Passed July 1883

Thesis

A clinical review of nearly four hundred Cases of Scarlet Fever

Richard Prichard M.B., C.M.

Belvidere Hospital
Glasgow.

June 1883

ProQuest LLC.
789 East Eisenhower Parkway
P.O. Box 1346
Ann Arbor, MI 48106 – 1346

Scarlet Fever

In a community so large as that of Glasgow, where there is a continual intermixing of the people not only with one another, but also with those of the world at large, it would be difficult, nay, impossible, to keep away altogether the Specific Fevers. But where even the ordinary precautionary measures are disregarded, the infectious diseases must inevitably always abound.

The question naturally suggests itself to one;- Which of the Fevers, under these conditions, will be the most prevalent? Undoubtedly, the greater number will contract that which is the more infectious.

Than Scarlet Fever there is probably no specific disease that is more readily communicated to those unprotected by a previous attack; and, so far as it is at present known, there is no contagion that retains its infective property longer than that of Scarlet.

To discuss what the nature of this virus is, does not

(lie)

lie within the province to which I intend limiting this essay. My purpose is, so far as compatible with a full and consistent narrative, to confine myself to the relation of facts based upon my own clinical observation of this disease at the Fever Hospitals, Belvidere.

A glance at the Statistics of this Institution — and it may be considered fairly representative — will very strikingly convince one of the great prevalence of Scarlet Fever in a City like Glasgow. For instance, during the year ending with the 31st March 1882, (i,e from 1st April 1881 to 31st March following, inclusive), there were admitted to the Hospitals 661 cases of Scarlet Fever and 1061 cases of all the other diseases, — viz, Typhus, Enteric, Febricula (ie, undefined febrile attacks), Measles, Hooping Cough, Diphtheria, Erysipela and Puerperal Fever. In other words 38.38 per cent, of the whole admissions were Scarlet Fever, or the latter disease was in the proportion of 10 to every 16 of all the other infectious diseases taken together.

Again, during the year ending on the 31st of March, last (1883), there were brought into the Hospitals 654 cases of Scarlet and 1177 others; that is, Scarlet constituted 35.72 per cent: of all admissions, or 10 to every 18 of the other infectious cases.

"The proportion, in the latter instance, is somewhat lessened in favour of Scarlet owing to the epidemic of Measles that has prevailed since the beginning of the present year. "Thus in Glasgow, at least, Scarlatina is the predominating disease of its kind during these years, — a circumstance, no doubt, due to the fact that its contagion retains its virulence, often for a long time, and is diffusive; and that, in this way, susceptible persons have ample opportunities of contracting it.

"Though chances for observing these qualities of the infection only rarely happen at Belvidere, accidents will occur in the best regulated establishments.

I will here adduce a case in point:—

(1) <u>That the Specific poison may be retained in or</u> (about)

about the once-infected person for a considerable period:-

I.B, aged 12 years, was admitted to the Hospitals on the 13th May 1882, with Scarlet. There was slight angina and fairly copious rash; except some rheumatic pains on the day after admission, the case was a mild and an uncomplicated one. Desquamation was complete about the 6th week. He was dismissed well on July 5th, after an hospital residence of 53 days. After his return home he slept with a younger brother, Willie, who on July 11th (i.e, six days later) was removed to the Hospitals with Scarlet, — the second day of illness. Here the coincidence is so striking, that the probability of the younger brother having contracted the disease from the elder amounts almost to a practical demonstration. And what are all the circumstances of the case? The first affected- I.B., — felt and seemed quite well after the 4th or 5th day of his illness, when the sorethroat had improved. He was permitted to get up at the end of the fourth week; had a bath twice weekly, and another bath just before left the hospital, when the clothes he wore

(here)

here were thrown aside, and his own disinfected ones put on. Then we find that a brother with whom he associated turned ill five days later. If the former got the disease from the latter, as appears most likely, where did the latent virus exist? I think the hair or the breath must have been the source of it; and, probably the former, because, in this case, the head was not shaved, though in Convalescence it was repeatedly washed.

10 That the contagion is diffusive:- Possibly it may be carried a considerable distance by the atmosphere. For example; Annie L- was put on admission into a "Scarlet" Ward. The nurse in charge, thinking there was a mistake, seated the patient before the fire, and at once came for me. It was clear she was suffering from Measles, and in about 20 minutes after her admission she was transferred to a "Measles" Ward. Eight days later, she took ill with Scarlet-Fever. It appears extremely probable that she contracted it during the short time she was in the Ward; yet there she had nothing to

(drink)

drink and was not nearer than several feet to the infected patients, while in the ward to which she was transferred not even the suspicion of a source could be detected. "This diffusibility of the poison may also explain why fresh nurses, who are not protected by a previous attack, are so readily affected when placed on duty in a "Scarlet" Ward.

If, as it is asserted (Bristowe) the "contagion ... may lie latent yet capable of action for an indefinite period," it is indeed a wonder that any susceptible individual escapes. "The following are only a few of the stories told to me by the patients or their friends:— (1) James A, aged 9 years "had been running about till yesterday (9th day of illness) when he got "swelled up". (2) M, M (a moulder) "felt he was able for work and kept at it for 20 days" when he became dropsical.

(3) Edward McM, 12 years old, "was at school daily" from 9th till 19th day, when his mother observed "the skin peeling off his hands.

(4) Arch.ᵈ McK, who took ill three weeks ago, "had been at school for the last nine days".

(5) Ann A (9 years), after the second day of illness "was running about (for three weeks) and playing with the other children.

(6) Andrew McF, "had been running about all the time" (for 5 weeks).

(7) Maggie H, fancy-box maker, "took ill a month since," and after being "nine days at home, went back to her work again." Desquamation was nearly completed on admission!

(8) Mrs McB, widow, "having four children to provide for, kept at her work ('out-door' washing) for three weeks.

It is not to be surprised at then that cases of Scarlet-Fever sometimes arise in a mysterious and unaccounted for manner.

It is greatly to be regretted also that so much confusion exists in the profession as to the non-identity of this disease and Diphtheria, or that it should be believed that the one may be evolved from the other. There is no doubt (as I have repeatedly seen) that a very great many of the so-called cases of-

"Diphtherias" are in reality Scarlatina, which, as soon as the angina improves, are allowed to do as they please and to spread infection "at large".

It has been proved beyond question that the cuti=cular scales of desquamation are imbued with the dormant virus, and that in this way it may be conveyed through milk or other articles of diet to those unfortified against it. Fomites are also well known to furnish a ready medium of communication. Recently, Dr Thomson seemed to trace very clearly the simultaneous infection of four children who were in hospital with measles, to the fact that they were transferred to another ward in an am=bulance which had not been disinfected nor the blankets in it changed since it had brought in some cases of Scarlet.

There is good reason to think that in one case, at least, the disease was conveyed by means of a letter. A young woman about to get married, contracted Scarlet Fever and was removed to the Hospital. About a fortnight (after)

after admission she became very anxious to reply to the numerous communications from her lover; and at her request, a new probationer who had no knowledge of any rule to the contrary, wrote him a letter at the patient's bedside. A few days after that the future husband sickened with Scarlet. It is quite possible that he was infected in the way I suggest. In any case, fully three weeks had elapsed since he had last seen his companion, so that this source can be excluded.

It will hardly be out of place now to consider the question, "At what stage of the disease is it most infectious?". Besides the voluminous evidence as to its infectiousness during the stage of desquamation and later, I have already given some cases illustrative of the same fact. It now remains to be added my conviction that it is highly infectious during the stadium eruptionis, if not earlier. It is a very frequent occurrence to see different members of a family, employed in different occupations, brought to Belvidere,

the one on the first, second or third day illness, and the other or others on the seventh, eighth, or ninth &c. For example (1) Catherine M (Laundress) had been ill ten days; her sister Bridget employed in Chemical Works, only 3 days.
(2) Roden S - tailor - took ill eleven days before admission; his his brother, William, a schoolboy, four days only.
(3) Five days after the two younger children of another family had taken ill, the two elder ones, who were at school, sickened.
(4) A mother had been "seven days bad with sorethroat" (Scarlet) when her two little children got bad.
(5) G, and W, had had Scarlatina for seven days, when their two sisters began to complain.

From a careful inquiry into the history of the attack in fifty-two families - comprising altogether of 132 individuals - that have been under my charge, it would appear that infection was brought about either from an extraneous and unknown source, or from a person at that time suffering from the disease. Let us briefly review these cases.

In <u>six</u> families, Scarlet Fever manifested (itself)

itself on the same day in all the members then attacked by it; – two or more as the case may be. In ten other families, the diseased appeared a single day earlier in some of the individuals than in the others.

In seven others, there was an interval of two days; and in three other instances, three days intervened between the time when the one member took ill and the appearance of the disease in the remainder.

These facts seem to indicate, I think, that in each case the family was infected from one and the same source, – (probably through the ingesta) – and simultaneously.

In the next category, there were five families in which the disease showed itself in one or more members four days before its appearance in the others. Singularly enough, in two of these, the fathers who assisted at the nursing of their sick children were the last attacked.

Again in thirteen other families the first were ill five, six or seven days before the others sickened.

