Thesis

Scarlat Fever, its Complications and Sequelae,

by

James L. Darwin

1859.
I have chosen for a theme the subject of Scarlet Fever, its complications and sequelae, in consequence of having been a large number of cases of the disease since I commenced my studies five years ago. I have some misgivings as to the insufficiency of the arrangement of the Essay, but I have acted as nearly as I could in accordance with the principles which I learned in the Edinburgh School of Medicine. While of necessity, most of the matter is compiled from the various authorities on the Practice of Physic, I shall state my own opinions and impressions regarding those forms of the disease which I have most frequently met with, and the treatment which I have been adopted and followed.
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Introductory Remarks

Scarlet Fever or Scarlatina was described and named by Sydenham nearly two centuries ago, but it was not until near the close of last century that it was universally recognized as distinct from Measles, and received a definite place among the fevers styled the Eruptive or Exanthemata.

Since the beginning of this century it has been well known as one of the most constant and deadly diseases of the Symptomatic class, indeed by far the most deadly disease of infancy and childhood, and forming its mean item of the whole mortality.

To use the words of Dr. Burnett, "it is the most rapid in invagination, and the most variable in its course of all the eruptive fevers." Dr. J. L. Lamb says, "It presents the utmost diversity of form, severity, and complication, a diversity dependent on epidemic constitution, on local and endemic causes, accumulation of inhalations to, though he continues, "there are few diseases so fatal, yet there is not one of which the pathology and treatment has received so little elucidation in modern times."

While this statement is in the main true, and while the "variable course" and "diversity of complications" have caused the observations of physicians to be contradictory often, than could have been wished, much attention and careful research has been devoted to the disease, especially by the Edinburgh physicians, and not in vain.
The Successful Treatment of Scarlet Fever, by P. Hood, Surgeon.
Much remains to be done, however, and it may well be singular to those best aware of the difficulties of the subject, that the questions whether albumen is invariably present in the urine at some period in the course of scarlet fever, and whether tellurium is or is not a prophylactic of the disease, are still unsettled. Chiefly, in consequence of the differences of opinion regarding the Pathology of the disease, the treatment has been equally various, and nearly all the therapeutic agents at our disposal have been dogmatically recommended by their employers, each of whom has contended for the correctness of his own views, and maintained the superiority of his favourite plan of treatment. The results have been singularly different too. Mr. P. Hill, in a work entitled "The Successful Treatment of Scarlet Fever," published in August 1857, states that he has lost only two patients from this disease, during 25 years of active practice. Again, a friend of mine who graduated in Edinburgh in 1856, informs me that he lost more than 50 patients from scarlet fever, in a town of some 20,000 inhabitants, situated on the east coast of Scotland, and that during a few months of last year, such is the Porteous disease which we have to treat, one too, which there is good reason to believe, is increasing in severity and frequency of occurrence as an epidemic, but I think that, by careful study of its various phases and appropriate treatment, we may hope to lessen the mortality of the disease.
(a) Dr. Williams on Mortic Poison.

(b) Dr. Sydney on Inactive Fever. p 14.
I. History.

"We have no trace of the history of this disease, its origin or primary cause. E. Irving of Alexandria, (time of Mahomet, A.D. 610), spoke of smallpox and measles as not new or unusual, as its primary invaders, Europe from the East soon after smallpox and measles made their appearance. My own impression from reading lead me to coincide with the latter view, but I am inclined to think that it must have been some considerable time after these diseases, not least that it did not present itself in the marked form in which it is now observed. Jenner first named the disease in 1769, but he had only seen the eruption of the disease, not so-called malignant sore throat. And still others, however, considered measles and scarlet fever as one and the same, during all the 18th century. In 1748, Fothergill described the disease very well, especially the throat affection, and for some time it went by the name of 'Fothergill's sore throat.' In 1753, Norden, a French author, tried to show that scarlet fever was of epidemical origin. In 1793, Bichat, who had previously held that measles and scarlet fever were distinct diseases, abandoned his belief that they were identical. His theory first convinced the profession, and his opinions were soon after confirmed by William in his 'Treatise on Cutaneous Diseases.' The disease spread in a
(a) Dr. G. Gregory, p. 149.

Churchill on Dis. of Children, p. 570.

(c) Edin. med. & Surg. Journal, Vol. XXXII.
properly direction steadily, but slowly, when we regard its
short period of incubation. It first appeared in Spain
in 1610, Naples 1618, Germany 1625, Edinburgh 1680,
and America in 1736, when it spread slowly but with
great mortality. Various authors mention in their
description of epidemics, that a similar affection was
coincidentally prevalent among the lower animals.
Dr. Hamilton states that during one severe epidemic
in Edinburgh in 1832, many horses had violent fever,
with low throat and abscesses of the neck, pneumonia &c.

II. Symptomatology.

Characteristic symptoms.

Scald Fever is an infectious and contagious febrile
disease, characterized by inflammation, more or less
dense, of the mucous membrane of the fauces, and
a scattered efflorescence of the skin, the latter generally
commencing on the second day of the disease, and
decreasing about the fifth, and ending in desquama-
tion of the cuticle.

To give a less precise definition, the disease has the
following marked features: a short period of incubation;
unusually great heat, severe throat affection, frequent
involvement of the salivary and lymphatic glands; con-
tiguous textures, complete desquamation of the
epidermis, and frequently accompanying a following
congestive nephritis, with albuminous urine, anuria,
and secondary involvement of the lungs, laces.
Varieties.

Scutari fever is usually spoken of as having different modifications, hence called Varieties. For a long time only three were recognized, viz. Scutaria Simplex, S. Anginosa, S. Maligina. Following Dr. Copland, have two more, S. Pneumonia, S. Lata. Some authors have other sub-varieties, while others simply call them cases grave or mild.

1. Scutaria Simplex or S. Virtus.

The invasion of the disease is usually ushered by rigors, and the usual train of symptoms styles febrile. Frequently coincident with the rigor, or in its place, there is vomiting, generally of a bilious looking fluid. The articular pains are often severe, and in children there may be convulsions or delirium. At a variable period, but usually at the end of 24 hours, the eruption begins to come out. Cullen says that the eruption is later in appearance, but Villan, Yac绖. I all grant authors agree in stating the average time to be the second day. At first there are red spots at points, with pale veins between them, and soon the redness becomes uniform. It generally makes its first appearance on the face, neck, but last infrequently on the hands and lateral side of the forearm. On the neck and limbs it is vivid and continuous, while the trunk, last affected, is often covered with irregularly sized and shaped patches of eruption. The swellings of the joints show the rash well, but I have not been in those cases...
as done over. The skin is hot, dry, and rough to the feel, from the cor pertion of the cutaneous papillae, which, if may be remarked, disappears on pressure.

At a time less definite than the eruption, there is a feeling of stiffness in the neck, and there is injection of the fa caval mucous membrane, which there is also inflammation in the definition. I believe that the throat affection is upon the whole more constant and certain in appearance than the blemish. You may have, however, with no trace of rigor, a steadily persisting disturbance, the eruption or the throat affection as the first appreciable symptom. Very early in the disease, the tongue is covered with a thick white fur, though which the elongated papillae are seen pro jeeting. On the second or third day, this fur clears rapidly, leaving the tongue clean and of a bright red colour, and the papillae still enlarged, giving rise to the "strawberry tongue," which is almost diagnostic of scarlet fever, and is present in all the varieties, save perhaps in S. lataeus. On the 3rd or 4th day of the eruption, military vesicles not uncommonly appear. They are filled with fluid which is absorbed, leaving a dry ichthyic scab. It is said that the contents become purulent in some rare cases. The eruption generally fades on the fifth day, and is understood on the birth. This is frequently attended by some critical discharge, a trace of albumen in the urine, a copious deposit of lithiates, or free inspiration, and sometimes there is slight general.
the febrile symptoms. Desquamation of the cuticle begins from the 4th to the 8th day, and takes place in the order of the nails. It is more complete than in any other disease, and the cuticle is shed in large flakes, sometimes in the form of a glove or slipper. The cuticular appendages are sometimes affected. The hair comes off, and Dr. Gowers mentions a case in which the nails were shed. The throat affection gradually abates, in most cases coincident with, or closely following the decline of the fever. The patient, even in the milder forms of the fever, is left very weak, and there is great tendency to involvement of the kidneys, which must be carefully attended to, and prevented if possible. It has generally occurred that the least susceptibility to renal disorder is an increase ratio of the severity of the fever symptoms.

