5°</td>
</tr>
</tbody>
</table>

This occasioned the patient no effort whatever could be performed without any trouble to him. The fact that the temperature in the rectum fell at the same time as that in the axilla, was of course an indication to continue the sponging.

The temperature on the chart is that of the natural course of the fever, recorded each time, as far as practicable, before sponging or other therapeutics was resorted to; the results of the sponging to are not recorded on this chart unless so stated, on the chart of other cases, in order that the normal course of the fever may be recorded.
recorded as far as possible.

There is a point I may refer to here, which is obviously of importance viz. the condition of the abdominal viscera in typhoid, & the importance of investigating it as far as practicable. There are however two symptoms in connection with this which are greatly over-rated, & are out of sufficient consequence to justify the means employed in many instances to elicit them; I refer to pain & gurgling produced by pressure upon the right iliac fossa. Many medical men make a practice of kneading the abdomen of the sickless patient, with a view apparently & to demonstrate gurgling as the typhoid, or to make the patient cry out; now the slightest application of the stethoscope will show whether gurgling is or is not to be heard, & in this way one benefit will be done to the patient; but any pressure upon the abdomen is wholly inadmissible, as the pain so produced is no measure of the lesion, & indeed irreparable mischief may be done before the desired cry of pain is elicited.

Then again, these symptoms are out of diagnostic use,asmuch as most people exhibit them; & even were it assumed that they are so, too great cannot be employed in determining them, for it
is as reasonable a proceeding as it would be for a surgeon to demonstrate enteritis to a class every day, in the case of a broken limb.

Mrs. Betley, 30. Wife of Alfred Betley.
Admitted Nov. 19th

Well nourished; face flushed; expression anxious and confused.
She has been ailing for some weeks; but three or four days ago she became very weak & ill; she
has been in bed since 16th.

Lips & teeth are dry, with tendency to cedema;
tongue moist, raw, & red. There is great thirst.

The abdomen is a little prominent & tender; bowels
open once daily.

Heart-pounds good; pulse feeble 108.
Respiration 24-26. No cough.

Still very at present, but she has been sweating profusely. There are some spots of pinkish, pomegranate scattered over trunk & limbs irregularly; interspersed among them are a dozen or so of pink pea-sized, slightly elevated spots. In about a couple of days this rash, which was suggestive of typhus, but due to flebitis, was almost entirely gone; & one or two typhoid proctitis had appeared on the abdomen.

Urine 51 op. 1020. Albumin 1/10; no leucocytosis to
account for this.

Nov.
Nov. 25th (about 14th day of illness). Face irregularly flushed; aspect bad. She has been pitiful the last 2 nights, fretting about her children. The tongue remains pale, red & smooth; abdomen prominent; lumbal & tender. She has been vomiting frequently, is able to retain very little on the stomach; diarrhea is increasing. Heart & pulse are feeble; there is occasional cough; few dry rales in chest.

This day, went to the dentist a good deal. Swellings have appeared on the abdomen & chest, also several fresh pustules have appeared & faded again.

There is no tremor.

An ice bag over the epigastrium temporarily allays the vomiting, & in this case more effectively than bromides; small doses of Ac. Hydrocyan. Dil., & Lif. Mag. Mus. are given to the same end; also ice to drink, & small doses of red champagne; Brand's beef essence is retained in small amount. Half an ounce of bromide every two hours is ordered, but the monose prevents its administration.

Nov. 26th (15th day of illness).

All day yesterday she was feebly sitting about in the bed; 15 drops of Lif. opii ied, received a few doses, rest towards evening.

At 10 p.m. she vomitted, chiefly bile, & very soon after
after, the bowels acted, & 4 oz. of blood-cloth passing with stool. Three grains of ergotamine were injected into the glutus muscles, & a light ice-bag placed over the right iliac fossa, absolute quiet being enjoined.

At 9 a.m., about 5 oz. more blood was passed by the bowel, & the temperature fell suddenly, the fall being accompanied with sweating, tachydy Pulse, coldish perspiration & sweat, also involuntary micturition. Moreover there was considerable abdominal distension, & the abdomen was no longer tympanitic, but dull, apparently especially so in the direction of the colon. This symptom, as will be supposed, was ascertainned with extreme care. Fatal collapse seemed imminent, & 3/4 bromide was given in enema, & one grain of ergotamine injected.

By 1 a.m. there was a little improvement, the patient having slept about an hour. Pulse a little better, & less rapid; the face was sunken, but of lips rounded, tongue pink, freckled & glazed. She is quite conscious, complaints of hunger & fatigue.

At 3. P.M. The heart's first sound, & pulse were inappreciable; 2nd sound at base, strong, 160.