Probationer F (to be immediately referred to) distinctly

(get)

got the disease from a patient in the acute stage of it.
"There is then, I maintain, every reason ~~to think~~ especially after the facts already cited with reference to the infectiousness during the eruptive stage, that, in the majority, at least, of these instances, those who manifested Scarlet Fever several days after the others, had contracted the disease from the members primarily affected. Perhaps in this class should also be included two other cases in whom there was an interval of eleven days. But here comes in the possibility of desquamation & and it must be added that in one family, at least, every effort seems to have been made to isolate the sick from the healthy.

And now we come to consider the last category to be exemplified. In it are included the cases of six families. "The disease had developed in two instances a fortnight; in three others, three weeks; and in the re= =maining one, five weeks, before it was seen in the rest.

There is no doubt that here infection was (possible)

Incubation

possible during the stage of desquamation, for inquiry proved that that process had set in early enough in the former to allow for the period of incubation in the latter.

What then is the length of the period of incubation?

My own experience would lead me to think that it varies in different cases from one to eight days; and the following are some of the cases upon which this opinion is based.

(1) Miss R – assistant-storekeeper, having to deal out supplies to all patients and employees at Belvidere, was forbidden to go near any of the Wards, or otherwise expose herself to infection, in order to avoid all possible risk of her being the medium of spreading disease. She strictly observed these injunctions at the Hospitals. But she went to Greenock to see a little nephew who "was very ill"; He had Scarlet Fever. She nursed the child on her lap for some time, and kissed him. The following day she complained of sorethroat. It was the beginning of a well-marked attack of Scarlatina.

(2) Nurse F, came to Belvidere as "probationer" on Friday 18th May. She was in the Ward for a short time that same evening; and on the following day and Sunday she several times handed the drinking cup to a patient, who was very bad with Scarlet Fever, and held to him the Spray when the throat was being steamed &c. On Monday (21st) she turned ill with Scarlet.

(3) Mary S,— on a Friday, went to the house of a playmate of hers, who was suffering from what "the doctor" called "Diphtheria". On the following Monday Mary sickened.

(4) Willie B- (already referred to at page 5)- took ill five days after his brother's return home.

(5) Annie C— left Hospitals well on 11th March (1883) after having passed through a severe attack of Enteric. At home she nursed "the baby" whom they "thought was just getting better of a touch of Scarlet." Six days after dismissal Annie was laid up with Scarlet Fever. (A brother suffering from the same disease had been removed to the Hospitals two days before she went out).

(6) Annie S- took ill eight days after she had been for twenty minutes in the Scarlet Ward (page 5).

(7) Mrs M- (washerwoman) took her grandchild with her to the Sanitary Washhouse, on Saturday 12th May 1883, when she was going for her wages. In passing by I saw the child (Mary M) in very close proximity to bundles of infected clothing & just deposited there, and reprimanded Mrs M for exposing her Ward to such risks. Six days later she was noticed to have Scarlet. It may be added that the child at this time was convalescing from Measles, and was not permitted to play with any other children.

In these cases then the incubation period was probably as stated,- granting that infection was brought about in the way I have suggested.

In Miss R's case it did not exceed 24 hours.

Nurse F, could hardly have been infected longer than forty-eight hours before she felt ill, because on the Friday evening she did not come near any of the patients.

Mary S, it seems pretty clear, contracted the disease at the time of her visit to her playmate.

Willie B got it most likely from his brother sometime during the four days after the latter's return home. Annie C must have been infected after she went home, and probably soon because she would be sure to caress her baby brother when she saw him.

In Annie S—'s case, the period of incubation was probably eight days; for when she was transferred to the Measles Ward, she was bathed and put to bed in clean clothes.

In Mary M—'s case it appears to have been six days.

The several cases given at pages 10—11. are also strong proofs in favour of the question now under discussion.

Why does the period of incubation vary so much in different persons? The cause must be sought for in the soil or the seed, or both.

Age or Sex of the patient seems in no way to influence it; for while in the case of one family of two or three or more individuals of different ages and sexes in whom the infection was apparently coetaneous, took ill the same day; in another, similarly constituted, there was a

difference of one or more days in the appearance of the disease. The same fact is frequently observed at the Hospitals.

The difference in the time of development of the vaccine tubercle in different persons, inoculated simultaneously with the same virus, may probably be attributed to similar cause or causes as those which give rise to the variation of the period of incubation in the other specific fevers. From this it would appear to be due to a constitutional peculiarity of the recipient. Indeed were I to draw any conclusion from the few cases to which reference has just been made (p.p. 14–16), it would be this, viz., that the better the soil, so to speak, the more rapid the growth of the seed and its full development. The two patients in whom incubation was not longer than a day in the one case, and two days in the other, were strong and healthy-looking. These were, perhaps, the only cases infected with Contagion, as it were, in the nascent state; that is, directly from a patient at

(the)

the height of the fever.

Mary S – (incubation of 3 days) was seemingly in good health, but subject to spasmodic attacks of the left side.

In the case of Willie B – incubation was not more than five days, possibly a shorter period. He was a healthy child.

Annie E who had recently recovered from Enteric Fever, took ill six days after exposure to infection.

Mary Th, incubation six days, was convalescing from Measles.

Annie S, – incubation eight days, – was actually labouring under an attack of Measles at the time.

These facts are too few to be of any value, but they are none the less interesting.

Symptoms

As a rule the disease sets in somewhat abruptly; though the patient may feel "wearied," "queer" or "dry in the throat" for two or more days before the characteristic symptoms supervene.

It usually commences with sorethroat; vomiting;

often dizziness or headache; shivering and malaise.
There is often aching of the extremities, and pain is complained of in the back and, not infrequently, in the belly.
Very early the patient becomes feverish; the temperature rises rapidly usually several degrees; the skin feels dry and "burning" hot: and there is more or less thirst.
The tongue is soon coated with a thick whitey fur; the taste is perverted, and the appetite is lost.
The secretions are diminished: the mouth is "sticky", and tends to dry; the urine is scanty, concentrated, and contains a deposit of mucus, and, occasionally of urates. The bowels are generally constipated.
Sometimes the patient is heavy and sleepy; but most frequently, there is restlessness, and, often, delirium, especially towards the third and fourth day of illness. In these cases the conjunctivae are congested, and the face is flushed. According to my experience, Convulsions are rarely seen, and only at the onset of the illness in young children.
The pulse increases greatly in frequency, usually

attaining to about 120 per minute by the second day; it is often 140 or beyond that in children.

The respiration is more or less accelerated, retaining in an uncomplicated case, pretty much its wonted proportion to the pulse-rate.

Very often within 24 hours of the onset of the fever the rash begins to appear; its advent is rarely delayed beyond the second day. It is first seen on the front of the neck and upper part of the chest, whence it spreads over the arms and abdomen, and thence to the lower extremities; it is seldom well out on the face. During the next two days it continues to increase in distinctness. In different cases it varies very considerably in character, time of appearance, and duration. In some instances it is completely absent: in others it is only a faint blush, which soon fades, and in this way may be easily overlooked or not seen at all. There are other cases again in which it looks like a general erythema, appearing about the usual time, but which mostly begins to fade (within)

within four-and-twenty hours in the region where it first came out. Sometimes the rash is comparatively sparse, consisting of raised roseate spots, which are apt to become papular. These are for the most part aggregated to form patches which are chiefly seen over the elbows, back of hands; gluteal regions, knees and anterior aspect of legs; often there are small red puncta on the abdomen as well. As a rule, the colour is more or less livid, and there is very little spreading of the redness from the base of each spot. This variety occurs mostly in children who are of poor constitution and emaciated, such as those beginning to recover from a severe attack of Measles or Hooping Cough &c. In an instance of this kind which occurred in the Hospital a short time ago, the Scarlet-rash took on all the characters of the previous Measles emption.

A typical rash consists of numerous small slightly-elevated points which spread at their bases and blend with those immediately around them, thereby

(forming)

forming an uniform redness. It vanishes readily under the pressure of the fingers, and there is left an anaemic impression for a second or two after the hand is withdrawn. Some of the points, especially along the external aspect of the extremities, attain greater size than others, and may terminate in minute vesicles. These do not disappear altogether by pressure. They remain for a long time after the rest of the eruption has gone back give rise to an almost characteristic appearance; and when present, in a doubtful case, they materially aid the diagnosis.

When the rash is very copious, there is a perceptible inflammatory exudation into the skin. It feels stiffer and thicker. The face looks fuller, and often puffed; there is pitting on pressure, over the shin ridges in particular. These symptoms subside with or soon after the disappearance of the rash without any manifestation of renal mischief.