I have said little of the symptoms common to other fevers, third be, and may merely remark that there is no abatement of the fever when the eruption comes out. Before leaving Dr. Jenner, I may state that the disease is usually divided into three stages. The first, occupying the first day, and marked by fever and toward its close, by a furrow tongue and sore throat. The second lasts from the second day to the fifth, inclusive, and is characterized by the eruption and increased throat affection, and the clean strawberry tongue. The third stage is that of desquamation.
From "Norton's Practice of Medicine," p. 411.
This may be said to differ from S. Leptinea only in degree, all the symptoms being much intensified. The onset of the disease is the same, but the constitutional disturbance is more severe, and the throat symptoms are present early and urgently. Soon after the onset, there is much pain in the throat, and the muscles of the jaw are stiff, and deglutition is difficult. The eruption comes out on the second day, but it is not as regular as in S. Leptinea. The heat of the skin is very great. The temperature is often 105° or 106° Fahrenheit, and Dr. Napier said that he had found it even as high as 112°. Andral and Nogu in recent experiments have not found it higher than 41° cent, equivalent to nearly 106° Fahrenheit. (a) To return to the throat, there is intense injection of the faucial mucous membrane, and in the majority of the cases which I have seen, there were patches of effused lymph on the membrane on the second day. They rapidly gave way, but if removed, an unbroken surface remained. Rapid ulceration soon follows, which chose the velum and the convex surfaces of the tonsils by preference. There is a vivid eructation from the whole throat, and the hoarseness generally involved, from forth a secretion of very acrid mucous, pus-tentent fluid. In several days the inflammation increases and the ulceration extends. The tonsils can be felt externally, had I swelled, and if, as frequently occurs, the submaxillary and other glands are
implicated, the whole neck is brawny and edematous. Meanwhile, the fever is severe, and there is frequent delirium, aggravated towards night. The fever and throat affection may continue long (the latter now acting as a cause in keeping up the former), for five, ten or fifteen days after the disappearance of the rash. Many local complications occur in the form of scarlet fever. Inflammation, more or less severe, of the Cattarhian tube is frequent, indeed it is the rule. Convalescence is slow, the closeness of the throat healing tardily, and the peculiar appearance of the patient, pale, thin, cool, with the mucous membranes of the face bright red, is familiar to all who have been much in the vicinity.


Under this head authors generally include those cases in which the throat affection is more severe than in 1. Anguisora, and of an asthenic type, more tending to sloughing than ulceration, but chiefly those in which the constitutional symptoms are of a typhoid type, with little reaction, sometimes indeed so truly malignant that necrosis takes place, and we only discover the existence of scarlet fever from circumstantial evidence. Death may occur in a few hours. Dr. Withrow stated give instances of this. Dr. Willan asserted that in these cases there had been throat affection existing febrifugously, though not observed, but this opinion is not generally held. The nervous disturbance is great.
In the most fatal cases, there are convulsions and coma. The pulse is small, frequent, irregular, there is low fever, delirium, tongue dry and brown, and the teeth covered with lodes. The mouth is foul, with an fetid smell. The rash is irregular in appearance and duration, often disappearing and reappearing without any obvious cause. The skin is not as hot as in Measles, and in one or two cases I have seen no reaction after the rigor, and the surface continue cold until death took place. I have also observed the rash in patches with defined abrupt margins. The throat has lost the bright red appearance, but is forged, and of a dusky red or livid hue, and is often covered with lymph of low vitality, which, soon giving way, reveals thrushy ulcers below. The discharge from the nares is very offensive and often purulent. The copious purulent discharge from the nares and the swelling under the larynx stertor is and difficult. The posterior pharynx is much affected, and is irritable that liquids ingesta are frequently rejected per nares. Hoary and discolored abscess of the neck, involving hard tessel, is common. In some cases there is hemorrhage from all the mucous membranes & cutaneous petechiae. The complications are severe and fatal; and in a large proportion of cases there is a fatal result. Among the complications.
Here may be mentioned diaphoresis, with or without elevation of the intestines, probably in some cases at least, the result of the throat discharge being swallowed. Albuminuria and haematuria are frequently present, in the variety of the disease occurring as an early complication, and I say as a sequel. I shall refer to these and other complications.


This form of the disease is generally seen in adults during an epidemic of scarlet fever. It is accompanied by the red or pharynx, usually without much swelling, and attains with a leucorrhoea and disproportioned amount of fever. The strawberry tongue is almost always present. In several cases which I have seen, the nocturnal exacerbation of fever has been very severe, new amounting to delirium rigor; I have seen cases in which the scoriæ is heated from ordinary scarlatina, and it is usually believed that it is capable of complication all the varieties. During the spring of 1838, I attended an adult Lancastrian, operated for low throat similar to that of scarlatina. On the fourth day the rash appeared, and remained for three or four days, as if it had come out at the normal period. A fellow workman, residing in another part of the town, who visited him, had S. Farrow about a week after, and some ten days after that, two children of the latter were attacked with leucæmia anguïosa, which was followed by dysentery.
Laycock mentions that nurses attending seceded fever patients are frequently attacked. (Lectures, 1858.) It seems also that the susceptibility to further and repeated attacks of this modified disorder remains. Dr. W. Walker, who graduated in Edinburgh in 1858, informs me that, notwithstanding a severe attack of scarlatina in youth, he suffers from chronic angina almost every time he visits cases of the disease. He here makes a somewhat similar statement of his own experience. (c)

5. Scarlatina Latens - Copland.
This form of disease undoubtedly exists, though not much recognized as yet. It comprehends those cases, in which anaemia similar to that following scarlet fever occurs, and the disease is or has been present in the same family or neighborhood, so as to render it probable that some masked form has been the cause of the disease. Slight febrile symptoms usually precede the manifestation of the disease, but they are frequently overlooked or concealed. I shall enumerate the symptoms in detail, when treating of Scarlatinoid Dyspepsy, and they fault remark that there is albuminous urine, sometimes hæmaturia, anaemia of the cellular tissue, and abscess of the various serous cavities.

I have seen some marked instances of this disease. In the autumn of 1858, I attended a family of six children, one of whom had severe S. Anginosa.
and no dyspepy. Two had slight empiema, and the remaining three had none. Three five had anemia with albuminuria, and two of those who had no empiema died of edema of the lungs. They were twins, and in one case the right lung was affected, in the other the left. In these cases there was a period of sickness previous to the appearance, varying
from 2 days to a week.

Here thus gone over the varieties of Scarlet Fever. 
I. Convexus, with empiema and mild throat affection, but considerable risk of subsequent empiema; I. Ancyrosis, with high fever and severe throat symptoms, essentially ethmic in its nature; I. Maligna, asthenic and tending to a typhoid type; I. Faciens, where the manifestation of the fever process is limited to the throat; and I. Laticus, in which, all the primary phenomena being wanting, we have in involvement of the kidneys.

In acute diseases, more especially those of the pyemotic class, the maternal brodie may exhaust itself on only one or two of the tissues it usually affects, with no involvement, a slight, of the others. Such tendencies or variations being caused by the idiosyncrasy of the individual. And the type of the disease, or in other words, some difference in the amount and violence of the fever process.

In almost every epidemic of Scarlet Fever, there is some peculiarity in the type of the primary disease.
and more especially in the complications, and those which may be very deadly in one epidemic, are often comparatively harmless in the next.

It must be remembered that the divisions into varieties are artificial, especially Nos. 1, 2, 3. Not only are all forms seen in the same epidemic, but even in the same family or institution, and moreover, the disease, after a benign beginning, often passes into one of the severe forms, without any warning or appreciable cause.

III. Etiology

Scarlet Fever has been well styled by Dr. H. Williams, "one of the diseases of secondary formation," and one of the finest of its class. As I have before said, I doubt if the latter remark is correct, and incline to think that Scarlet Fever as we have it now, the fully developed disease, is by far the most recent of the tonsillitis.

From a study of the history of epidemic diseases, one is led to believe that each exists for a certain time and then dies out, from exhaustion, interferences, or other causes unknown, and that the epoch of their existence is limited in proportion to the length of their incubation stage, and rapidity of spread. If we assume this to be correct, measles ought to have been longer in attaining a climax than Scarlet Fever, had they begun about the same time. Measles, however, seem to be less fatal than they were.
During last century, or at least not since so, while scarlet fever is obviously an increasing malady, and seems likely, in after times, to occupy that painful pre-eminence among the fatal diseases of early life which smallpox formerly enjoyed. The general opinion is that the disease had a local origin, probably epidemic.

Cause. The cause is considered to be a specific or specific from poison, which acting on the blood, gives rise to the symptoms which characterize the disease, and which, being re-produced in the body, further the spread of the disease. The predisposing cause is the universal, or almost universal susceptibility, in childhood at least, the exciting cause is the infection or contagion, and as complications I have been to - immune to cold or fatigue apparently accelerate an attack, which, we may think, might possibly not have occurred but for those depressing influences. The disease occurs as an epidemic about every three years on an average.

In London there is usually a longer interval, probably from the thorough saturation of the crowd city, with the disease, and few of the predisposed escaping. It was epidemic in London in 1839, 1844, 1848, 1852, and less very fatal (March 1852).