Hands & face blue, cold & clammy, Respiration deepening, & abdominal; groaning expiration. Death occurred about 6 p.m., without any further change preceding it.

Sectio.
Heart & lungs, all right; the latter a little congested.
Spleen large, soft & puffy.
Liver congested. Gall-bladder thickened & large; containing 35 smooth faceted gall-stones, all about half an inch in diameter.
The greater part of the intestinal tract is deeply stained (internally) with blood which has gravitated into it; the large intestine & ileum contain a quantity of a chocolate coloured mixture of blood & feces, chiefly blood.
Immediately above the ileo-cecal valve is a large patch of infiltrated & shrinking glands; at a point quite close to the valve, the ulceration is exceptionally deep, it has almost the appearance of a jagged cut; a vessel ulcerated into at this point thus given rise to the profuse hemorrhage. Peyer's patches are mortally swollen & infiltrated for several feet up the ileum; many have a petechial appearance from ulceration of individual follicles.

It is curious that gall-stones should have been found in both hands & knife. In this case there was no history that any had been passed at any time, nor were any observed during the patient's stay in the hospital. Moreover from their size, & the smoothness of the bile duct, it is improbable that any could have been passed without giving rise to very marked symptoms.
Case 26. Cogan's eruption; free desquamation.

Edith Betty, aged 7.
Admitted Nov. 22nd. Delicate; somewhat tubercular aspect.

Flushed, shiny, chest, dry tongue;

ripped belly; diarrhoea; thirst & dry skin.

Nov. 25th (11th day of illness)

Face irregularly flushed in circumscibed patches

on nose, chest or chin; teeth & lips dry; tongue dry & brown; pretendined sallow; abdomen full & tender, diarrhoea increasing.

Heart beat, pulse small, 140.

Stomach dry & hot; that of hands & face is shiny & tense-looking. A very profuse rash of rose-colored spots has appeared the last day or two; they are now scattered in groups over the chest, belly & limbs. They are pale, rose-colored, punctiform, spots, disappearing on stretching the skin; they are identical with ordinary typhoid pustule.

They are also present, but in less number, on the back.

During the whole illness the stool was almost always dry; the pustules appeared in groups,

while the old ones faded, until Dec. 7th (22nd day of illness) when they commenced to subside.

The skin then became very rough, & from Dec. 10th to about the 14th desquamated freely in small flakes, especially upon the chest, belly, arms,...
Sensation was extreme; convalescence slow but satisfactory.

The course and severity of the fever is indicated by the chart; the sudden rise in temperature which is commonly preceded by the final subsidence is well shown in this case.

Case 27.
Herbert Rossiter, aged 8 years.
Admitted Nov. 20th.
Tubercular aspect; deeply conjunctivitis, lachrymating.

Disease was typical of a moderately severe course, a good idea of which is given by the chart.

As convalescence progressed strength returned; marked indications of mental weakness were observable. He took no notice of anything or anybody; would occasionally get into peculiar attitudes & gaze vacantly & fixedly before him, for an hour or more, hardly moving at all. At other times he would scream vigorously for hours without any ascertainable cause; his expression in the intervals being absolutely vacant & insensible. This condition was first noted on Dec 6th & was very marked up till the 13th when it

Commenced.
commenced to diminish, & in about a month she was all right. There were never any signs of squinting, grinding of teeth, etc. Jaundice &c., during this interval period, she neither liked to be moved about; so it was probably due simply to temporary degeneration of the brain substance arising during the illness.

Case 28. Relapse.
George Howard, 22, Carpenter.
In this case, throughout the whole illness, there was constipation, necessitating recourse to enemata every 3 or 4 days.
Several proceed were noted during both the primary disease & the relapse; also crops of undanoma.
There was a persistent subsidence of the primary disease; normal temperature & pulse lasted 6 days, & then followed relapse. It is one of the most typical I have seen, & well shows the various peculiarities of regular relapse, which may be briefly recapitulated.

Relapse in all its symptoms bears a strong resemblance to the primary disease, notwithstanding that it may vary considerably in many points & in different cases. Its regularity of temperature is sufficient to distinguish it from exacerbation & complication.
An interval of apyrexia is by no means always present, nor is it constant.
A relapse may interrupt the ordinary course of the primary disease or of a previous relapse at any stage, if the disease begins, as it were, anew, without any apyrexial interval. This fact makes it very improbable that relapses can throw any light on the incubation period of typhoid.
Relapse is considered to be a frequent sequel to mild cases; hence the desirability of prolonged observance of such cases. It is also considered to be more frequent in cases which have been subjected to anti-pyretic treatment, e.g., bitters, than in others.
The pre-infection which presumably takes place in relapse, may be due to persistence of the local lesion, or absorption of infective material from the bowel; or virus may be absorbed from an infiltrated gland. According to Maclean, constipation predisposes to it; styphlas would be very apt to paw the surface of an ulcer.
The mean duration of relapse is 15 days, according to Meurice; primary relapse is 21 days, according to Irvine, who states that there is "usually an apyrexial interval of some days, when a sudden renewal of fever..."
fever occurs; the maximum is reached on the 5th day of relapse, and declines slowly & slightly to the 9th when it falls & rises in the usual subterminal manner. Fever persists to the 15th day, & intermittent fall to, or below normal, continues to the 21st day. Convalescence is then rapid.