In very severe cases, there is often exudation (beneath)

beneath the epidermis, raising it into blebs or pustules.
The regions on which they are most commonly seen are the pectorals, the back (chiefly about the sacrum), over the elbows, hands, knees and feet. The contents of these bullae may be at first a clear fluid, but, soon or late, if the cuticle over them remains unbroken, it becomes opaque, yellow or even sanguinous. When they burst, especially those on the back, and the patient is very restless, ugly sores may form.
In cases of a haemorrhagic tendency, petechial spots are usually seen.
The following cases will illustrate what has just been said, and some facts that will soon come under treatment:—

11 James Laged 6 years, admitted on 4th day of illness.
Took ill with sickness and vomiting; sorethroat, which has been getting worse. Rash seen on second day.
On admission:- Very malignant case. Dark purplish haemorrhagic puncta over front of legs and chest. Quite insensible, tossing about. Purulent offensive discharge from mouth and nose

nose. Throat ulcerated; tonsils almost meeting. Cervical glands much enlarged. Pulse cannot be counted. Coarse râles all over the chest.
℞ Spray throat. Poultices. Wine. Died in four hours

(2)

Margaret R, aged 30 years. Admitted 29th Jan? 1883
Patient not able to give history. Lies chiefly on her back, moaning, and in a semicomatose condition. Eyes suffused; pupils dilated. On face there is a raised partially confluent rash, like that of measles. On the chest there are a few isolated papulas; while on the back and extremities it is a generally diffused redness, with here and there large blebs, chiefly over the elbows, sacrum, and feet. Skin is very itchy. No thickening of glands in neck. Tongue congested, furred, dry along centre. Throat is congested. Drinks freely when it is given to her, but does not ask for it. Temperature 103.6.7. Pulse soft and hurried. It is stated that the patient is menstruating.
Feb? 1st: Very offensive smelling from the patient, which

nurse says, was "due to the discharge." My attention was directed to the condition of the vagina. Continuous with the clitoris there is a pendulous tumour about the size of a walnut, which is inflamed and tender to touch. Folds of groins excoriated. Vagina to be syringed with a solution of Condy; excoriations kept clean, and dusted with Zinc Oxide. Raw sores over back in place of pustules, treated with Zinc Ointment. Discharge from nose. Tongue dry, cracked, cannot be protruded. Sordes. Throat congested. No swelling of cervical glands. Drinks freely. Pulse 70 per minute, very feeble. Temperature yesterday 99.4° and 99.4°. Today 97.6°. Bowels loose on day of admission, regular since. Urine passed in good quantity, but mixed with vaginal discharge.

Feb 3rd: Seems somewhat improved today. Tongue furred and moist, can be protruded at will. Pulse quiet, stronger. Respiration easy. Temperature continues below normal. Vaginal and other conditions better. Desquamating freely on neck; skin generally dry, cuticle loosening.

Feb 4th. Pulse worse; Give 3ss Ether in Brandy every 3 hours. (Getting 6 oz Brandy since day after admission).

Feby 5th Has lost a good deal of blood from vagina and bowel. Give following:-

℞ Extracti Ergotae Liquidi ℥ss
Liquor: Ferri Perchlor ℥iii
Spts Chloroformi ℥iii
aquae ad ℥vi ℥ss 6, ten hour.

Feby 5th P.M.

Vagina was plugged through Speculum with lint soaked in Liq: Ferri Perchloridi Fort.

Died the same night

As has been already said, the eruption in a very large proportion of cases, begins to appears within four-and-hours of the onset of the disease. If the patient sickens early in the morning, it is often seen the same evening; or if the illness commences in the evening, the rash will generally appear during the course of the following day. I do not know of any authenticated instance in which the delay extended beyond forty-eight hours; though it is not uncommon to hear that the patients or friends

(have)

have not observed it till the fourth day, and in some cases not till the fifth day of illness. These cases were almost without exception either sporadic, or the first of the family to take ill, — where, in fact, the prodromal symptoms were comparatively mild, the disease not thought of, and therefore the rash not looked for. Very frequently the doctor called in, was the first to point it out. Hence these cases are no proofs that the emption did not appear till the fourth or fifth day.

"The following are the dates of the first appearance of the rash in 260, as noticed by the patients themselves or their friends. In 33 it was observed on the first day; in 103 on the second; in 74 on the third, in 33 on the fourth, and in five not till the fifth day of illness. (Unfortunately I kept the register of these in Calendar days: it would have been much more instructive in days of 24 hours, because, then, many of the so called "second" day would come within the 24 hours; and most of the "third" day within forty-eight hours &c). In 33 other cases

no rash whatever was seen. This figure was made up of (1) very young children, in whom the rash was likely very faint, (2) boys and girls whose illness did not interfere much with their play & (3) adults whose illness was not so severe as to prevent them from following their usual occupations. The parents who come out as patients to Belvidere, very seldom see the eruption in their own cases. In some instances the skin was in such a filthy condition, that it was almost impossible to see, in good daylight, any rash that might have been present – without in the first place giving them a bath. There is no doubt that in most of these (33), there was a Scarlat=inal eruption, because in 28 desquamation followed, and two of the remaining five died shortly after admission. Still the rash may be altogether absent.

Four children of the same family were brought under my care at the beginning of April last (1883). The two girls had well-marked rash. In the case of the youngest boy (13 years) there was a faint redness

(of)

of the skin, as after a bath, for one day: the eldest boy had none. Both were admitted on the 2nd day of illness; had high fever, and very bad sorethroats.

"The duration of the rash is also very variable. In a normal case it persists in direct proportion to its intensity; ie, a typical rash beginning to appear about the second day, takes from 12 to 36 hours to reach its height, and then after remaining stationary for a day, more or less, it gradually fades within the next two days. In very severe cases, if it comes out well, it usually lasts much longer than in an ordinary case.

"The skin in some cases is very itchy during the eruptive stage; but there seems to be no relation between the amount of eruption and the itchiness.

Desquamation "varies according to "the time of its commencement, duration, intensity and "form. It may follow close upon the eruption, or a "few days after it, but only in a few cases after the "lapse of a few weeks; and the process may either (last)

"last but a few days, or ----- it may continue "for several weeks." It may begin before the rash has faded; the eruption in these cases is usually very intense and persistent. It rarely commences as early as the fifth day of the disease; more frequently on the sixth; and still oftener on the seventh; but in the great majority of cases it is not seen till the first three days of the second week of illness. Its appearance in some cases is still later, and it then "usually occurs on a delicate epidermis, after a mild exanthem". As a rule, the cuticle begins to separate on the neck, face or ears.

I have never seen it "end in one or two" days, but frequently found difficulty in getting it all off the soles of the feet by the end of the eighth week.

Desquamation may be branny, scaly, or in flakes as to the region it is on, and the thickness of the cuticle at that particular spot.

It would be well now to proceed to the consideration as concisely as possible, of the other individual symptoms, and to note their frequency and importance.

Sorethroat:- "The condition of the month and throat has considerable influence on the diagnosis and prognoses of a case. With the exception of the rash, the angina is the most common symptom and "when – as unfortunately too often happens – the affection of the throat is severe, the whole case partakes of the same nature." (Begbie). In other words, the severity of a case very often depends upon the amount of inflammation and ulceration in the throat. Out of 325 patients about whom any history or evidence could be obtained, rather over 91 per cent suffered, more or less, from inflamed throat, – i.e. in the prodromal and eruptive stages. "Most of those who seemed to escape scathless were young children, – their average age being 5½ years, – and therefore many would not or could not tell how they felt. However, it is astonishing how lightly infants sometimes pass through the disease.

In a case where the eruption is copious, there is usually pretty acute angina, but there may be

Severe inflamanation of the throat with little or no rash (as in cases cited at p 28), and vice versâ.

In some cases, there is only a sensation of dryness or measiness felt at the back of the mouth; the fauces, palate &c look somewhat unnaturally red; but the feeling and appearance become normal in a day or so as a rule. In others again there is actual pain, which is aggravated in deglutition, especially of solid food, but rather soothed than otherwise once the painful part has been moistened by a fluid. Hence the patient is almost continually sipping his drinks, - preferably water; or, if permitted to inhale steam he will probably declare he feels "fine". In these cases there is always a decided inflammatory congestion of the mouth and throat, and possibly, some acute swelling of the tonsils. Very often this condition is only the initiatory stage of another and a worse state, - viz that in which there is tonsillitis accompanied by more or less ulceration, or it may be sloughing. I have frequently seen intense inflammation of a patient's tonsils, - the swelling so great that they actually touch-

but in no instance did suppuration ensue. In this respect, so far as I have seen, it differs very greatly from idiopathic tonsillitis. Possibly if our resources at Belvidere had been applied to the case of the latter the results would have been similar to the former.

When the ulceration makes any progress, it is apt to spread to the nose. It is then a most serious complication, and it indicates a state of ill-health in which repair of lost tissue is always very difficult. There is often a whitey coating with subjacent ulceration along the border of the soft palate and uvula; a fetid acrid discharge runs from the anterior nares and mouth, irritating the mucous membrane and skin over which it passes. Drinking is difficult, and the milk may return through the nostrils. The patient, who is almost invariably a young child, is heavy and listless, but does not rest well, and sleeps little or none at all. Though naturally irritable, there is seldom any resistance offered to the nurse when the nose has to be syringed or the throat sprayed. There is extreme

(weak-)

weakness; the pulse is very feeble and hurried, and the patients often die quite suddenly,— when seemingly a little improved,— apparently from sheer failure of the heart's action. Towards the second week or later, there is apt to come on a gradual and progressive emaciation arising, it would appear, out of impairment of the process of assimilation of food taken into the stomach; and upon it may follow an ulcerated throat of the above type.