Dr. Brodick remarks that epidemics are often peculiarly limited, "being confined to a small district of country, a single city, or even part of a city."
There was one instance of this which befriended me very much. During the autumn of 1857 and spring of 1858, there was an epidemic of scarlet fever in the north east of Lancashire, where I was then residing. Two villages about half a mile distant were attacked, and in one of them there was scarlet fever in every house. In another village situated between them two but a single case occurred, although the inhabitants went to the same factory, and the children to the same school, and no precautions whatever were adopted. This village was on a ridge which separated the other, and I could find no cause for its exemption except its elevated situation.

Mode of Spreading.

In the great majority of cases the air is the medium by which the disease is conveyed. Most medical men believe that it is also communicable by contact and fomites. Dr. Jenner, William J. G. Sebag, state this, and Dr. Morton gives an instance of it. The general opinion too is that the liability to infect others lasts long, even weeks after agueanation. William L. Asomption will cause the disease. Sir Richard Kron of Cambridge inoculated with fluid from the vesicles and found that it produced the disease, but not less severely than in ordinary cases, as Morton also succeeded in inoculation, and found that seven days elapsed before the disease appeared. (c)

Joseph d'Aubosse & Lehmann have employed it also.
The results of the practice do not seem to give any prospect of benefit, and I am not aware that it ever now employed.

Time of Incubation.

This is variously stated. Dr. Christian says from four to six days. Dr. Mivews says from one to ten days. Dr. Rushton, from the result of inoculation, says 7 days. Giliieu only three days, and Dr. Williams from one to ten. Dr. Miliieu and Martley state that of 39 cases, in sixteen, the time of incubation was from two to seven days, in fifteen, from eight to thirteen days, and in eight, from fifteen to forty days. From Cases which I have seen, I think that Dr. Gregory is nearest to the truth in stating the incubative period as from four to eight days.

Question of Recurrence.

Recurrence of scarlet fever, except in the modified form of Dr. Faureaux, seems the very rare. Most authors state that cases occur, but I find very few trustworthy to be recorded as such. Dr. Millen, in an experience of 2000 cases never saw recurrence of the fever. Dr. Case makes a similar statement. Dr. Henderson mentions that of a large number of cases which he saw at the Royal Infirmary here during an epidemic, only two were said to have had the disease before. Dec. 1859. Dr. Meigs gives three instances in his work on Diseases of Children, and Sir Gilbert Blane saw the disease occur three times in a young lady. (a)

My own impression is, that the law of incuration has...
aptibility holds quite as true of scarlet fever, as small-pox, or measles, and that most cases of so-called recurrence have been mistakes in diagnosis. Prevalence as to time of year, climate, & observations are contradictory regarding the season which is most favorable to the spread of the epidemic. The usual opinion seems to be that it is most prevalent in spring and autumn, and least in winter. Both extremes of temperature seem adverse to the spread of the disease. Though some cases occur in winter, the inscrutable mortality is greater, and the case seems to be that while cold checks the spread of the disease, it increases much the risk of those attacked. Dr. Billan makes this remark in his work on the Diseases of London, and I am convinced of its truth. As regards climate, scarlet fever is essentially a disease of temperate climates. Dr. Gregory says that he is unaware of its action on the black races. He, along with Dr. Copland, says that the disease is still unknown in Australia, New Zealand, and Samoan islands. However, scarlet fever, or scarlet fever, prevails extensively in the tropics, but is unknown in temperate regions.

Prevalence as to age.
The disease is essentially one of childhood, more than three fourths of cases being under ten years of age. Dr. Billan states that most cases occur during the third year.
(a) Lectures, 1858-9
This author states that the third and fourth years of life are most опасны for attack. It is uncommon during the first year, but nevertheless may occur very early. Dr. Gregor states that his youngest child died of it on the third day after birth. Dr. Meigs had a case of twenty-five days old. Of one hundred and five cases treated by him, Miller and Barthez, eighteen were from two to four years old, forty-six from four to seven years, and nineteen above eight years.

The susceptibility to the disease lessens much after the thirtieth year. It may occur much later, however. Dr. Henderson mentions two cases, one at forty-five years, the other at fifty-nine years. The latter was fatal. Dr. Copland gives a case similar to the last, which proved rapidly fatal.

Prevalence as regards sex.

Scanty hair affects the toes in remarkably equal proportions, during childhood at least. Copland and Gregor.

Dr. Sweedie states that he has seen it most frequently in girls. Mr. H. Miller. Barthez come to the opposite conclusion. Dr. Meigs, Wood, Dr. Sweedie agree in stating that the disease is most frequent after puberty in the female sex, probably the result of their more frequent intercourse with the sick.

The complication of local dyspepsy seems more frequent in males, but I shall return to that afterwards.
Las, sometimes hoarse - cough is consistent with tuberculosis.
IV. Intercurrent Complications and Sequelae.

It is well known that the SCARLET FEVER is liable to have complications and sequelae which are frequently the most serious part of the malady. Foremost among these SCARLET FEVER stands, and indeed I am aware of no disease which involves such a variety of organs, "no organ or structure which may not be dragged into participation with the primary malady." Dr. Williams has spoken of the complications of SCARLET FEVER as secondary and tertiary effects of the specific poison, the primary effect being the fever itself. Under the head of the secondary effects he includes the action of the disease on the throat, kidneys, etc., and the further action of the local poison he styles the tertiary. I shall use the terms primary and secondary, when considering the affections of the various systems. I shall first speak of SCARLET FEVER consequent on other fevers or poisons. Of course, preexisting disease, acute nephritis will influence the course of the malady, and as age advances, we have greater liability to this.

SCARLET FEVER complicated with other fevers.

In some rare instances SCARLET FEVER is consequent with measles or smallpox, and still more rarely with erysipelas. Dr. Gregory mentions the interesting cases of two children of the same family, one of whom had measles and subsequent SCARLET FEVER, while the
Other had scarlet fever first, and measles afterwards. He mentions also that he had seen cases at the smallpox hospital of the simultaneous presence of scarlatina and smallpox. Mr. Mason, long the surgeon to the hospital, states that in eleven years he had seen cases of simultaneous varicella and scarlatina. In one of his cases of scarlatina, the surface became covered with spots much resembling those of varicella, so that I looked upon it as a case of smallpox grafted on the former disease. I am now of opinion that these were petechiae, resulting from a previous cachectic state similar to scarlatina, and caused by insufficient food. Possibly some of the above cases may have been of the same nature.

Dr. Copeland remarks that he has been patients who had suffered from scarlatina and measles exposed to the contagion of scarlatina, and yet escaped. It is an interesting query how far one of the exanthemata gives temporary or permanent immunity to the attacks of the other. That some community, temporary at least, is produced, there can be doubt.

"Secondary fever," while speaking of constitutional complications, I may remark that I have frequently noticed a peculiar febrile condition following scarlet fever, and this without any apparent cause. I have actually seen it in cases of diphtheria.
After desquamation, the fever instead of abating, continued, with thirst, no desire for food, restlessness, night sweats and frequently delirium... It frequently took in discharge from the ears, or the occurrence of some other sequela, but, with the urine free from albumen, and no traceable cause, I have seen this state continue for one or two weeks, or even a longer period, and then gradually disappear. I have not seen this noticed by any of the authors whom I have consulted.

Anaemia and Anaemic Dasisy.
As after all other acute febrile diseases, an state of anaemia may occur after scarlet fever. My opinion is that as a general rule the anaemia left by uncomplicated scarlet fever is simply a lessening of the quantity of the blood, at least the blood is not impoverished by the marked loss of iron and haematin which takes place in albuminuria.

I need not have mentioned the anaemia said to follow (presumed uncomplicated) scarlatina, were it not for the Dasisy which is said to accompany it. I have never seen it, and believe that scarlatina Dasisy has all but invariably a constitutional origin. Still, it is reasonable to suppose that anaemia might be the cause. E. Behrend (Constant. Lekh, 1857. p 200) calls it hypertrophi anaemicus, in contradistinction to hypertrophi applications. Ilin states that Phillip observed sixty cases of scarlet fever at Berlin.
(a) Days' Translation of Simon's Chem. p 280.
where it was thin prevalent, and anasarca could not be ward off, and in no instance was albumen in the urine. (a) Presuming this state-
ment to be correct, I suppose that the disease would be Hemopto Anaemicus.
Complications and sequelae affecting the urinary system.
By far the most important complication of scarlet
fever is the involvement of the kidney, causing all-
serous urine, retention of ura, and secondary
lesions, some of which are rapidly fatal.
It is still a fixed question as to whether the kidneys
are always affected in scarlatina, whether their
involvement is an essential part of the disease, or
merely an occasional sequel. Phips and strongly
express the opinion, "that from symptoms and
post-mortem appearances, it is inclined to believe
that the kidneys are affected commonly in the case."
The general statement is that the lining membrane
of the convoluted tubes of the kidney undergoes des-
quamates coincidently with the shedding of the
cuticle, and some cases are that all mucous mem-
brane are similarly affected.
After some investigation, the only proof which I have
found of this is in leucous chemistry. "During
desquamates after scarlet fever, I found some
mucous corpuscles in the urine than was usual,
but there was then no trace of albumen. The
urine was also turbid from a large quantity of
epitheliun swimming about, either in single scales, or connected together to the number of eight or twelve. The latter appearance generally precedes the desquamation of the cuticle. (a) 

Sicking, it for granted that scarlet fever includes in its phenomena the desquamation from the canals, the next question is, whether albumenuria is invariably present at some time or other in the course of the disorder. Simón says, "Further researches are required to settle this point. He may have been noisy with albumenuria, albumenuria without desquamation, and desquamation without albumenuria." (b) I have been the less formed, but been the last mentioned occurrence, and doubt the correctness of his statement. As I have previously stated, Phillips of Berlin saw sixty cases of scarlet fever, most of them soon attended with desquamation, but with no albumen in the urine. Sölsa found albumen in twenty-two cases out of twenty-three. Simón considers that it is generally present, but not invariably.