Septicemic conditions may be distinguished from relapse by the course of the temperature & the general symptoms. A septicemic, or at all events, mortality persistent course of temperature, very commonly takes place from the 14th or 15th day to the end of ordinary primary typhoid, frequently only during the last week. But the persistence of specific symptoms, e.g., to prove it to be a continuation of typhoid fever.

A fluctuating & irregular temperature, whether it occur in primary typhoid or in relapse, is certainly to be regarded with more suspicion than a high regular one. It probably indicates complications, but these are not always ascertainable.

The height of temperature alone, is by no means a constant measure of the gravity of the case in relapse, any more than it is in the primary disease. In apparently the mildest cases some untoward symptom, as thrombophagia, or perforation, may arise.

Puh inflammatory processes in unhealed ulcers
may cause recrudescences, indication of or followed by, curative processes; inhaled primary ulcers may, by their septic condition make intermittent relapse alike irregular; hence, at the end of a typhoid fever disease, if the temperature is fluctuating, about 97° to 99°, for example, great caution is needed in the conduct of the case.

In the case of Bettley (1) and Squires (2) there was nothing in the gross symptoms appearances to distinguish relapse from the primary attacks, assuming that relapse had occurred in those cases.

Inflammation of the mesenteric glands, together with partial healing of some of the ulcers, was found in a case recorded by Pearson's Irvine; in this case the temperature was irregular. The duration of the apparent interval averaged 11 days according to Martin's; about 5 days in most of Irvine's cases.

Generally speaking, relapse appears to predispose to relapse; subsequent relapse being of shorter duration than the first one.

Relapse may commence with a continuous sudden rise of temperature, quite similar to that which is so common at the close of recrudescence in typhoid, but that it does not fall again to the normal; hence a few hours will determine whether relapse is occurring or not.
Case 29.
Arthur Davis, 14, schoolboy.
In this case which terminated favourably about the 23rd or 24th day, the temperature was markedly persistent during the last week—a common mode of termination of the disease.
In this, as indeed in almost every case, the pulse remained quiet for several days after the temperature had completely reached the normal.
Case 30.
Mrs Clements, 18, housemaid.
Precursiveness simulating commencing pellagra occurred immediately before the final subsidence of the fever. A slight mental excitement probably occurred this.
Case 31.
Lefèvre, 18, labourer.
In this case a precursiveness occurred which closely resembled the commencement of pellagra; the cause of this was not ascertained.
Case 32.
Mr Jacques, 30.
From the 9th to the 14th days the temperature was barely above the normal. Pustules and aphthoid sores were well marked. From the 15th to the 30th day varied between 100° a
102°, & then gradually subsided. The attack was moderate in severity, & exhibited the usual signs of typhoid.

Case 33.

Hæmorrhage — Longtime.
Ada Tyrwhitt, 16. Inmate of the Union-school.
Admitted Nov. 8th

On Oct. 31st she had two days' leave of absence from the school, & during this period she stayed in a house where two cases of typhoid fever had recently occurred, one of which subsequently died from hæmorrhage. Prior to this visit, she had not been from the school (except for exercise with the other inmates) for about 2 months; there had been no illnesses of any kind at the school for many months, & the sanitary arrangements there are good.

About 21 days after visiting her friends she felt out of sorts & had a little diarrhœa, but there was nothing urgent enough to complain about. On Nov. 1st (25 days after her visit) she was cold & shivering, & felt decidedly ill, but continued her duties until Nov. 6th when she was too ill to get up. The date the commencement of the illness from Nov. 1st, which would give an incubation period of 25 days, if the history be a correct one.

Nov. 8th: She is pallid, poorly nourished.
almost blind from infancy.

Lips & test clean; Tongue large, clean edges, moist yellow fur in centre, somewhat trametous. Abdomen prominent & tender; epigastic dulness increased.

Bowel open 3 times last night, 'hypochondrical'.

Heart sounds clean & sharp at afeet; 1st impulse at base; Jube + impulsa rect, 96.