This is exceptional, however; whereas it is the cause of death in the great majority of fatal cases in the first two weeks of Scarlet Fever.

A diphtheritic inflammation (that is, inflammation leading to necrosis of the mucous membrane &c) in the throat, is therefore not infrequently seen in Scarlet Fever. It is usually centred about the tonsils, whence in a weakly subject, it tends to extend to the soft palate and nostrils. I do not think, though appearances are sometimes very similar, that this is a complication of specific diphtheria, but simply an ulcerative sorethroat,—

(a)

– a sequela of Scarlatina. If there can be brought about an improvement in the recuperative power of the patient, the destructive process ceases, and the part heals. I have seen no such recovery in a case of undoubted Diphtheria, though the disease may not be anything so advanced. Dr Allan's experience is much the same as mine.

"The mucous membrane at the angles of the mouth is commonly affected like that of the throat. (1) It may be only a herpetic scab, which falls off, in a few days leaving a healed surface; (2) or it may result in an ulcer which heals with the alleviation of the other febrile symptoms, or (3) it may progress independently of all treatment. This last form is usually associated with cases of malignant ulceration of the throat, nose, or possibly the cheek, and is continually being irritated by the thin reddish ichor which runs from the latter.

"The tongue also presents very different appearances in Scarlet Fever. It shares in the hyperaemia of the other mucous surfaces and the skin. It is usually more or less furred during (the)

the febrile state, but it may be clean all through. In either case, the mucous membrane of the mouth desquamates with or soon after the subsidence of the fever, and in this way the tongue gets to look unnaturally red and clean. If there is swelling of the papillae as well, we have the "Strawberry tongue." But this appearance is by no means so frequently seen as one is given to understand in books. It occurs typically in about one of every six cases. Dryness of the tongue is seen mostly in severe cases. It may be only over the tip, or along the centre of the dorsum; or the organ may be dry and glazed all over, and with fissures transversely across the raphe. Later on in the disease, it is often swollen and indented with the teeth; and these indentations are occasionally the seat of small ulcers.

Sympathetic swelling of the cervical glands is usually observed when the throat is implicated. Those situated along the anterior border of the sterno-mastoid muscles, opposite the angles of the lower jaw, are most commonly affected; and those

(on)

on the left side are oftener swollen than those on the right – the proportion being more than three of the former to two of the latter. Both sides may be equally inflamed. The amount of swelling varies in different cases, dependent to a certain extent on the throat affection, and disappearing with subsidence of the inflammation there. "Yet" as Thomas in Zeimssen's Cyclopoedia, says, "it is to be noticed that there does not "appear to be a definite proportion between the two "lesions; there may be, for instance, severe angina with "slight glandular affection, or, on the other hand, consid-"erable lymphadenitis, with a trifling amount of angina"

Great and early enlargement of the cervical glands is often as Professor Gairdner taught, an indication of severity, as there is always bad disease in the throat along with it. When there is secondary enlargement of the glands, i.e towards the end of the second week or later, it is generally on one side of the neck, or greater on one side than the other; and, while in some of these cases there is thickening of the tonsils, or a small insignificant-

=looking ulcer about the fauces, in a great many others nothing of the kind can be detected. These swellings may end in the formation of circumscribed abscess; but if proper means are adopted, as will be seen under "treatment," this will seldom happen.

Another condition is the red brawny swelling along and below the jaw, due chiefly to infiltration of the cellular tissue. In a case recently in my charge, the region below the chin was alone involved. It seems to arise, as a rule, irrespective of throat inflammation but it may be complicated with secondary ulceration of the tonsils and palate, with laryngitis or oedema glottidis. The veins descending over the swelling get involved in it, and in this are more or less occluded, giving rise often to considerable oedema of that side of the face. With time it softens, points and feels like an abscess, but if an early incision be made into it, only thin sanguineous fluid discharges from the gaping wound that has thus been created. There is always more or less suppuration, and sometimes sloughing, which (may)

may cause considerable destruction of tissue and consequent deformity if the patient survives it.

Vomiting:— After the sorethroat, the next most common symptom in the pre-eruptive stage of Scarlet Fever, is vomiting. In rather over 90% of my cases there was the history of vomiting. Sickness is often associated with it. It generally sets in somewhat suddenly, and, it may be, without any preceding nausea. Most frequently it occurs on the first day of illness, but occasionally not till the second or third day. It seldom lasts long, and is never serious except in severe cases. In these, however, it may continue on into the Eruptive stage, when it is usually accompanied by great prostration, and sometimes by troublesome eructations.

In the case of an infectious disease of a doubtful nature, the fact that sickness and vomiting are so much more common in Scarlatina than any other fever, will, (and other things being equal) greatly assist in arriving at a correct diagnosis of it.

Headache is not complained of by patients with anything of the frequency that it is stated in books. In the latter, it is frequently laid down as an almost constant symptom; whereas, in only 23 per cent of my cases it could be elicited that any pain in the head had been suffered from at all. Of course, some of mine were very young children, but where no history was obtainable, only the symptoms present on and after admission were taken into account. The headache is chiefly frontal, and only in very bad cases does it persist for any length of time.

Convulsions :- as has been already said, convulsions are rare at this stage of the disease; and then, it would appear, children alone are subject to them. If we exclude the the case of a girl, aged 6 years, who, it was said, had a "fit" on the 7th or 8th day of illness, only four out of 355 cases had convulsions. They were all boys, aged, four, four, six, and seven years respectively; and they were all attacked on the day of the onset of the disease.

Delirium;- Patients are not infrequently somewhat delirious when the fever is at its height. It may be only a restlessness and wakefulness at nights, or perhaps now and again talking irrelevantly. It almost never amounts to more than a desire to get out of bed,- in which, as a rule, the patient is readily persuaded to remain. The following is about the worse case of the kind that come under my care.

(Case)

Hugh S- aet 23 yrs, "salesman" in a spirit shop, was admitted on 5th day of illness. Had taken ill with shiverings, sickness and vomiting, sorethroat, headache and general pains. Throat was very bad for two days, rather better since. No eruption had been observed.

On admission: Very abundant bright red rash diffused generally over the body. Blebs are forming over the elbows, hands and feet; minutes vesicles seen on the pectoral regions. Drinks freely; throat not very sore now. Tongue is thickly-furred, congested at edges, and moist. Palate, fauces &c are red and somewhat irritable looking. Slight enlargement of both

tonsils, and of corresponding glands. A dirty white exudation coats the back of the throat. Temp^re 103.4°F. Pulse 108, fair. Bowels costive, give dose of oil. Scarlatina mixture, ℥ss every three hours. Spray throat every hour.

4th day:- Became restless yesterday afternoon. Head was shaved; given three (gr 15) doses of Bromide of Potassium. In the evening was very wild, almost maniacal, and would persists in trying to get out of bed. Given ℥vi of Syrup of Chloral (gr 60), in two doses at an hour's interval: five minims of 'Liquor Morphia' added to last dose. As nothing seemed to produce any effect, other 20 minims of Solution of Morphia were administered. He became quieter and controllable about 2.30 A.M. After six o'clock he slept for three quarters of an hour, and has been dozing a good deal today. Drinks freely, better than yesterday. Bowels inclined to be loose since he got the oil. Temperatures on 6th 101.2° and 102.6°F. Today 101.2° and 101.2°F. Tongue is dry, glazed, and cracked. Feels as if "pricked by pins."

9th day: Feels well; numbness gone. He is quite rational now. Tongue moistening. Temperatures same yesterday and today - viz 100.8° and 101.9°F.

13th day:- Feels alright. Tongue moist and clean. Pulse good and quiet. Temperatures not quite satisfactory, viz on 10th 101.6° and 103.8°?; 11th 101° & 101.9°?: on 12th 99.6° & 102.2°?. Today 99.8° and 102.2°?. Desquamating freely on the hands and feet.

20th day: Temperatures continued:- 14th 99.6° and 100.2°? 15th 99.4° & 100.4°?; 16th 99.2° & 100.8°; 17th 98.2° & 100°?. 18th 98.2 & 100°?: 19th 98.8° & 98.4°? Today 98.4° & 100.6°?. Complained of pain in right ear last night and today. Swelling and tenderness below right mastoid process: Syringed ear with lukewarm water; dry: drop in Glycerine and Laudanum.

21st day:- Otodynia persists. Right cheek swollen. Functions regular. Temperature 102° and 102.4°?. Continue treatment. Give pill of (gr 2 each) Quinine and Extract of Hyoscyamus, every two hours.

22nd day. Temperature is less, viz 101.2° and 101.8°?. Discharge from right ear; no pain. To be syringed, dried, and Boracic acid insufflated. After the above, temperatures were normal; ear was soon well; and

and general progress uninterruptedly good.

In my experience the delirium soon passed away; and there was left no impairment of the mental faculties as after some of the other infectious fevers.