Dr. Rössle considers that it is all but constantly present. His experiments have been the most careful of any hitherto attempted, at least on the same scale. His conclusions as quoted by Dr. Hatton are, "in almost all cases of scarlet fever, the urine at some point of the disease is more or less albuminous. The usual time of its appearance is soon after the
degeneration of the interior. This condition of the
urine is transient, and not necessarily accompanied
by albumen. It lasts from one to two days until
ten days, the average being from or five. Unless the
urine be frequently examined it may not be found.
Then once it disappears, it never reappears."
Mr. D. Hamilton remarks, that when the daily amount
of urine was divided into three parts, that he
sometimes found albumen in that passed in the
morning, and lost in the other two portions. Dr.
Blane states that he has not found albumen
so constantly as D. Keighie. A case of measles
occurred in Ward I of the Royal Infirmary in
Nov. 1858 of last year. An adult, John Mackie,
had L. Angioma, with escharous eruption and bloody
vesicles, and during the three weeks he was in the
house, not a trace of albumen was found in the
urine, though it was carefully examined.
In the same epidemic which D. Keighie observed, D.
R. I. found the same albumen in St. Helen's
Hospital. Some time later, Dr. A. Wood in Pertho
Hospital had albumen in half the cases.
About the end of the epidemic, Mr. B. Hall in
George Watson's Hospital, and Dr. Gillespie in Dona-
so's found no albumen, same when albumen
infrequently. Hence it would seem that albumen
is present much more frequently in some epidemics
than in others, and even in different periods of the same.
to sum up, my impressions from reading and experience are, that more or less albuminuria exists in the great majority of scarlet fever cases, that it is not necessarily an indication usually accompanied by anaemia, but when the latter occurs, its presence is invariable.

Leaving this interesting subject, I return to the involvement of the kidneys which gives rise to albuminuria and anaemia. I believe that our improved knowledge of the true pathology of this disease gives us a clue to those frequent cases of sudden death which so much surprised our predecessors. "The true sources of many of the diseases complicating and following scarlet fever, are the changes which take place in the kidneys at a much more early period in the disease than has hitherto been believed. So these changes are owing the inflammations of organs and serous membranes." Copland.

Dr Copland also advances an ingenious theory, viz. that if we could gauge the amount of the renal disease, we might know when it was likely to show itself. This is incorrect, and our only guide in such cases is to study the rheumatic predisposition of the patient. Cardiacal Deafness.

This was first described by Horton. It varies much in severity and frequency of occurrence according to the character of the evidence and the predisposition.

(b) Envirote Reus. p. 153.
When attacked, "Plague of Vienna in 1762, thought the disease more dangerous than the previous fourteen years. King in 1786 regarded it heavily, and so also did Cullen, Bateman, and Armstrong. Until a comparatively late period, many erroneous ideas were held regarding the pathology of the disease. "Dr. G. Gregory in 1843 supposed that it depended upon some inflammatory condition of the vascular system. (1) Dr. G. Johnson, N. London, have since thrown much light on the disease, and shown its true pathological nature.

Frequency of occurrence.

Accounts regarding this are variable. Mr. H. Welch & Dr. Barry had one fifth of their cases attacked. D. Spears had twenty-two in one hundred and eighty-five, or one in eight. Mr. Henderson had one case in fifteen of those under his own observation. (Letters, 1859) Mr. K. of Bootmen, mentioned by Dr. Gregory, had one case in eleven. In those cases which I have had, it occurred very frequently, one in every four or five. I should think, but I have no accurate means regarding this. Dr. J. shows in an elaborate article on the subject, that the most frequent day of invasion is the fourteenth, not the twenty-first, as stated by Dr. Copland and most authors. After the fourteenth, the most frequent day is the twenty-first, then the twelfth, then eleventh, then thirteenth, eighteenth, and twentieth. Indicating from

(b) Lancet. March 19th 1859.
the mortality, the disorder is more frequent in males than females; in the inspection of boys to forty, it is most frequent between the fifth and tenth years, and September is the most fatal month. In his calculations, these cases are not taken into account in which the kidneys are early involved, causing a contributing to a rapidly fatal result.

The severe follows T. semihora most frequently, and T. anguivora in the next degree. S. Jaccutri state that there are no recorded instances of it after T. malaya, and I believe that is rare, as a sequel at least. S. Besham mentions a case in which it happened upon T. vaevaeus. According to S. Laycock, the arthritic diathesis is very liable to renal affection after scarlet fever, and along with this is the secondary effects upon the subcutaneous tissues. It is certain that some families suffer from scarlet fever much more than others. S. Hill, Dr. E. Hamilton, S. Williams & Henderson add this symptom of scarlet fever.

I have already remarked that when death occurs early in scarlet fever, it may be the result, either of such a great change in the blood as is incompatible with life, and the symptoms are those of the worst form of typhoid fever, viz. consumptive fever, or from especially when such result is sudden and attended by the appearance of new complications of which there was no threatening at the commence-
ment of the disease) from oral involvement, acute poisoning of the blood, and probably effusion into the meninges or pericardium. The latter affection is generally accompanied by a lumen affection of one or both pleural sacs. In scarlatina, the specific fever poison acts on the kidneys, and they in turn produce a new and additional change in the blood. When the kidney is involved during the first few days of the disease, we have little warning of its occurrence, the symptoms being those in those of the general fever. There, however, as most usually happens, the attack of delirium comes on after the turn of the disease, during convalescence, the diagnosis is less difficult. The skin becomes more dry and harsh to the feel, the febrile symptoms return or are exaggerated, the pulse becomes quicker and, in a very marked degree, harder, and the urine becomes scanty, high-colored, and frequently contains blood corpuscles. Allusion, which may have been entirely absent previously, is now plentiful. Frequently, the urine will coagulate into a form curd, upon the expelling of the clay. There have also been haematuria, which in one case continued for about a week. The usual appearance of the urine is characteristic. The word term used is that it is smoky or foamy, and I have thought that it much resembled muddy ale. Along with the symptoms above mentioned, there is

tenderness in the lumbar region, and not infrequently the whole of the joints, and even the muscles are painful, and even slight movements are execrable with difficulty.

Anosmia is the cellular tissue is the most frequent result of the mental disorder, probably in the proportion of ten cases to one. (a)

Next to anosmia, the order of attack is said to be, edema of the lungs, hypothyrosis, hydrophobia, and hydrocephalus. (b) There may be complete encephalitis. Dr. Bree relates two cases, one lasting for 36 hours, the other for five days. Both cases recovered. I have been one case, a girl of six years of age, in whom encephalitis came on about the birth day from the commencement of the fever. There was purpuraiancica, but not a drop of urine was secreted. The constitutional symptoms were not urgent until the birth day, viz. the twelfth day of the fever, when death took place suddenly with coma-like symptoms.

The anosmia is usually first seen in the face, in the lower eyelids especially, the puffiness being most evident in the morning.

"The discharge is of a serous type, not serous, and does not yield readily on pressure." In males the scrotum is very frequently affected to a great degree, indeed this took place so often in my case, that I could not account for this choice of locality.
The lower extremities are usually affected last. Dr. C. J. B. Williams states that he has frequently seen great tenderness of them and oedematous ankles along with dyspnea. These have not uncommonly the witness many marked degree.

In the great majority of cases the disease is curable and much more amenable to treatment than the primary fever. Sometimes, however, there is gradual progress to a fatal termination. I quote the graphic description given by Dr. Nest.

"The swelling, after having undergone many apparent by careless fluctuations, becomes extreme as well as universal, the features disfigured and blotted, the legs swollen, and the abdominal peritoneum infiltrated. The skin is hot and dry. The lumbosacral pain is severe, and the urine is voided in very small quantity. The chief suffering, however, is referred to the chest, the respiration is quickened and laboured, there is short, hacking, cough, and orthopnea, and death soon follows."

The secondary complications of scarlatinal dyspnea I shall treat under the various systems.