Respiration 22.

The skin is moist & greasy; the sweat considerably.

There are one or two prococes on abdomen.

The is very frequit & irritable.

Nov 12th. Deanchea is considerable, too very little affected by astringents. At 9 a.m. yesterday she was complaining of abdominal pain and headache & was very restless, the two preceding motions had been almost formed; at about 9.30 there was copious hemorrhage from the bowel.

(about 2 oz. of blood clot) accompanied by alarming symptoms of collapse. 3 grams of ergotrine were injected, & an enema of starch + opium ordered, also a light ice bag to the ileum region. Nausea was allevied by sucking ice, but it prevented the administration of anything by the mouth for many hours, except very small quantities of Brandt's ice cream.

At 3 P.M. a little more blood was passed; 1 2 grams of ergotrine injected.

Soon after this, a quantity of clots & bloody serum, about 2½ oz. in all, escaped from the
brief, the patient being almost pulseless + in imminent peril. Syrup of brandy was given, and
an astringent mixture, composed of gallic acid, 
Tr. opii, Syr. Tardinet (m/2) + Syr. Eugot (m/8) ordind
every two hours. One or two small citrons were
passed ‘at intervals till 1 p.m. + some morphia. No
nausea. The astringent mixture was given every
two hours, after the first nine doses.
This morning she is quiet + comfortable, headache;
pulse firm + even, about 104. Respiration brisk at apex.
Tongue large + clean, a little little indicated. Abdomen
full. Respiration 30. Stomach moist; no eructo.
Nov. 15th
There were traces of blood in some of the citrons
passed on the 14th. The astringent mixture which
had been given every 4 hours since the 12th was
discontinued, & one containing bismuth + catechu
substituted. Getting Bismuth 4 oz. in 24 hours.
Face is flushed + warm; skin moist + greasy; one
or two oren spots.
Pulse soft + compensable, tending to diastole.
Nov. 20th About 2/5th day of illness.
On the ninth of the 18th she became greatly excited
by the admission of new cases into the ward, &
remained so all night, + was in consequence
moved into a private ward. After this night
of excitement she was extremely irritable and
half-conscious the following day. At present she
She is screaming loudly & continuously, compressing the lips & grinding the teeth. The eyes are open & she is squinting, or possibly is spasmodically oscillating the eye-balls laterally or up & down; the conjunctiva are white & glistening. She utters occasionally, & passes urine & feces involuntarily; unless subdued she lies constantly on her back. The feet & lips are bound: blood upon them from the lips which she has been biting; the tongue is dry & hard, protruded with difficulty.

Diuresis diminishing.

The heart-pounds are short, clear, & sharp, like a pebble heard somewhat.

Respiration 32; rhythmical. Immersion expirations.

4 p.m. She is now on her back, the hands are crossed; smooth & eyes half shut; constant twitching & tremor of the hands & face. There is slight resistance to passive movement of the fore-arms, almost spasmodic in character.

When spoken to, she replies incoherently, but asks for drink occasionally.

Nov. 27. There was some improvement up till yesterday. Today, muscular twitchings (shorter & more prolonged than those of uraemia or advanced typhoid) are prominent in the face & hands; also cramps & rigidity in the fore-arms & legs; the masseters are occasionally rigid & cramped. The thumbs are bent inwards, the palms...
The voice is becoming quite aphonic & whispering.

Thoughs are threatening to form on the breatharies or between the toes; minute dry, black, funerous specks, without any explanation are seen upon the head. There is also a black dry though the size of a shilling on each head. The toes are cramped & bent over towards the soles; they are not cold nor painful unless moved.

The pulse is pruninng twonary. Respiration quiet but phthisimical.

She has bitten a piece the size of a nut from the angle of the mouth, & requires constant watching to keep her from nibbling the raw surface.

Convulsion is noticed; the skin is dry, rough & scaling a little.

The moral condition is peculiar; she answers patiently when spoken to, in a breath aphonic whisper, but is full of horrible delusions about blood & effusions, believing she is fed upon one & lives in the other.

Dec. 6th was quieter than usual last night.

Cramps & rigidity continue; especially about the fingers & toes, hands & feet; the whole body, neck, hands & trunk is more or less stiff & rigid, remaining so in any position in which she is placed.

She sneezes profusely occasionally, & has her back covered.
covered with scabs. No progress to be seen. A dry, rough form at the circumference of the wound at the angle of the mouth caused by biting, is now separating. A deep slough is forming between the plates; the stria over the trochanters is sound, but there is a mernal redness over the respite to which white of egg + rectified spirit is applied. The spots on the heels + toes are apparently diminishing.

Dec. 15th. Face is usually moist + greasy; sometimes dry & scaly.