The temperature in this fever, as in other acute diseases, runs high; but in an average case of severity, it is not higher than in Measles, Enteric or Typhus. Its peculiarity is that it rises very rapidly, and usually attains its maximum height about the evening of the third day of illness. The following may be taken as fairly typical examples in a sharp well-marked attack:—

	Boy 11 years old					A Nurse aet 20 yrs.		
Day of Illness.	A.M.	P.M	Day of Illness	A.M.	P.M.	Day of Illness	A.M	P.M
1	—	102.2	2	—	103	2	—	102.2
2	101.4	103.4	3	102.	103.6	3	102.4	103.2
3	102.2	103.2	4	101.8	103	4	102.4	103.4
4	101.2	101.6	5	101.2	100.6	5	101.2	101.2
5	99.4	100.8	6	99	100.2	6	100	100.2
6	99.6	99.8	7	99.8	Normal	7	99.2	100
7	99.4	Normal				8	99.6	99.4
								Normal

Each of these three cases had a good rash, angina &c but there was no complication. When the temperature persists febrile (100 – 102) after the 8th or 9th day, there is generally something wrong, such as throat irritation, enlargement of the cervical glands &c, and not uncommonly it is coexistent with a condition of mal-nutrition and progressive asthenia, which may lead to an early fatal termination. In mild cases it is seldom above a moderately febrile heat, which, with the disappearance of the other Abnormal symptoms, becomes normal. Cases of this kind are frequently met with; eg – (Case)

Gavin D. aet 10 years, took ill one evening with sickness, vomiting, and slight angina. Rash seen the following morning. The same was removed to Belvidere Hospital. The rash, like a general erythema, was fully developed thirty-six hours from the beginning of the illness. It soon after that began to fade, and by the fourth day was quite gone. The fauces, tonsils &c were somewhat inflamed on admission, but throat got rapidly well. The

temperatures in this case were as follow:-

Day of illness	A.M.	P.M.
2nd	—	102.4
3rd	100.4 :	101
4th	98.8	— Normal and subsequently

Sometimes in the course of Convalescence there are febrile disturbances, accompanied often by gastric derangements &c; but to this point, I shall return in speaking of "Complications".

Pulse:- "Acceleration of the pulse, especially "in children, is a notable feature of the disease; it probably "rises on the first day to between 100 and 120 — in children "still higher; and it generally continues to increase up "to the time of full development of the rash, sometimes "attaining a rate of from 120 to 160, or more. "This great- "acceleration of the pulse is not necessarily an indication "of danger. Nevertheless, unusual rapidity with marked "weakness of the pulse, especially when associated with "other unfavourable symptoms, is of grave import." (Bristowe).

As the forgoing expresses succinctly and clearly what has been my experience of Scarlatina, I have copied it in full: and I would add that what I would designate "unusual rapidity" in the above connection is a rate upupwards of 160 beats per minute. When we find that combined with feebleness of the pulse, a scared, vacant look, tremulousness of the limbs, dry shrunken skin, and likely a dry cracked tongue, it is a symptom of the gravest significance, especially, as often happens, if the throat is affected as well.

The pulse may present great irregularity, and it may be abnormally slow, just after a case has fully entered Convalescence; and sometimes it is very markedly intermittent, at that period, especially in elderly people.

Respiration: As stated already, the pulse-respiration ratio is pretty much maintained at the height of the disease in an uncomplicated case,— both are proportionately accelerated. For instance, when the pulse is 130 to 140 or so, the respiration is usually about thirty per minute, without there being any bronchitis &c.

Secretions and Excretions :—

Though the patient drinks a much larger quantity of fluids than usual, there is at least apparent diminution of the secretions. The mouth tends to dry, and the skin very often feels dry as well as hot. Undoubtedly there will be, in the stage of pyrexia, actually an increased elimination of watery vapour by the breath, as there is of Carbonic acid gas, because the temperature of the exhaled breath is increased, as well as the breathing accelerated. Probably there is also increased transudation by the skin. Sometimes, indeed, the skin is moist with perspiration. The bowels are usually constipated. Diarrhoea occurs sometimes; but whether early or late, it is, as a rule, a most unfavourable symptom.

On the other hand, the quantity of urine passed is abnormally diminished, though the total amount of urea contained in it, is usually, more or less increased. The Chlorids are always lessened during the febrile period. The Specific gravity of the urine is higher, it may be

(from)

from 1025 to 1030: the reaction, in the great number of cases that I tested, was acid, and in not a few the acidity was very great. With the decrease of the febrile symptoms, the quantity "becomes more abundant", and the Specific Gravity is lower. Thomas in Ziemssen's Cyclopoedia, again says; "At the beginning of the disease, "especially during the development and height of the "eruption, the Character of the urine varies considerably. "It may not only be free from albumen, but very "often exhibits no indication of catarrh of the renal "tubules. Not unfrequently, however, the urine, "although in other respects clear and free from "albumen, soon begins to show a mucous cloud, "which is composed of more or less abundant cloudy "and degenerated epithelium, and, sooner or later, "cylindroidal, in rare instances epithelial, and still "more rarely hyaline casts..... At this period "albuminuria occurs only exceptionally, and then only "to a slight amount and for a short time." After testing a great number of urines of Scarlet Fever

patients, I have arrived at exactly similar conclusions. The appearances here described, however, are not peculiar to this disease: they seem to be perfectly identical with what is found in cases of pneumonia, erysipelas, and some cases of Meningitis. The primary albuminuria of Scarlet does not occur any oftener in it than in these diseases, Enteric Fever, &c. I have recently tried the "Picric Acid test" in the way recommended by Drs Kirk and Johnstone, and found the pale "green zone" — said to be indicative of albumen — in almost every instance. I got it in several specimens of urine of Enteric Fever, and Erysipelas patients; and in two cases of Scarlet Fever, alone, was it absent. Only in a case of Enteric did I see blood as well as albumen in the urine during the febrile period, but Dr Thomson has met with it in Scarlet Fever at the onset of the disease.

The following are the results of volumetric analysis of urine of some Scarlatina cases which I did:-

Jane H aged 7 years

Day of illness	Quantity per diem	Albumen	Blood	Chlorides	Urea	
	oz			grains		
5th	22	None	None	33½	205¼	Sp: gr 1019
6	16	"	"	43¼	—	" " 1019
7	24	"	"	54	(12grs P_2O_5)	
8	28	Trace	"	80½	345	" " 1015
9	21(intake)	"	"	87	216	(not all Kept)
11	25	"	"	67½	—	" " "
12	31	None	"	122	324½	
13	32	"	"	78½	295	
16	50	"	"	174	462	
17	42	"	"	105	491	
19	38	"	"	109	515	
22	45	"	"	129	497½	
27	37	"	"	—	273	(Not all Kept)
28	38	"	"	130	—	
30	39	"	"	84½	192	Right cervical adenitis
31	44	"	"	174	—	
32	38	"	"	164	—	
35	56	"	"	65	—	Left " "
38	25	"	"	135	385	
47	34	"	"	146	314	
52	39	"	"	133	200¼	

John M. J. – aet 20 years Stout – 12 stones weight

(5-2)

Day of illness	Quantity of urine	Albumin	Blood	Chlorides	Urea	
5	33	(?)	None	53½	418¾	Sp: gr: 1024
6	30	?	"	59	480	" " 1028
8	30	None	"	67½	—	" " 1020
9	36	"	"	64¾	822	" " 1025
10	72	"	"	259	—	
11	46	"	"	105	831	Not all kept
12	74	"	"	333	1230	
13	48	"	"	164	709	
14	48	"	"	146	650	" " "
19	52	"	"	280	857	
21	63	"	"	306	970	
22	42	"	"	189	646	" " "
24	53	"	"	210	734½	
27	64	"	"		1182	Sp: gr 1016
29	38	"	"	239	757	" " "
30	95	"	"	461¾	819¼	
35	72	"	"	—	1685	
36 37	54	"	"	272	—	
40	62	"	"	401¾	715	
48	64	"	"	337½	495¼	
56	50	"	"	252	462	

Having been called away suddenly to Wales to what I fear will turn out to be a sisters death-bed, I left Glasgow without notes of the cases whose urines I analysed; and therefore, I cannot give the temperatures, diet, and history of the attack, of these which which have been quoted. But the conclusions at which I arrived were principally these:-

(1) Very decided diminution in the Chlorides during the period of pyrexia, and again during any febrile disturbance in Convalescence, such as that arising from soretthroat, acute swelling of the cervical glands &c. I was very much struck with this — what may be called - secondary decrease; it was evident in the examination of the urine of the day on which the patient complained. (The quantity passed in the 24 hours was stored up to, and measured at 12 oclock noon each day). In none of the ten case, whose urines were examined all through, did the Chlorides wholly

disappear. The least amount detected was a third of a grain to the ounce – a mere trace – in a malignant cases complicated with oedema of the lungs on the 12th day of illness. (The above calculations may seem very high in some instances, but it must be remembered that they were made as if all the Chlorine was in combination with the metal Sodium. This was done for the sake of furnishing a better estimation of the real quantity, than if it had been calculated as Chlorine gas).

(2) As stated by Dr Gee, the urea is not necessarily increased during the febrile stage of Scarlet fever; though I have always found it is by fully a half in Pneumonia. According to my experience, it is greatest after the fever has subsided, and the patient is getting food, while he is being confined to bed. It seems to diminish, when he is allowed to get up and take exercise, though the diet is the (same)

same, and the total quantity of urine voided continues as large as ever.