Causes of Scarlatinal Dyspnea

Among the predisposing causes to its occurrence, there is the liability which is undoubtedly present in some families, and under certain diathetic conditions. Another cause is the type of the epidemic, "the epidemic constitution of the year," as Sydenham named it.
There may be no exciting cause besides the fever itself, especially when the chills occur as a complication early in the disease. Most frequently, however, when it occurs as a sequel, it has been excited by exposure to cold during delirium, or an error in diet. Cold is to common a cause, that some, as Dr. Watson, mention it alone. I shall recur to the state of the kidneys in this disease, under the head of Pathology. It may be stated, that they are incriminated in the skin as secretory organs. When therefore, the skin secretion already performed with difficulty, is checked by cold, the venous effluxion falls on the secretory critical substance of the kidneys. These veins fail to perform the double task, allow the albumen, an essential constituent of the blood, to pass through, and at the same time to not eliminate the urea. In, and hence arises the long train of symptoms which I have enumerated.

Integumentary System.

In some cases of scarlet fever, there are petechiae, often associated with internal hemorrhage, and almost always foreboding a fatal issue. As I have mentioned previously, it has been stated by Dr. J. B. Williams that he has seen epipharlexes of the skin after the chills, once. I have not seen this, nor found mention of it in other authors. What may be called filigreeous epipharlexes of the
neck is of very frequent occurrence in T. Angiosoma. In one case under my care, the skin and cellular tissue over the neck and upper external region were affected, and dissecting abscesses formed. The patient recovered after a long struggle, the cicatrices resembling that consequent on burn.

I may here mention the swelling of the lymphatic glands, and the abscesses of the cellular tissues of the neck, which may co-exist or occur separately. When the patient is exposed to unfavourable circumstances as regards ventilation &c., these abscesses are often bloody. They are generally under the angle of the jaw, and extend down the side of the neck, or, as I have been, encircle the whole neck, except over the spine. When of large size, these abscesses are generally fatal, but the patient often survives for a surprisingly length of time. The inflammatory effusion is characteristic, not yielding much to pressure, and advancing slowly to ulceration. An incision will only produce a thin, purulent discharge, the pus being seemingly infiltrated through the whole swelling.

Even when the abscess has opened spontaneously, there is great tendency to sloughing and ulceration. The mouth may be opened wide, and to best state that death sometimes occurs from ulceration extending into the large vessels of the neck.

As this is all somewhat rare, I subjoin a view
account of three cases, the first two of which I saw
myself, along with a friend to whom I am indebted
for the details.

Case 1. Ellis, a boy, aged 5 years, residing in Canongate.
A large abscess formed on left side of the neck, which
was opened when pointing took place. Ten days
after this, instant death from sepsis ensued from the
aperture took place. The abscess was of a
shrunken nature, and never took on healthy
action. The date of death was Dec. 30, 1835.

Case 2. Mary Brown, aged 20 months. Abscess of neck
followed on scarlet fever. When opened there was
a large quantity of unhealthy pus. A week after,
sepsis took a profuse extent took place. My
friend, being accidentally in the house, applied
pressure, which checked the bleeding, and there was
no recurrence. The patient died from exhaustion,
four days after. Jan. 10, 1836.

Case 3. A girl, aged 4 years, residing in a town on the
east coast of Scotland. She had hooping cough,
when she was attacked with scarlatina, a complication
which I omitted to mention under the head of "scar-
larina coexistent with other fevers present."
This was the usual throat ulceration, which was
treated by inject of belladonna. She was apparently
recovered, and taking tonics. Then, one morning after
a severe attack of coughing, hard sputum from her
mouth in large quantity. The exact place from
which it came could not be seen, but it was chiefly
tentral. Cold was applied externally, and Asec.
Plumbi & Catechu given internally, and the bleeding
was temporarily arrested. During a fit of coughing
twelve hours after, it recurred and caused death.
This case occurred during the summer of 1858.
Digestive System and Puerperium.
Perhaps the digestive system, and its appendages, is
that most frequently involved after the puerperium.
We have the parotid and submaxillary glands af-
fected, the tonsils and submucous glands of the
Pharynx, and also, in some cases, the whole intestinal
Canal. The parotid and submaxillary glands may
be affected conjointly with other tissues and organs
in ordinary scarlet fever, or they may present the
only symptoms of the disease. J. Laycock considers
this a variety of scarlet fever, and in his histology
of fevers, styles it glandular scarlet fever, having as
a sub. Variety, the Tumors, Contagious Parotitis, the
lymphatic Parotidea of authors (2). The glands are
hard and shiny, and may painful. The affection
generally ends in slow resolution which begins on
the fourth or fifth day. When the parotid is af-
fected alone, the disease is called Mumps. Though
similar in many respects to St. Huremism, it is not
generally recognized as a variety. J. Laycock
states that anoclyce sometimes follows Mumps,
which tends to prove his opinion correct. The famous
is often affected similarly to the other glands which have the same structure.

The affection of the tonsils and sub-mucous glands of the throat is, in my opinion, the most invariable symptom of scarlet fever. I believe that this organ on the blood, as Dr. Lacych has taught in his lectures, and that the fever poison acts upon them in the majority of cases.

I have described the throat affection under the varieties of scarlet fever, and need only reiterate that it is seen in very different degrees, from slight redness, to closely ulceration and gangrene.

Access caused by extension of inflammation from the posterior pharynx is sometimes seen, involving all tissues, mucous substance, ligaments and deep bone; and in some rare instances causing paralysis of the cervical nerves, or part of the tracheal pleurae. Dr. Copland mentions that these occur as asthma or diffuse gouty enteritis tender and quotes instances from the works of Johnston, Kruhsham, Thomsdae etc. Dr. Gregor mentions this as various enteritis, and states that in bad cases ulceration takes place, and bloody blisters, as in dysentery. "The angles of the lips are excoriated, and the tip of the nose bleed with congested vessels." (a) I have been seen the latter, but slight ulceration of the angles of the mouth is very common, causing great pain, and healing slowly. I have seen "Francica" as
in steatoma, especially in S. Habiga, but my impression is that it is an unusual complication, or at least that there is no particular tendency to it more than in any other form of malignant type. The theory that the swallowing of the acid stomach discharges is the cause of diarrhoea and dysentery seems feasible enough. In fact, if we exclude the tonsil as not belonging strictly to the digestive system, the tendency to involvement of it is not very great.

Pentoneum. When this serous membrane is attacked it is generally a secondary complication caused by the renal disorder. Dr Copland mentions, however, that he has seen cases of acute pentoneum early in the disease. The effusion which we usually find is non-inflammatory, and anaerobic in most cases precedes it. Dr. J. B. Williams says that the serum has slight deposits of lymph in it. It may be stated that the evidence of inflammation in the fluid effused in the pentoneum or other serous cases does not prove that it is of inflammatory origin. As Dr. Copland observes, inflammation may be either a cause or an effect of the effusion.

A recent writer, M. H. Forn, considers that the liver is frequently affected in steatoma, and Dr. Scrine & Prof. Bourcier hold a similar opinion. M. Forn lays much stress on the hepatic enlargement.
and arms, from frequent observations, that those of the bilious temperament are the greatest sufferers from the disease as.

I think, however, that there is nothing more than as a general rule, than the functional hepatic arrangement which we see at the commencement of many cases.

I suppose a very interesting and complicated case, for which I am indebted to a friend before mentioned.

James Henry, aged 17 years, residing at Arbuthnott, had a chill in August 1838. Albuminuria and drenches followed. He was recovering from this, when he was visited with pain in the right hypochondriac region. Early in Dec. 1838, he had cough, dryness in the nose, leucopenia, and copious expectoration of purulent matter. Soon afterwards, diaphoresis set in, and pus appeared in the stools, which were very offensive. The patient was hectic, emaciated, and had little sleep. The abdomen was always on the right side. There was extreme dulness in right hypochondriac and epigastric regions. In the last of December, there was slight bulging over the right lobe of the liver. In Jan. 1839, the abscess opened between the 6th and 7th ribs, in front of the angles, and some ten ounces of foetid pus escaped. The discharge continued until the middle of
[Handwritten text not legible]
Feb 2 and then gradually ceased, and the aperture closed. Now, March 1859, the boy is healthy but weak, and this fair to make a good recovery. My friend thinks that there was abscess of the liver, which opened into the intestines, and probably into the right lung.

Pulmonary System, and Meninges.

Delirium is a common symptom in St. Acheson's
St. Maligna, in the former delirium amounting to violent mania, in the latter generally of a low type, with incoherent muttering and un
conscious conversations.

Insanity is said to follow Scarlet Fever by some
of the older authors. Willan has related several instances. (a) Recovery generally took place in six or eight weeks, the cure being gradual, and apparently accompanying the return to bodily vigor.