Tongue clean, grade of moist, not tremulous; the appetite is good, & she occasionally asks for food. The abdomen is diminished & retacted; digestion continues. This is not restricted; eggs, milk, claret & also scraps are given; + oil, bran oil.

The skin is blemished, dry, rough & peeling; excoriations very marked. A hard dry slough has separated from the angle of the mouth, leaving a circinate punched-out hole. The edge of a gum is gumming with granulating edge; the teeth + gums are exposed when the mouth is shut. There is a dry superficial slough over each trochanter; that between the striae is minor. Large + deep; the spots on the heels are gone.

The emaciation has almost entirely left the hands & fingers, & are diminished in the arms.
and legs, but painful tonic spasms tend to recur on movement; the face spasms are unaffected. She is perfectly helpless, makes no attempt to move or turn, a spasm engulfs her under her; there is no tremor.

There is a small Phlegmonea on the left corne.

Dec 20th: Symptoms remained much as usual until today, when she died apparently from asthmatic.

The daily record of the stools, pulses, urine etc. is on the chart.

Sectio.

Absence of any very noticeable.

Heart brown & soft; lungs deciduose.

Lungs large soft & red. No abnormal appearing about the liver & kidneys.

Mesentery glands somewhat enlarged.

Large intestine:– Close to the valve are several transverse almond-shaped ulcers, one or two longitudinal ones, bearing clean, slightly undermined edges & smooth base. Several similar ulcers in the valve itself.

Small intestine:– Immediately above the valve are several irregular-shaped ulcers, mostly with jagged undermined edges; this condition exists for several feet up the intestine, the ulceration becoming more confirmed at Peyer's patches. Here & there are completely
completely cured as to all other
No further examination could be got.

The use of ergot is not always unattended with danger, but its great value in cases of hemorrhage is best known than are possible dangers from small quantities of it.

Most authorities recommend it when the loss of blood is sudden + copious, or frequently repeated.

Dr. Ringer goes so far as to say that the statements made in therapeutic works as to its possibly dangerous consequences, must be very greatly exaggerated. (Hand-book of Therapeutics p. 509)

As regards the quantity to be given, Ringer says 30 to 40 drops every hour in severe cases, or 2 to 5 grains of ergotrine; Dr. Russell authors 5 to 10 drops every hour; Dr. Taylor quotes a case in which a woman is said to have taken 31 grains three times a day for 11 weeks, with a fatal result. (Medical Jurisprudence p. 570).

In this case 7 grains in all were injected in a period of 48 hours, during the following 48 hours 15 drops of ergotrine were given every 4 hours, i.e. 3 drachms of ergotine altogether, which cannot be regarded as an unusual quantity, but yet was sufficient to act most disastrously; its effects being first noted about 15 days after its use. With regard to the temperature, this was
modified between the 8th and 22nd day by hemorrhages and also by emesis.
From the 22nd to the 26th day a gradual fall occurred; at this time however, eczema appeared, and the temperature rose steadily to the 35th day. Then, without any appreciable cause it fell to 99°, and for the next 10 or 12 days bore the closest possible resemblance to petechiae; diarrhoea continued during this period, so the autopsy showed that ulceration had not altogether ceased. This last phrase then, was probably a petechiae, but the part played by the eczema was very clear.

I will now most briefly refer to Cases 34 and 35, as they are mentioned on page 65.
Case 34. Scarletina.
Patrick Parle. 9. Sore eyes, sore-eyes, furious, ulcerated and ill-nourished.
Admitted Sept. 29th, 2nd day of illness, in a drowsy helpless, semi-comatose state.
Throat much ulcerated; Rash abundant.
Cough increased; Pulse quickened, while temperature followed a gradual subsidence to the normal, when death occurred.
Case 35. Scarletina.

Mabel
Mabel Wright, 14. Schoolgirl.
The child lived many years—9 or 10—in India.
She had suffered 10 years ago from dengue of which she remembered nothing.
The first sudden rise in the temperature, as also the rest more sluggish, as the patient felt comfortable except that a very slight chilliness had occurred, was followed by slight perspiration.
No cause for the pain could be detected.
It will be seen that the exacerbations occurred chiefly in the morning.
Their malacinal course was interrupted when quinine was administered, and tended to recur when it was accidentally omitted, and finally stopped abruptly when the doses were increased.
Throat and other more typical symptoms of dengue were abundant, and convalescence satisfactory.
Some malacinal impress seemed to have been left upon the constitution from the dengue of 10 years ago.
There are one or two points in connection with Typhus which may be now referred to. With regard to any evil, prevention is better than cure, and in this case it is vastly easier. Poverty, intemperance, squalor and want are the prominent features of the low quarters of every large town, and wherever, as in Liverpool, these evils are intensified by the denseness of the population, there will an ample field be found for the study of typhus.