Nephritis: Kidney disease is so frequent in Scarlet Fever that it may almost be regarded as a symptom. Indeed some do regard it in that light. I prefer however, to consider it as a complication, but, certainly, the most common and important one. It was manifested in some form or another in nearly 20 per cent of my cases; the urines of patients in bed were examined mostly every day, and those of the patients going about the place every second or third day, as a rule; so that, in this way, no serious mischief could pass by undetected. Of those who had albuminuria or dropsy, or both, it developed in a fourth of the number (67) during the second week; in fully half in the third week, and in less than a fourth of the whole during the fourth week: In one other case albuminuria came on in the fifth week; and in two others not till the seventh

(8)

and eighth weeks respectively.

It is often a remarkable fact, — the similarity of symptoms and results in different members of the same family; and in nothing is that fact more strikingly exemplified than in the occurrence of the complication now under discussion. If one member takes dropsy, it is almost certain to develope in some, if not all the others who are ill, — no matter what precautions are taken for their protection from colds &c. There would thus appear to be, in individual families, some proclivity — inherited or acquired under similar conditions of existence — to take on a particular form of the disease; or, is it the offspring of special form of the [illegible] contagion? Most likely, I think, it is the former, though the latter view is not without — what may be termed — evidence in its favour. Notwithstanding this, there is no doubt that the access of the disease can be hastened, if it can not be brought about solely through

exposure. This explains why adults who have been at work, or children who have been permitted to run about and play, are almost invariably brought in to the Hospitals suffering from dropsy. Nephritis sets in variously. In a good many cases the patient makes no complaint whatever; the malady is only recognised through objective evidence. But these as a rule are readily appreciated. There is probably pallor and puffiness of the face, and more or less albumen in the urine. Sometimes the former symptoms precede the latter by a day or two, and vice versâ. Occasionally a trace of albumen and blood — or the one without the other — is detected in the urine for a day or two, — and nothing more. This is probably the "congestive hyperaemia" of the kidneys described by E. Wagner. Again oedema of the lower extremities may supervene a few days after it has been seen in the face. Very frequently, on the other hand, it would seem, all these symptoms set in simultaneously.

Again, there may be very decided swelling of the face, feet, and genitals, for some days, before any albumen can be detected in the urine, or repeated and most careful examinations for it may completely fail to reveal it at any time.

In some other cases the onset is marked by more decided symptoms. There is possibly severe sickness and vomiting; headache, pain in the abdomen or back; and feverishness. The feverishness soon subsides; but the sickness and vomiting may con=tinue for some time. The pain in the lumbar region, complained of by the patient or elicited by pressure is not very common in the nephritis of Scarlet Fever.

As a rule, the urine is very scanty, and there may be total suppression. The disease may set in with suppression of the urine, or this may come on after the urine has been concentrated and albuminous for some days. In either case it is a most serious omen: and is often unaccompanied

by any oedema. Occasionally, the invasion of the kidney mischief is gradual. The patient does not feel well; the appetite is lost; the tongue is coated with a dirty brown fur; and there is a foul smell with the breath; the bowels are, irregular, generally constipated; the skin is dry and loose; obscure pains are often complained of. The pulse is accelerated, and the temperature subfebrile. I have more than once seen dropsy come on after such symptoms have been present for few days, that I now endeavour to avert it by baths to restore the natural function of the skin, saline purgatives on alternate days if demanded; and perhaps a tonic medicine. This treatment usually brings about the desired result.

"Most Specimens of urine which show a trace of albumen, contain, as well, some blood. Sometimes very considerable haematuria sets in two or three days after albumen or blood, or both have been detected in the urine; or it (may)

may come on a week or longer after every sign of oedema and albuminuria has disappeared; or, a large quantity of blood in the urine may be the first thing observed. Very recently there was a patient in one of my "Scarlet" Wards who look-ed somewhat anaemic. Her urine was tested morning and evening for albumen and blood. Not a trace of either was made out till one afternoon it contained a heavy sediment of blood. After this, the urine was bloody and albuminous for a long time, and there was slight dropsy of the feet. The girl was seven years of age.

Indeed, no one who sees a number of cases of Scarlatinal albuminuria can fail to recognise two distinct kinds, viz; the one in which there is albumen and little or no blood, the other in which haematuria is the prominent symptom, — the albumen may be from the same source.

The former presents all the appearances of acute Nephritis. At the beginning, as already said,

there may be headache, sickness and vomiting. There is usually slight elevation of the temperature, and increased frequency of the pulse. The skin is dry and rough. The tongue is pale, clammy and coated with a thin whitey fur. Bowels are generally constipated. Simultaneously, or soon after there is paleness of the face and fulness below the eyes; in most cases, there is also oedema of the feet and legs. It may increase into general anasarca. In the male, the scrotum is about the first thing to swell, and, probably, it will be swollen after all trace of the swelling has disappeared in other parts. Effusion into the pleurae and peritoneum to a slight extent, is also apt to occur. As soon as the dropsy is fully developed the temperature falls to normal or rather below that, and may remain subnormal till the patient recovers. The pulse is slow; I have frequently seen it in adults and children from forty to fifty per minute. The breathing is generally very quiet. The patient is

(either)

either heedless and drowsy; or, the limbs tremble and he is very restless, continually glancing from onething to another. The pupils, in the latter case, are usually dilated, and he is, perhaps, on the verge of Convulsions. There are other cases again who appear and feel alright.

At this point other complications are apt to be superadded; for instance, ordema of the larynx, glottis, or one or other of the lungs; bronchitis; inflammation of the throat, lungs, pleurae, or pericardium; or Convulsions. The advent of one or other of these renders life in imminent danger; but the most uncompromising of all is the throat mischief. It may make deglutition and even the breatthing impossible.

Out of Sixty seven cases of Nephritis, three had Convulsions. They were the sequence of suppression of the urine. Complete recovery may follow suppression for a day or so. In one case there was a series of thirty convulsive fits before death ensued. The report of this case is appended at page 68.

When convulsions occur, they are not necessarily fatal. Complete restoration to health is often established.

The other variety of kidney disease met with in Scarlet Fever is that in which the urine contains a large quantity of blood. It may set in without any warning, or, may come on during or after dropsy. It may be preceded for a day or two by a trace of blood in the urine. I have always found a minute trace of albumen as well, though, as suggested by Dr. Thomson, the urine may have to be evaporated slightly before it can be distinctly seen. There is seldom any great swelling accompanying this form. According to my experience, the immediate danger is not so great in this as in the other variety; though the remote effect seems greater, because the discharge of blood in the urine continues, despite all treatment, much longer, — usually for several weeks. In this way the patient is greatly reduced by it, and soon becomes very weak and anaemic. It tends to

become chronic. I have known some cases of it lasting over two months before the urine was free of all blood-colouring matter; and, it is very liable to return in the case of patients who are allowed to go about before they have completely recovered. This and the other variety are not infrequently combined. Both are undoubtedly of renal origin, and probably the same disease,— the one being a modification of the other. It is likely that a haemorrhagic diathesis or not makes all the difference in the two forms, for in cases of great haematuria there is often a sanguineous discharge from the mouth and more or less epistaxis. The prevalence of swelling accompanying the one rather than the other kind may be due to the relief of of blood pressure induced by the haemorrhage. For what is Dropsy (anasarca)? Is is not Nature, through reflex action, doing away with some of the arterial fluid, and depositing it in the storehouses of the cellular tissues &c, in order to reduce the blood pressure, and thereby

(giving)

giving the inflamed kidneys the rest from irritation so needful for their recovery? And is not the slow pulse that we almost invariably find in such instances a means towards the same end and not the result? Whether there is any truth in this or not, I do not pretend to judge, but by acting upon it in the treatment of Scarlatinal Dropsy, very successful results are obtained.

The following cases will illustrate some of the points that have just been referred to.

" Faint rash; no sorethroat; Dropsy.

James H., act six, took ill yesterday with headache, sickness, severe vomiting. No sorethroat. Rash seen today. On admission:- Faint uniformly and generally distributed erythema-like rash. Skin dry and hot. No pain or angina. Tongue congested, coated with whitey fur. Fauces to seem rather redder than normal. Temperature 103.6° Pulse 120. Respiration easy.

9th day:- Progress good since last note. Rash faded quite by fourth evening. Tongue soon cleaned.

Following is the record of the temperature.

	A.M.	P.M.	
3rd day.	103	103.8	
4th "	102.4	102	
5th "	100	101	
6th "	99	100	
7th "	98.8	100	(Desquamating on neck)
8th "	98.6	99	

Normal since above. No albumen in urine, tested daily.

16th day: Slight general dropsy today. Urine contained albumen yesterday, and was ~~rather~~ scanty. The quantity voided is greater today. Pulse abnormally slow. Given digitalis and Iron. Poultices to bod. Regulate bowels &c.

24th day: Appears much improved; swelling less. Urine clearer, and passed in fair quantity.

28th day: Oedema of feet and legs gone; but is rather full below the eyes still. Urine been quite free of albumen for the last two days.

Given a mixture of Hydrochloric acid diluted and Infusion of Calumba.

P.S. Progress since above uninterrupted: dismissed on 53rd day.

Case of Albuminuria; no Dropsy.