L. Cepland states that he has been conjecture in
observation of the central substance along
with effusion into the ventricles and meninges.
This effusion is generally present when delirium
is early and suddenly fatal. The symptoms
are coma and convulsions, sometimes hemi-
plegia, or blindness of one or both eyes. Many surprising
instances of recovery in most unfavourable cases
are recorded. Dr. Watson relates one case, in
which he used bleeding and mercury with great
apparent benefit. One of the worst cases of chorea which I had under my care, a boy of ten years, was twice attached with phasmotic movements of the left lower limb. The movement was back and forth, and was chiefly at the hip-joint, and continued for several hours. No other part was affected, and the intelligence of the patient was perfect, and he made terrific but unavailing efforts to check the motion. After some months, during which the patient had afebrile and general anaesthesia, albuminuria, frequently recurring haematuriae, he gradually recovered perfect health. During the long course of his illness, many remedies were tried, salvars, diuretics, cathartics, including castor oil, and also tonics and cholylates, but they seemed to produce no effect, and improvement did not begin until some time after all medication was discontinued, indeed, both attendants and parents had given up the case as hopeless.

The ear is frequently affected in scarlatina. The inflammation of the staucial mucous membrane spreads to the eustachian tube, and causes complete deafness. In a large proportion of cases there is purulent discharge from the mucous tube, none of the external ear. This is usually preceded by increased fever, and severe lassitude, which usually disappears at the commencement

(b) "Surgical Fever, p.128.

of the discharge. The watery clearness, though it may continue for a considerable time, is very rarely permanent, at least I have never seen it prove such. In some cases the ear affection is truly formidable. The whole internal ear may be disorganized, the bones crumbling, and the mastoid cells becoming cavernous. Dr Watson mentions a case in which the food was ejected from the ears when the patient attempted to swallow. Dr Graves states that he has been fatal hospital from this complication. 3.

The eye is rarely attacked. Dr Gregory gives a case in which both were lost, and another in which the ear was first affected, and then the eye, and the latter was saved with great difficulty. 4.

The Schneiderian membrane of the nose is affected to a greater or less degree in all cases of Scarlet Fever. There is a copious discharge of a thin acid mucous-purulent fluid, which begins the upper lip. The membrane is congested, and the sense of smell is in great measure taken away. The amount of the discharge is peculiar. Epistaxis is mentioned as of extremely frequent occurrence. Dr Graves lost some of his patients from this cause, and I think Dr Cheadle makes a similar statement. The Schneiderian membrane seems to be affected from the spreading of the throat inflammation by contiguity.
Circulatory System

A good deal of attention has been lately paid to the occurrence of pericarditis after scarlatina. Dr. Scott Alexander, who has written an essay on this subject, considers that it occurs frequently. The symptoms are few, and the disease will probably be overlooked, unless the heart is frequently examined. Aware of this statement, I have auscultated the hearts of many patients suffering from scarlatina, but I have only met with one case, which recovered rapidly. There was a case in which tubercular disease was found to exist six weeks after scarlet fever, and although the patient had been most carefully attended to, the tubercular affection was never suspected, and indeed, only found out accidentally. Hydrops pericardium is seen in cases of albuminuria, and is usually accompanied by oedema of the lung or hydrothorax. In cases in which there is a taint of scarlatina, pericarditis, death sometimes results from hemorrhage into the pericardium.

Respiratory System

As a rule, this system is little affected in scarlatina, indeed it must have struck those familiar with the disease, how seldom the laryngeal membrane is affected. When we consider its close proximity to the inflamed throat, a sort of laryngeal cough is often present, from the irritation...
(1) S. Reig on His. of Children. p. 506-7—

and accumulation of thick discharges.

Group is rare. Hayn and Lucas express the belief that in post mortem examinations they rarely found the larynx affected. Dr. Scott, Klaebe, Miller, Karr, and many others mention cases, but they are comparatively few. Dr. Karr had three cases, but there were no distressing symptoms during life. Dr. Smith, however, mentions eleven cases of croup coincident with a closely following scarlatina, of which five died. (a)

The only writer who mentions that he has been often respiratory complications is Dr. Hamilton. He states that in some one hundred and fifty cases, almost every one had some pulmonary affection, and he had only one fatal case in which the respiratory organs were free. (b)

Chronic pleurisy and oedema of the lung are not infrequent complications of scarletinal disease. Chronic pleurisy is rarely seen in infancy or childhood, even in this disease, and it seems to be the sole cause of oedema of the lungs.

The hydrothorax is very invariable in its approach, and generally slow in progress, but the oedema is often rapid in course. The cellular tissue of the lung seems to be affected in the latter. These complications generally accompany severe general crisis, but not invariably, and they may impose on its recollection.
O. Gravis Clin. Ind. 2nd Ed. p. 832.

Roses of joints.

It seems to state that he has been apparently chronic affection of the cervical vertebrae after scarlet fever. He considered it a result of the inflammation of the pharynx extending backwards. The two cases which he mentions, recovered.

The joints are often painful and swollen during or after scarlet fever. In most cases this is doubtless the result of anemic affection of the blood. St. Vincent mentions that he has seen the large joints filled with pus. In his opinion this was not a result of inflammation, but of deposition from the blood. He also found the pus external to the joints and in the ends of the long bones.

V. Diagnosis

The aspect of a patient suffering from scarlet fever is pathognomonic enough for the experienced, but I shall enumerate the more important diagnostic signs. Of course, a knowledge of the incidence of an epidemic is one of our chief guides in actual practice, while decided symptoms have not shewn themselves.

From Measles. The law of universal susceptibility holds more in the case of measles than scarletina; and the former is more uniformly a disease of early life. Ninety per cent of cases occurring under five years of age. The stiffness of the neck, pain in thorax and epigastrium...
and injected faces in Sculatina, have their analogue in Measles in suffusion of the eyes, sneezing, and cough. The eruption in Measles does not come out until the third or fourth day, and instead of the bright redness of the skin in Sculatina, we have a "dull raspberry red" in Measles, and the patches are separate, in a circinate form. Also, in Sculatina the rash is brightest in parts that are covered, while in Measles it is most evident on exposed parts.

Further on in the disease, we have Sculatina accompanied by elevation of the trunks, renal involvement etc., but in Measles the Respiratory organs are affected, and we have Croup, Tracheitis, *Pneumonia*. The laryngeal cough of Measles is strikingly different from the laryngeal cough of Sculatina. I omitted to mention that the incubation period of Measles is twice as long as that of Sculatina, generally being about two weeks. Sculatina. This cutaneous disease should be carefully distinguished from Sculatina, indeed, as this is reason to suspect that our statistics of the former disease are frequently in conflict from the two being confounded.

Measles is non-contagious, accompanied with mild fever, the rash appearing first on the lower extremities, and consisting of "circinate rose-red patches, of a circular, cratered, or annular form."

Diphtheria, Angina membranacea.

This disease has received much attention of late years - Paycock has classed it among the Exanthemata, as "inflammation of the Fauces, pharynx, and trachea. Mucous membrane, attended with the exudation of a whitish or red-coloured false membrane, through the cracks and fissures of which, the mucous membrane beneath is seen red, convoluted, dusky, and sometimes ulcerated. As I have previously stated, an exudation of lymph on the tongue, easily separable, was present in most of the cases of S. Anginosa which I have seen early in the course of the disease. This exudation was usually circumscribed, and had little tendency to spread. The exudation of diphtheria is said to consist of fibrinous and albuminous matter, underneath the epithelium. In those cases of so-called diphtheria which I have seen, I could not recognize the intervening epithelium. The exudation in scarlatina is much less cohesive than the diphtheritic, less adherent to the mucous membrane, and also less disposed to spread into the larynx."

Diphtheria occurs during or more generally after an epidemic of scarlatina. An exanthematous eruption is sometimes seen on the lower extremities, and the complications are very similar, abscess of the neck, congestive nephritis with albuminuria. "
From these circumstances, and from my own observation that the incubation differs only in degree of extent, I am inclined to consider that there is a much closer connection between scarlatina and diptheria than is now generally believed. I am aware that I am thus expressing an opinion contrary to the late Lancer Commission on Diptheria.

II. Diagnosis.

For means of prognosis may be classified under these heads, the character of the epidemic, the symptoms, and the collateral circumstances. A knowledge of the prevailing type of the epidemic may enable us to give a good prognosis, when the case is mild. But in its degree must our prognosis be more guarded, for as the disease is uncertain, sudden aggravation of symptoms and death are frequently happens. When the type of the epidemic is mild, and the case has begun favorably.

As regard symptoms, the prognosis of S. leucopena is usually favorable. But the caution should be given of the risk of diarrhea and its sequelae. S. anaerobia, although the fever runs high, if it is ethanic, the eruption vivid, and the throat affection evenly ulcerative, and not leading to hoarseness, the patient generally goes well, though frequently brings up mucus.
Mr. Henderson's lectures, 1838-9.
But when the eruption is dusky red, and fitfully reticent, and the throat rough, and if there is irregularity in the sequence of the usual phenomena, there is much reason to fear a fatal issue.