The substitution of wide, open streets for crowded courts and filthy alleys; appropriate, in fact, open means of ventilating the houses; personal cleanliness, temperance, and in consequence, better clothing and good food, will prevent, or greatly lessen, epidemics of typhus. There is abundant evidence to prove this.

Whenever typhus does occur, the patients should invariably be removed to hospital as the earliest possible time; not only on account of the necessity for removing the great danger of infection to which those about them are exposed, but also that they themselves may be placed in conditions favourable to recovery. Late removal, say, after the 8th day, is a disastrous proceeding with the patient. Appropriate ambulances must be used, and bedding, clothing, &c. should be taken away and disinfected, &c. by exposing its head of
about 300° F, then by free and prolonged exposure to fresh air. The room in which the patient has lived, may, with advantage be sulphurized, every opening must be closed, & one gram of sulphur burnt for every 500 cubic feet of space; after this the greatest possible ventilation must be had.

During the removal of the patient, care must be taken that she is not allowed to exert herself; she must be carried into & from the ambulance, must not be allowed to walk, or to undress herself. He may have a bath if appliances are available to obviate fatigue & exertion on his part; otherwise it is better to sponge him, & wash him at the same time.

Abundance of cubic space & free ventilation are essential, not only for the patient, but for the security of those who attend him. In this hospital 2,000 cubic feet would be the amount of space for each patient if the wards were full, but as they are rarely, if ever, more than half full, the typhus patients have generally about double this, while cross ventilation allows as free a supply of air as may be desired.

Nurses should adopt every precaution consistent with an efficient discharge of their duties, to protect themselves against contagion; open-air
open-air exercise & recreation, good diet, & rest must always be accorded them. Good nursing is in giving an inestimable advantage to the patient; nothing can be more satisfactory to the physician than the consciousness that he has the services of educated & intelligent nurses, on whom he can rely to carry out every instruction; encouragement should be given them to take an interest in their work; its dangers are only too apparent.

Rest & quiet for the patient being ensured, there is abundant evidence of the good effects of a necessity for fresh air, at a temperature of about 59° if possible.

Nourishment must be given at regular and appropriate intervals. A few of the notes sheets of a case of typhus are appended to illustrate the record kept of food, stimulants to administered by the nurse. If after long sleeplessness, the patient fall into a quiet sleep, he is not proved merely because this nourishment is due. Hememata may of course be had recourse to in suitable cases.

Alcohol.

In a disease so acute as typhus, it is undoubtedly an advantage both to patient & physician, if the latter have an opportunity for a close & frequent observation of the patient's condition,
condition, as far as it is practicable to make it. This is especially the case in those severe cases of what might be called uncomplicated apoplexy, in which for several days life seems to be hovering about the patient, whose extreme danger is intimated by the bewilderment, cerebral breathing, helpless, senseless state, interrupted by convulsions, twitching of the facial muscles, yells, hurried pulse, and impaired cardiac action. It is in such instances as these, that the marked benefit of alcoholic stimulants is best demonstrated, though in many other phases of the disease their benefit may be equally apparent. In severe cases an almost hourly variation of the pulse may be noticed, as the amount of alcohol needed can be best gauged by a consideration of this condition; in many cases its action is as unmistakably beneficial as is that of quinine in malaria. Under its use we find a rapid, soft, irregular pulse, become slower, stronger, fuller; a dry, brown tongue will become moist, and cleaner, as may be readily demonstrated by the return of the dryness if the alcohol is withheld, and by the tongue again becoming clean and moist when it is resumed; delirium is frequently diminished by it, but this symptom cannot be taken as a guide to its use constantly.
Dark + copious eruption + profuse sweating demand it, as also do the usual symptoms of prostration.

Albuminuria; while if low specific gravity + small amount + urticaceous symptoms, contraindicate alcohol.

As regards quantity, 30t to 3.5t or once every 2 hours may be given; more than 3.5t is purely needed, except in severe cases + towards early morning when it may be increased. The quantity should be diminished as soon as it can with safety. Hypodermic injections of 20 or 30 drops of Ether are recommended in severe cases of extreme prostration. I have frequently employed it, but could never find that the pulse or other symptoms improved by it.

Nervous excitement + shuddersness are often troublesome.

In the early stage, quiet, + removal of the brain, + the application of a light ice-bag, may relieve the headache + procure sleep.

Balmamis & quinine enemas will remove the brain with least trouble to the patient; the ice-bags should be as light as possible, including the ice, half a pound is plenty, + most of this weight should be borne by the pillow. Cries + grunting the head are bad + occasion discomfort.