(2) Robert K— aged 21 years Admitted 6th Dec 1881

Illness began with shivering; vomiting and sickness; sorethroat. Rash seen on 3rd day. Admitted on 5th day. On admission: Good generally diffused rash, which is apparently beginning to fade. Throat been improving for last two days; no pain in it now. Fauces congested. Slight thickening of the glands at angle of jaw. Slight cough. Temperature 101°7 - Pulse 82 per minute.

6th day: condition better than yesterday. Tongue moist, strawberry-like. Temperatures 100° and 100.6° Pulse 80.

8th day. Complains of pain in lumbar region. Tongue is dry. Temp^re yesterday. 100.4° and 101.6°F. Today 99.6° & 100°F. Pulse 112 per minute. Fair quantity of urine passed; it contains very large amount of albumen, and some urates. Great diarrhoea. No oedema of face or limbs. ℞ Poultice back

9th day: Pain relieved today. Still bowels are loose. Fair quantity of highly albuminous urine passed. Tongue is dry and brown on centre, moist and clean at edges. Temperature 100.6° and 101.6°F. Pulse 98 per minute. No oedema.

11th day:- Temperature yesterday was 99° and 98.4°F. Today 98.4° and 99°F. Pulse 64, full and soft. Respiration quiet. No pulmonary or bronchial mischief. Tongue clean and moist. Bowels moved, partly formed, daily - getting the Imperial drink for some days. No oedema.

Urine, 20 oz kept, much less albuminous.

13th day:- Tongue moist & clean. Temperature continues normal. Pulse always about 64 per minute. Feels well. Partly formed motions 2 or 3 times daily. 30 oz of urine kept, albumen in it diminishing daily. Poultices stopped yesterday.

16th day: Progress most satisfactory. Temperature, pulse & normal. Passed 40 oz urine yesterday; 48 oz today. Only contains a small amount of albumen and blood.

P.S. Quantities of urine;- on 17th day 68 oz. 18th 60 oz: 19th 64 oz: 20th 62 oz. Continued very abundant with trace of blood and albumen till 54th day: not after that.

Dismissed hale and hearty on 79th day.

(Case 3)

Albuminuria on 30th day: Suppression of urine: series of thirty convulsion fits on 34th and 35th days: Death:—

Catherine McA: aet 16 years. Admd 11th Nov 1882

Illness began with headache, sorethroat; sickness and vomiting. Rash out today.

on admission (2½ day of illness.),

Patient is strong looking, – very big and stout for age. Felt faint after ride to Hospitals. Bright profuse crop of rash all over the body. Slight enlargement of the cervical glands. Tongue, very red at edges, thickly coated with a white fur. Tonsils very considerably swollen; fauces, palate &c very red and irritable looking. Temperature 102.6°F. Pulse hurried and full. Give Scarlatina mixture; and Spray throat with a mixture of Chlorate of Potash and Tincture of Belladonna

4th day: Inflammation of throat completely subsided; swelling of glands gone. Desquamation begun on neck. Rash has faded except on extremities. No complication. Urine contains large amount of urates. Temperatures on 3rd 102.6° Am; on 4th – 102.3°/103°F. 5th 101.2 and 102.6°F.

12th day; – Temperatures normal for three days. Tongue clean, moist. Pulse good, quiet. Complained of Gastric pains on 8th and 9th day. Given Bicarbonate of Soda (gr 5)

Tinct: Cardamomi (3ss), Acid Hydrocyanici (m iiss) every 3 hours.
Soon got alright. Bowels rather costive.

16th day: Been suffering from Bronchitis for three days; chest poulticed; given "Cough mixture"

21st day: Cough a little improved. Temperature still keep rather above 100°F. Give.

℞ Liquoris Ammoniae Acet: 3iss
Vini Ipecacuanhae 3ss
Spt Aetheris Nitrosi 3ij
Syr: Scillae 3ss
Infusi Senegae ad 3vi ℔ 3ss o.t.h.

24th day: Cough been well for some days. Urine highly albuminous five days ago, but no trace could be detected in it since then. Looks somewhat puffy and full in the face, but is naturally so. Within last few days had made good progress till yesterday morning, About 1 P.M yesterday had a convulsive fit — twitching of face, upturning of eyes and clenching of hands — for about two minutes. Pupils dilated. Bowels moved in bed. Was semiconatose for a while after coming out of the fit. Some Bromide given then was immediately vomited. Up till 11. P. M she (had)

had thirteen similar convulsive fits. The following is the time of each fit she had during the night,- as noted by Nurse H. Walker, who remained in the ward with the night-nurse:- 11.P.M., 10.10 P.M, 11.23.P.M. 11.34.P.M. - (Had bowels well moved by Enema; and medicine (Bromide) given) Then 12.32 A.M. 12.48 A.M. 1.45 A.M. 1.55 A.M. 2.10 A.M. (Slight hiccup), 2.25 A.M 2.40 A.M. 4.25 A.M. 4.35 A.M. 4.48 A.M., (Vomited medicines and drinks taken since 12.30. A.M.). At 5.18 A.M, had bad hiccup, and took a severe fit. as she did not come out of it in 15 minutes the nurse called me. When I got to the Ward, found patient still convulsed. Administered Chloroform with relief. Has been comatose since, but seems to be emerging from it now (12.30.P.M).
Was put in a hot pack (hot bottles along sides the legs and trunk - the patient wrapped in blankets) at 6 A.M. The patient did not perspire for fully an hour; at the end of two hours, the skin was well rubbed, and she was wrapped in blankets. At 9. A.M pulse was 180, hard, Resp^{n} 80 per minute, and at

12. AM 144, and 60 respectively. Has been able to swallow very little since yesterday. Pupils were all along dilated. Urine suppressed since yesterday morning: Back poulticed since last evening. Died at 2.30 P.M, on 35th day

Complications

In the first place I shall briefly consider those which affects the organs of special sense:-

(1) The Eye:- In severe case of Scarlatina, congestion of the conjunctival vessels, and slight lacrymation, are often present. Ophthalmia is prone to return in those cases which have previously suffered from it. During Convalescence, if there is debility, the result of dropsy &c, phlyctenular ophthalmia is frequently seen. Parochial children - many of whom have had sore eyes before - appear to be very susceptible to it. By adopting the treatment recommended by Dr Thomas Reid, I found that, with one exception, all yielded more or less

readily, and there accrued no permanent injury to the eye. The exception to which I allude, was the case of a weakly child, aged 5 years, who developed Scarlet Fever soon after admission to Hospital with Measles. She had persistent diarrhoea, and was greatly emaciated. There was a diphtheritic ulcer in the throat, at the angle of the mouth and behind the left ear. There was a bloody discharge from both ears and from the nose. The right eye became affected with destructive ulceration of the Cornea, (described by Schröter); and in about a fortnight the lens dropped out, the Eye was completed lost.

"The discharge from it had evidently some specific property, because in treating it, a little got on the nurse's eye and caused considerable irritation. Several of the other patients were similarly affected, through the same sponge being inadvertently made use of in the first place. There was acute conjunctivitis and some iritis, with muco-pululent discharge. Fortunately, with careful attention, all soon got well.

None of my cases had retinitis albuminurica. No complaint of impaired vision could be elicited from even the most prolonged cases of nephritis; and repeated ophthaloscopic examinations failed to detect any abnormality of the kind.

(2) Ear:- Otitis is very common in Scarlet Fever. Of those who came under my charge, otorrhœa occurred in 69 out of 341 cases; i.e., in 18.59 per cent. Of these cases, the disease began (in the ear) on the 6th or 7th day of illness in 13; in 40 cases during (chiefly the earlier part of) the second week; and nine in the course of the third week: in three, during the sixth week in one "late", and in the case of the remaining three, the period is not specified. It often arises in connection with disease of the throat. In some of these, where there is much swelling of the tonsils and of the cervical glands, and inflammatory exudation at the back of the throat, with possibly, some discharge from the nose,- one would be pretty safe in predicting that the disease will extend to the middle ear.

on the other hand, it sometimes happens apparently quite independent of throat irritation — in a case where there was little or no angina. In the latter variety there is always the chance of resolution without rupture of the membrana tympani; — that is, if counterirritants are applied behind the ear as soon as pain is complained of.

The patients who had otorrhoea in the sixth week were very mildly affected. There was only a thin watery discharge from one ear, on two or three days: it seemed to be wholly due to catarrh of the auditory canal.

In connection with the otitis, the inflammation extended in two instances into the mastoid cells of one side, and an abscess threatened to form over the mastoid process; but the swelling subsided, and any discharge that there was, came away by the middle ear. It had completely healed when the patients left the Hospitals, but in both cases, the sense of hearing was impaired on that side. In the others, recovery seemed complete in every respect.

I have already discussed shortly the affections of the mouth and nose in the ordinary course of the disease, so that little else will require to be said.

But sometimes during convalescence the tonsils get swollen and ulcerate; – it may be for the first time in the disease. As this occurs usually in weak and emaciated children, especially after nephritis, it is apt to extend to the nose; and, it may be further complicated by oedema of the glottis, or laryngitis &c. In one case diffuse suppuration of the cervical glands set in during the fourth week.