Haematuria, hurried respiration, and other typhoid symptoms are especially of evil omen. Convulsions too, even when occurring at the onset of the disease in children, are of bad omen. For when they occur in youth or after the first day or two, they show that the blood is being pressed by the fever itself, or by retained blood from the malady, especially if we restrict the term to those cases in which the nervous symptoms predominated, is very dangerous, and the odds are fearfully against the patient.

As regards collateral circumstances, I may state first that there are some families in which scarlet fever has been known to be fatal for cultural generations as Dr. Codd makes the same statement, "a family may be thus decimated without there being any particular malignancy in the prevailing epidemic of the disease. Marcus Wright is said to have died of an invariably fatal complication. So Rutherford and B. Codd state that adults males suffer more severely than females, except when the latter are pregnant or in confinement."
that the mortality is very high among pregnant
and especially parturient women, only a small
proportion escaping. Some epidemics seem to
affect this class of patients much more than
others. I have been in a case, although
had many midwifery cases in the same
houses where scarlet fever was raging and no
inspissating means were employed. Medical
men should not visit their midwifery patients
after attending scarlet fever cases, or at least
some interval of time should elapse, and attention
of the hands performed. I mention this, as a late
medical friend of mine in England suffered
much in reputation and practice from one of
his patients dying of scarlet fever, at a time
when he was attending scarlet fever patients.
In children, the first diphtheria and period of
weaning are very fatal periods. In an epi-
demic of scarlatina, which I saw in Lancashire
during 1857 and 1858, nearly all the cases which
occurred during diphtheria were fatal, and I
long considered the result of this complication
to be invariable death. I need not dwell upon
the increased risk arising from crowding, want
of ventilation, and similar depressing agencies.
The progress of scarletinal diphtheria is generally
favourable, especially when it occurs as a
sequestra. Recovery is the rule in these cases.
as C. I. B. Williams: Elements of Ind. p. 308.
The opinion should be modified by the extent of the disease, the organs involved, and whether it yields readily to, or resists, the treatment employed for its removal.

VII. Pathology - Pathological Physiology -

Although much attention has been paid to the Pathological Physiology of scarlatina, since close observation has become the rule in medical science, it fails to make the sweeping assertion that little advance has been made during the last century and a half.

Although local inflammations are proofs of the action of the Aseptica processes, they truly appear to be parts of a process by which the poison is brought to an eliminating surface. They all involve more or less a process of effusion and discharge, and the more quickly and superficially this takes place without disorganizing texture, the more favorable will be the result. While the former clause of this statement involves a theory which I am not inclined to discuss, viz., whether the elimination of the scarlatin mixture takes place in the skin, and in the blood-vessels, the tonsils, or whether the process takes place in the blood and system of large, and the former terms and organs are merely affected in greater degree, I have thought the statement worthy of being transcribed, as the latter part is undoubtedly...
correct, and is the principle upon which our
prognosis and treatment of scarlet fever
rest. While the scarlet fever affects the skin,
certain glands of the body, and the eruption of
measles is figurate, we see in scarlet fever
the whole capillary system congested, presenting
an appearance and an elevated temperature likened
to that presented by a haim of which the sympathetic
nerve had been cut. Professor Pasteur seems
to consider that the sympathetic is particularly
involved in this disease. "Besides the disturb-
ances which are referable to the brain and
spinal cord, there are others which we must
attribute to the sympathetic system. When the
filaments of the sympathetic nerves of the
head or a limb are cut, the cutaneous function
are exaggerated. Hence it may be concluded
that when in any disease heat is uncommonly
exaggerated, the sympathetic system is involved."
He then goes on to say that the congestion of
the capillaries of the skin is quite different
from the inflammatory process, for if all
the laceranthomata incalculum bears least the
antiphlogistic treatment.

Cuvier has stated that the blood corpuscles
are slightly increased in number during the early
stages of the eruptive fever; a constant has been
found any marked increase of the fibrin, hence
Early in disease, the blood discs are increased in number, the fibrin content decreased in quantity, after the crisis, the reverse is true.


[Dr. Fayre's lectures, 1858-9.

[S. Williams: Elements, p. 192.

[Stevings & Jones: Pathology, p. 99.]}
at any rate to the inflammatory itch. (a) (b)
I presume that there is actually a diminution of
the number of the blood corpuscles when leucotomy
even uncomplicated, has run its course, for Flacher
is a commonly observed
in albuminuria, Brown Reese remarks that the
number of blood corpuscles is diminished, and this may
be from the draining away of the albumin and
consequent watery state of the blood. (c)
Dr. C. J. B. Williams says, "in a case of rapid al-
buminuria fatal on the sixth day with effusion
of pus into the joints, I found the containing
matter dissolved in the urinary canals after
death, and few or no blood corpuscles. A similar
case of total destruction of the blood was ob-
tained in University Coll. Hospital, in a patient
who died of typhus maligna with pericardia.
"In many cases of fatal albuminuria after typhus
fever, whence found a peculiar dark pigment
in the blood." (c) When albumen is present in
the urine, it is deficient in the blood, and Landal
found the deficiency in the blood to be in direct
proportion to the excess in the urine. (c)
The effusion of urine into the cellular tissue undeni-
able arises from the diminution of the albumen in
the blood. This has been proved by Landal. (c)
The effusion into the leucous does may be from the
same cause, but more generally I think, from
(a) Scowking: Jones Path, Anatomy, p. 597.
the retention of urinary excreta—
It was long supposed that semielucent disease was
connected with true Bright's disease, as cause and
effect, but Dr. Barlow, Graves, J. Johnston. I judge
regard the renal disease as an acute affection,
actually tending to recovery after a certain time,
and most recent authorities are of the same
opinion. Cases are on record, however, in which
true granular degeneration of the kidney followed
on semielucent, but there is probably not more
connection between the two, than between an
attack of bronchitis and succeeding pulmonary
sclerosis. (a)

The pathological physiology of the kidney has
been ably investigated by Simon, I Dr. S. Johnston.
The renal glomerular filters and secreting convoluted
tubes are much congested at the commencement
of the disease, haematuria is usually seen at
this stage. The urine contains "epithelial casts," and
free blood and epithelial cells. In adults, there may
be oil globules in the "casts," but in children this
is rare. The presence of the oil need not cause
alarm, unless it continues for a length of time.
Further on in the disease, many of the convoluted tubes
are blocked up with epithelium, and others are entirely
denuded. The fibrin of the blood is traced in
creased, especially if there has been inflam-
mation of the various tissues.
The haematoxin does not leak at first, but after a time the decrease is very rapid. I shall describe the post-mortem appearances of the kidneys afterwards.

**Pathological Anatomy**

In rapidly fatal cases, Dr. Snedecor states that he has found no visible alterations in the tissues, as is usually the case in typhus.

Integumentary system. The intense congestion of the capillaries is generally seen, but I have frequently seen the usual congestion of the dependent parts of aimple, almost black, extema.

Putrefaction soon takes place. The fluids are sometimes pancreatic, and the integuments of the back turgid or swollen. Vomiting is often seen where leeches or strong external applications have been used.

Digestive System. In cases of typhus in which there has been apparently some throat affection during life, all congestion is frequently absent after death. In the majority of cases, however, the buccal and pharyngeal membrane is found affected in various degrees of intensity. Blood, mucus, covered with lymph, deeply ulcerated or gangrenous. The intestinal mucous membrane is generally natural throughout its whole course. (Sneek.)

Dr. Copland mentions that he has seen it dark and congested, and D. S. Syng. speaks of ulceration.
St. Williams Principles of Medicine.
My impression is that Dr. Tweedie's statement is the most correct.

The peritoneum frequently contains fluid presenting more or less of inflammatory changes, which, as I have before stated, may in some cases be the result, in other, the cause, of the effusion. Dr. Williams states that he has seldom found marked edema of the lesser omentum, and the traces of lymph in the effusion were slight.

Gastro-intestinal System.

When acute haemorrhagic nephritis has occurred in nephritis, the kidneys are found congested, indeed presenting appearances of inflammation. In the first stage the kidneys are enlarged, congested, and usually weigh from five to eight ounces. The urea and blood when cut open, and the tubular spaces especially are filled with blood. Both kidneys are affected, but the congestion sometimes affects some parts more than others. This variable vascularity is seen in the cortical substance, which compresses the medullary parts, causing them to be dark in colour.

When the disease has gone on unchecked, the capsule of the kidney shrinks off more readily than usual, and the surface is scaled and blistered. When a microscopic examination is made, the disease is seen to exist chiefly in the cortical substance. When the texture of the kidney becomes

pale or fawn-coloured, the tubules are found to be
opaque from the accumulated epithelium, which in
many cases completely clogs them. When the kidney
is torn up on the field, some cells are seen then
during the final process in the healthy animal. The
tubules of the medullary substance are chiefly
normal, but some are blocked up with cells washed
into them from the convoluted tubules.
In the first stage, the Shmallian bodies seem like
minute red grains, when viewed with the naked eye,
but in the second they seem lighter and less
opaque than the surrounding tissues.

Germs, System, and Membranes.