Small doses of chloral or hyp. morphia.
May be given.
In later stages chloral is safer than opium; but when pneumonia is extreme the pulse has often slowed; chloral is a dangerous remedy. In these cases, if there is not great lividity, nor much pulmonary congestion nor albuminuria, my impression is that opium is safer than chloral, and certainly safer; the following may be given, and repeated when necessary:

Liq. Opium sed. on $X$
Addition on $XX$
Ag. Compuls at $Xi$.

But in cases such as these, extreme caution is necessary, as it is often hard to determine which course is the best.

When shortness of breath is associated with a strong, or even full, and bounding pulse, 10 drops of Liq. Opium combined with $g\frac{1}{4}$ of Aspirin. This is most useful; or if the heart be more rapid and sweat profuse, 10 drops of Liq. $X$, may be substituted for the aspirin. It may be repeated in 2 hours if necessary.

Whenever there is tendency to stupor, the action of stimulant must be closely watched. Cold or tepid springing may be preferred to coffee or tea may be given, but the boodh might well open by enema. Blistering may, if need be, be most rapidly effected by brisk friction.

Liq. Am. Fort. mixed with gutta percha.
Pulmonary, & other complications must be looked for; the position of the patient must be changed from time to time.

A few noteworthy points are illustrated by the following cases:

Case 36.

Thomas Hunter. 50.

Coryzal. Intestinal eruption. Relaxed sphincters. Slow delirium from the 7th day of illness. onset of increase in tremors, twitching from same period. Pneumonia was evident on the 13th day. Lord alarming expiration, a symptom which seems to be always followed by fatal consequences, commenced on the 14th day. Death occurred on the 16th day, & was preceded for 6 or 8 hours by very prostrated perspiration, giving the skin a bluish, rotten, appearance.

Case 37.


Well nourished & Innoculated. Plenty of Intestinal. about the posterior axillary folds, sides, arms & feet.

Well-morticed Jaundice, Typhoid; jaundice expirations.

Course of the disease was very favourable throughout, but the patient was very troublesome. The course of the temperature was unusually persistent, & subsidence gradual.
This case is one of the frequent and common instances in which resolution is gradual.
In typhus, ominous symptoms are by no means infrequent; and it often happens that concurrently with one of them, perhaps as early as the 9th or 10th day, there is a marked improvement in other symptoms: the mind becomes clearer, subcutaneous tension diminishes, pulse improves, the patient looks so much better that it seems as if early resolution by crisis had already taken place. At night however, temperature rises, all the bad symptoms recur.
It seems that this form of typhus is apt to be prolonged a day or two in its course; but pernicious in temperature, or low temperature, appears to be of far more favourable import in typhus than in other fevers, as the temperature is a more accurate measure of the severity of the disease in this than in other fevers. If moreover, the temperature be lowered by quinine or cold appareil, the improvement in other symptoms is not so marked as if it fall naturally.
With regard to resolution by "crisis", it is to be remembered that the phenomena indicative of general improvement endured under this term, are somewhat more gradual than the name implies. It needs close observation & practice to detect the earliest signs; although in 24 or 36 hours they are apparent.
apparent enough. A patient who has had a favourable crisis, may still look desperate; but examined as he may have almost been in anteroom until for hours before the crisis, any deviation in the right direction from this state must be hailed with satisfaction. Commonly the earliest observed sign (because the pleasant) is a fall in the temperature, but this may be preceded by other indications of improvement such as firmer pulse, tranquil respiration, and even voluntary change of position.

Case 38.


2nd day of illness.

The course of temperature is shown from the commencement of the disease.

He was critically ill during the 11th night; favourable crisis occurred on the 12th day, although the temperature remained up for several days after this.

From the 17th day, convalescence was very fair.

He says he did not suffer - or does not recollect suffering much during the illness, beyond headache, a sense of prostration at the commencement.

One of his delusions consisted in the supposition that he was with people; this propre self was disposed to be quiet & tractable, but the other self would insist in being noisy &
unnatural; the two semi-individuals would try occasionally to erect one another from the bed... At another time he was under the impression that he had other people among his companions; it was very anxious to return them to their owners. Pictures on the wall were taken for letters for directions, or heads of corpses, an idea which occasioned no uneasiness whatever. His attendants were regarded as priests engaged in some religious ceremony; and indeed when his mind became clearer, he made inquiries as to the nature of the rites previously gone through.

Case 39.
Thomas Hargreave, 32. Inspectors.
In this case there was unusually well-marked improvement by crisis, the patient being extremely ill for 3 days preceding it. The effects of alcohol were very beneficial, as well demonstrated.