The organs more directly concerned in <u>respiration</u> may be also involved.

(a) Patients, who have at first suffered very lightly and imprudently exposed themselves to cold, or, in whose case the attack is severe from the beginning, are not infrequently admitted with more or less acute <u>bronchitis</u>; or the disease may come on during convalescence without any reason for it. In all cases of dropsy wheezing râles are heard over the

chest, and it may become as serious complication.

(3) Consolidation of one or other apex, or pneumonia of any part of the lung is occasionally met with, - usually from the second week onwards. It is very difficult to dislodge when the disease attacks one of the upper lobes. A boy of six years, contracted pneumonia of the right base, after he had been in Belvidere about seven weeks. He had been very pale and weakly since admission, but there was no oedema or albuminuria. Besides the pneumonic symptoms, there were others usually seen in cases of Meningitis, viz, staring into vacancy; occasional screaming, but denying he suffered from any pain; and once or twice vomiting. After a residence in the Hospital of 124 days, he left strong and in good health. (I have only an abstract note of the case at hand - the "Journal" being in Glasgow).

Cases of Pneumonia of this kind are described by Trousseau: I have had two of the same kind in the 'Fever' wards.

(7) Pulmonary Oedema is a most unpromising accident of Nephritis. Fortunately it does not often happen to any degree in kidney disease. In one case where there was moderate ascites, slight oedema of legs and feet, and no albuminuria, it was very marked.

(8) Pleuritis:- It occurs about as frequently as pneumonia, and during the same period of illness. Patients are sometimes attacked by it when in depressed health during or after nephritis. I have met with only one instance in which there was any appreciable amount of effusion, when the case was distinctly one of pleurisy. Usually there is only pain and friction &c.

(9) Hydrothorax may complicate anasarca. In only two cases I remember it to any degree, and both died. On post-mortem examination, in one case, the lung on the side of the effusion, was completely collapse, and seemed wholly devoid of air. A small amount of fluid may be reabsorbed.

(10) Febrile disturbances :- Sometimes when the patient is practically well - up and going about the ward - there is a sudden rise of the temperature, reaching, it may be to 103° or 104° F in a few hours. This is usually accompanied by a good deal of gastric disturbance, such as pain, sickness and vomiting; often headache, and abdominal pains. The bowels are generally costive. Occasionally it would seem to originate in some intestinal derangement. At other times it signals the onset of pneumonia or pleurisy; or there may be a small amount of albumen in the urine, or dropsy may follow.

(11) There are other constitutions again - probably in previous ill-health - who suffer heavily under an attack of Scarlet. The patient instead of coming 'himself again', after the subsidence of the acute symptoms, merges into a state of gradual deterioration of the general health, or dyscrasia, from which, it will tax all our resources to recover him.

The most constant symptoms are these, - Dry shrunken (skin)

skin, which may feel warm or hot; thin, soft, tremulous limbs; congested, cracked, often dry tongue; a subfebrile temperature; feeble, small accelerated pulse; usually a scared look, and dilated pupils; thirsty, yet drinks little: bowels irregular. There is slow and gradual emaciation. Diarrhoea, secondary ulceration of the throat, adenitis, with dysphagia are apt to be superadded and end life.

(12) Rheumatisms:-

Besides the general pains that are complained of sometimes at the onset of the illness, it is not uncommon for patients with Scarlet Fever to suffer from Rheumatism. Though occurring occasionally as early as the second day, it usually comes on from the fifth to the twelfth day of the disease. It very seldom much later than this. Adults do not always speak of it when it is present in a slight degree, and children but rarely do so. We may find it out from the nurse, who reports that the child cries when a certain limb is being moved, or there is swelling of the wrists

or wincing and shrinking from pain when we go to feel the pulse. Such cases may readily be overlooked. As a rule, there is more or less swelling of the affected joint, and any movement or pressure increases the pain in it. The temperature is not often elevated above a degree or so of the normal.

I have never been able to make out any Endocarditis either during or after the attack; and, according to my experience, the Rheumatism of Scarlet has not the significancy of the idiopathic form. If the joints are wrapped in cotton wool, and the bowels well-moved, when necessary, with Compound Jalap Powder, the former, almost invariably, gets better of itself in a day or two. In no instance, was there any chorea during the patients residence in the Hospitals, or, did it come to my knowledge of any ill-result afterwards. A girl, recently in my charge, took Scarlet Fever six weeks after she had left the Western Infirmary, where she had been under treatment for Chorea. She passed through the

fever free of any rheumatic pains, or return of her old complaint. I could never trace any decided connection between the Rheumatism of Scarlet and a previous attack of the same disease, or any family predisposition to it.

(13) Perhaps the most forbidding complication of any is destructive arthritis. Fortunately it only rarely occurs,- being met with in two, out of over four hundred cases of Scarlatina. One was a young man, aged 22 years, who made favourable progress till the 22nd day of illness, when this disease set in. The left knee was first affected; then the right shoulder and elbow, and the other joints in succession. Murmurs were heard over the heart, and the cardiac dulness was increased. There was profuse sweating, and persistent hiccup. Death on 25½ day, (third day of the Complication). It looked like "ulcerative endocarditis"; no post mortem was allowed.

The other case was a boy, aet 4, who had a very severe attack of Scarlet, but seemed to be (doing)

doing alright till the 30th day, - when this complication developed. The symptoms were somewhat similar to the previous case. He died in two days.

Cancrum oris, I never met with in my own Wards till two weeks ago, but this case does not come within the pale of this essay.

The following are some of the minor complications which I have seen, but have only time to summerate; - Eczema of the face; patches of erythema (?) on the chin; Urticaria (in three cases); a rickety diathesis, - a general weakly condition, accompanied by sweatings, stomatitis, and often ulceration along the border of the atonic-looking tongue; Incontinence of urine (not uncommon in the convalescence of young children): Boils; onychia and paronychia.

A distinct relapse of Scarlet occurred only in one case, - which was shown to Prof: Gairdner and students at their visit to Belvidere last winter.

In three undoubted cases, the patients had Enteric and Scarlet Fevers at the same time.

Measles, and Hooping Cough sometimes attack a patient with Scarlet, and vice versâ.

Two patients had Erysipelas of the face during convalescence from Scarlatina; one of whom had been suffering from haematuria for some time previously.

Mortality

Thirty-nine out of 371 patients admitted into my charge with Scarlet Fever, died, thus giving a deathrate of 10.51 per cent.

Three of whom died within few hours of admission; other three, within two days, and other five, only lived three days. So that there were eleven whose cases were quite hopeless when they came in.

The causes of death were, as follow.—

Fifteen from (primary) Malignant sorethroat.
Two " Secondary Sorethroat and Laryngitis.
Eleven, " Dropsy, complicated with Convulsions, Hydrothorax, Oedema of lungs, 2 nos Bad throat & Laryngitis

&c

Cause of death continued:-

Three died from Haemorrhages
Three " " Gradual asthenia.
Two " " Suppurative Arthritis (?)
One " " Acute bronchitis.

Treatment

Time and space will not permit me to do more than give a brief synopsis of the principal points in the treatment.

(1) "The sick should be at once separated from the sound"

(2) Protect from exposure &c.

(3) Get the head shaved if possible.

Diet should be liquid, at least, till temperature is normal.

"As for medicine, acetate of Ammonia or nitrate or Chlorate of Potash in solution may be serviceable." Carbonate of Ammonia has no special virtue. "Scarlatina mixture" of the Hospitals, (Chlorate of Potash & Perchloride of Iron sol^{n})-

is very useful, especially for spraying an ulcerated throat. Boracic acid solution is, perhaps, better.

(6) "For inflamed throat, a spray or gargle of Chlorate of Potash and Tincture of Belladonna, is beneficial.

(7) "To inflamed glands, counterirritants in the form of blister or Iodine Liniment (Tincture is useless) should be applied. "Few glands, thus treated, would suppurate.

(8) Dropsy:- Induce perspiration by febrifuges and external heat. Hot jars, outside the blankets, to feet, and if necessary, to thighs, will answer best. Dry the skin and change cloths as required. Give plenty of drinks. If pulse is weak, give Digitalis. In this way, great anasarca and albuminuria usually disappear in nine days or a fortnight. If great haematuria, Perchloride of Iron sometimes does good. Found no benefit from Ergotine or Tannic acid. Chloid of Ammonium and Nux Vomica did well in two cases: Be careful of the last.

(9) Convulsions. Inhalation of Chloroform during fit has a charming result; Also Suppository or Injection of Chloral to guard against return of them. Grains 15 and upwards given

as to age. Bromide is useless. Success of above method is unique. Cold to head &c as usual.

Otorrhoea: Syringe well; dry carefully; insufflate Boracic Acid, and few will go wrong. Carelessly done it is injurious and valueless. Nutritive enemata give surprising result in asthenic emaciated cases. Not long tried it, but three hopeless cases improved from the day first was given.

Now that the end of this thesis is reached, I would say that all statements that have been made here, are conclusions which I have arrived at, by careful observation of the cases that have come under my personal care. I have had no assistance from any-body; and any quotations made from books have been honestly acknowledged.

19/6/83
Aberdimant
Llandovery

Richard Prichard M.B. &c