Case 40.
Ann Thangood, 37. Maniac.
In regard to the condition of the temperature, a frequency of the jitters this case bears a close resemblance to the preceding; but it was far less severe. The patient was seen insomnious, tremor & palpitation were slight. The patient knew each time that urine was urinated after the
the temperature had reached the normal, there was
retention for 4 or 5 days.
Case 41.
The temperature is noted from the commencement
of the disease.
After the 1st day, 20-grain doses of quinine were
administered at intervals; their effect, as may be
seen from the chart, is slight.
On the 10½ day of illness the became somewhat
deep, a symptom which increased until the 17th or
18½, at the same time the voice becomes harsh
discordant, & deep in tone, like a creak.
Deafness is common in typhus, independently of
any medicinal treatment; I have observed
Hardness of the voice to accompany it in several
instances in which the natural tones of the voice
were familiar to one; no doubt these two
symptoms frequently coexist. From the general
tremor which exists when deafness & alteration of
voice appear, it is probable that these two
symptoms are due to nervous derangement, as the condition of the patient improves they
usually disappear, as occurred in this case.
Case 42.
Annie Bell, 30. Nurse at Bromley Hill Fever
Wards.
Admitted on the 8th day of the disease. Petechiae
were very abundant & large; sub-cuticular oozing & general distention of skin occurred. Great accessions excitement, tremor, enuresis & palpitation of stomach were prominent. The heart-pounds were pesky & syncopal; faint inclination present; pulse
\[125\] slow, restless, pulse. Respiration tranquill, 25; very fine gales over both lower in deep inspiration.

On the 11th day, (Feb. 24th) she was extremely weak, pulse rapid & wanting; face dusty, lips purple, extremities cold. Can swallow only with great difficulty, liquids apparently tend to flow into the trachea occasioning those gales similar to those occurring in ascites events.

The preceding night she had a few whiffs of chloroform, which however failed to produce sleep or depressed the heart apparently, leaving her with very little sleep. 20 grains of chloral were given, after which she slept for 5 hours, she then awakes in an alarming low state, but after stimulants & nourishment slept again for 2 hours. The dose of chloral was too large & caused depression, which however passed off.

At 3 p.m. she was muttering quietly to herself, lying on the left side, with the eyes closed. The tongue is evidently obstructed with foam, which she occasionally makes futile efforts to expelate. The mouth has a peculiar streaming effect, which
which consist in taking a somewhat deep inspiration, which is followed by a series of short groans and terminating in a louder groan.

13th day (Feb 24th)
The patient is in a profound semi-conscious state, frequently lying with the eyes open in a condition bordering upon coma-crit.
The eyes are sunken, pupils contracted, face drawn and greyish. The head helplessly in any position in which she is placed.
The tongue is small, dry, clean & red; tender upon the teeth & lips. There is considerable difficulty in swallowing.
The heart sounds are imperfect, pulse weak & feeble. Respiration is hurried & shallow, morning expiration, sublunary piles are heard in front occasionally. She continues to make the straining efforts before noted.
The skin is dry; the 'snotty' rash is fading into a faint cottony staining; the patches are very abundant & distinct, but these also seen to be fading. Throats are forming over the trochanters & praecox.
Tremor, & muscular rigidity are marked; when moved, the frame, as the nurse expresses it "all in one piece." There is occasional pain perversive. Urine & feces are passed involuntarily; the former dribbles away continually; a little drawn off
contains about 1/2 albumen. There is no retention.
14th day (Feb 27th) 10 a.m.
Some bad symptoms remained. At 2.30 a.m. she
narrowly escaped choking whilst being fed, & incumbe
ments were substituted for food by mouth.
Her pulse & 1st pound are barely appreciable; cold,
chill, fever, a lumbar, temporary pulse, cold back.
Died at 1.30 P.M.

A microscopic examination of the blood
from the 10th to 11th day showed large excess of white
corpuscles, whilst the red were irregularly aggregated
Together, or variable in shape from mutual pressure.
Here 8 there they formed pus-leucocytes.

This ends the cases I have selected.
I can best regret that various hospital duties
prevent a fuller reference to a subject of such
absorbing interest & great importance. There is
one practical point which this Institution
can help to answer; it is this: Are Fever
& small-pox hospitals sources of infection to the
neighbourhood? This Hospital accommodates
100 patients, is surrounded by walls about
50 yards from the building. Dwelling-houses
have been built not within 20 yards of these
walls; small-pox has frequently occurred in
these dwellings whenever there were many
cases
cases of that disease in the hospital. But I
never heard of any case of any other disease,
not even scarlatina, which could reasonably
be attributed to the proximity of this hospital.