Dr. Lexer mentions tautness and opacity of the
areolaroid, and in these cases there was generally
compostion of the central substance also.

Mr. Hamilton found the membranes thinner than
natural in cases succumbing suddenly to the chronic,
circulatory system. Signs of endocarditis are mentio-
ned by a few writers, but as of rare occurrence.

Hypoventricular is tolerably frequent, the sac
may be filled with blood. In cases of effusion of
pus into the joints, arthritis is probably excited, but
I have not seen it recorded.

Respiratory System. Bronchitis is mentioned by
Dr. Copeland and others, but some make no mention of it.

Dr. Copeland thinks that it is liable to occur in
advanced life, in decayed constitutions. I think
Dr. Best on Dis. of Children, p. 586.

Caroline Turner, p. 140.
that I have been it seem in infants under a year old, but I had no post-mortem evidence of it. Effusion into one or both pleuræ is frequently found. Edema of the lungs also, the organs being deep red, firm and destitute of air. Punctures will allow the fluid to drain out, and the lung may then be inflated & assume a natural appearance. Bones & joints. I have previously stated that the bones of the car have been found Carious after death. & that Dr. Simplicius has observed purulent effusion into the joints.

VIII. Statutes of Mortality. of Scarlet fever.

I have not much to lay on this head. I have been unable to get access to the recent reports of the Registrar General, but from those which I have been able to procure, I have formed no opinion as to what the disease is now or was less fatal than it was formerly, but rather increased fatality of late years.

I shall transcribe a few disjointed statements which I have met with. According to the calculations of D. Spre, the mortality is greatest in the third year: & D. Gregory considered that the period of greatest danger was sixty hours after the appearance of the rash, i.e. on the fourth day. 

The deaths in Philadelphia among children under ten years, during a period of thirty years, were 2171. Of these, 182 were under one year, 411 between
@Cleland's Med. Diet. 1731, p. 88.


between one and two years, 1130 from two to five years, and 570 from five to ten years.

In London, states, that he lost one in twelve. M. Hillier and Batthy lost forty-six in eighty-five, more than half, but this was in hospital practice, Dr. Meigs lost twenty-four in one hundred and eighty-five, or about one in eight. Dr. Xerox, in the London Eye Hospital, from 1822 to 1832, lost thirty-eight in one hundred and forty-four, the mortality varying from one in ten to one in forty-one. His average was six per cent. or one in seventeen. This agrees with the statement of Dr. Gregory, who considers the average about six per cent.

Dr. Topham says, "from 1838 to 1848 inclusive, the deaths in the metropolis from scarlatina were 20,962, from measles 14,832, and from smallpox 15,079. Only in three years of the eleven, measles took the lead of scarlatina, and in two smallpox exceeded it. Scarlet fever presents a period of high and low mortality more than any other disease, most deaths occurring in the end of October or early in November, and fewest in the end of March or beginning of April. (c) In the seven years from 1848 to 1854, scarlatina caused an average mortality of 66 per 10,000, and measles 27 per 10,000. (c)
The following details are from a friend before mentioned, who is engaged in provincial practice. Of 57 deaths, 8 were from Pneumonia, 15 of these being under 5 years, the average day of death being the 5th. From Influenza, 9 deaths, all under 6 years, and average illness 11 days. One of these was complicated with hooping cough, and hemorrhage from the mouth was the cause of death. From scarlatina, death, average age 7 years, average illness 4½ weeks. Of low from following scarlatina, 7 cases, average illness 15 days, age 4 years. Eight cases were not recorded. Particularly, average age 3 years, illness 12 days. Excluding the cases of diphtheria, the average duration of 48 cases was 9 days each.

Of scarlatina, Death.
Of the 57 deaths above mentioned, 8 were from diphtheria, viz: one in 63½. The average age 9 years, and illness 4½ weeks. "As the disease is most fatal in the fourth year, and males die in the first instance of 60 to 40 of the other sex. The largest number die on the 16th day, next on the 26th, and then the 10th. The second week is most fatal, than the first, and next the third and fourth. Only 36.1 of the fatal cases survived the first fortnight."

The above statements concerning the mortality of scarlet fever are imperfect and ill arranged, but time and opportunity were wanting for more careful calculations —
Treatment.

Of Scarlet Fever.

Although many and various remedies have been recommended for this disease, the result is too often unsatisfactory. The subject is one most difficult to treat, and would alone form matter enough for a lengthy paper. I shall do little more than give an enumeration of most of the xe.

medicines, and dwell a little on those which I have been used, and which are generally recom-

mended. Even since the disease was treated of by medical authors, until the present day, there have been new and of some physicians who have declared their belief that their own treatment, frequently the administration of one medicinal agent, was invariably successful, and as such gave it to the public.

In my practice, little need be done save attention to open ventilation, regimen, and the admini-

istration of mild cooling medicines. I angina requires in addition to these, careful attention to

the throat, and incidentally diet when any signs of weakness present themselves.

1. Maligna requires in most cases to be treated by carefully sustaining the system, until it is carried through the fever, and in the worst cases from diligent and continuous stimulants may be ne-

cessary from the commencement.
1. Tonsils should be treated as I mentioned.

I. Latinus properly comes under the head of Scalatalatina. I, and I shall speak of it under that head.

*Constitutional Remedies, Argimia.*

Expectoration must be carefully attended to. In the form from the throat, especially when there is much ulceration, is very offensive and distasteful. This odor is characteristic, and is diagnostic of Scalatalatina in the throat.

Scalatalatina is a very debilitating disease, and it is essential that nutrition be properly attended to, particularly when expectoration is impeded. Bulk and succinylating aspirin can be preferable, and this must be adhered to during convalescence. I am convinced that I have seen aggravation of symptoms and an increase excited by the use of butcher meat. There had no experience of meat juice. In the same manner, I would avoid lean steaks, unless there were decided symptoms of exhaustion.

As regards external applications, E. Leriche, followed by Dr. Freyron, has strongly recommended cold applications. There only been one case where this was used, but a fair trial however.

In the spring of 1888, a girl of two years was seized with symptoms of St. Haliguns.

The tonsils and throat were very much swollen.
The wife of an Insalubrité persuaded the parents to allow her to use the cold water treatment, which she did by applying a cold wet towel to the whole surface of the trunk. This was repeated every 20 minutes, and the process was continued for some two hours, when the child was licked with a culverin. I found the skin cold, and of a dark livid colour. Heat returned, but the sultry hue remained unaltered, and the child died some 10 or 12 hours afterwards. I could not understand the case, until I learned the particulars some time afterwards. The evidence of most authors is against the use of cold affusion. Dr. Hillard and Barthe have tried it, but think it unnecessary in mild cases. I think, would use it in typhoid, of an extreme type. For Grams, I prefer to speak of the cold bath and drenching as preferable to cold affusion, but another day, much stress on it. Dr. Polletin, in cases of coma, recommends warm baths, and lie to the head. Dr. Layser makes favourable mention of the wet cheek, and I should prefer this application. Dr. A. Lord speaks highly of the warm bath, provided by bottles of hot water wrapped in stockings, worn out of the same. I have not tried it in one case, but did not find that it answered.
Again, Dr. Schnellen has recommended liniment
with bacon fat. Dr. Park, a high authority,
gives his liniment to this, and attributes very
good results both use, a lessening of the febrile
action, and general sedative effect. Dr. Phelps
uses another form of liniment in more agreeable,
a mixture of brandy and glycerine, and applies it
from three to six times in the twenty-four hours.

I may remark that it is a common custom
among the people of Lancashire, to place a large
slice of fat bacon on the throat, lest the skin,
reaching from ear to ear, and kept in place by
a collar of flannel. This application is held
in high estimation, and it really seemed to give
relief in some instances.

In fact, as regards external applications, I should
use within the wet heat or the liniment. When
heated externally, we cannot hope to cut that
the disease by affliction, changing, heating a
grafting, but our object is to have and sustain
the skin and other secretion and excretory organs
in a healthy and equal a state as possible,
until the disease runs its course.

Lately, baths of mustard and hot water have
been recommended as stimulant and elevant
in asthmatic cases of teatbot fever, attended with
occurrence of the eruption.
(6) D. H. Williams on Linnaid Botanic.

Represented. As a rule, all depressing agents must be avoided in scarlatina.

Bloodletting was formerly much resorted to, but general bleeding is seldom or never employed now. Even in 1843, Dr. Gregory strongly advocated it in certain cases, and even used it in the secondary fever. In 1836, Dr. Williams made the following statement, which is often quoted, and I doubt lest it has had much influence on practice. "After careful consideration of the epidemics from 1763 to 1834, I am convinced that the chances of recovery are diminished by bleeding in the ratio of four to one, as compared with the chances, depressing the patient list to have been bled."

Local bleeding. Dr. Sears recommends leeches to the hairs, in ethemic cases, with deep throat affection, or threatening coma or consciousness. Dr. Case has used cupping on the back of the neck, and leeches behind the ears or under the angle of the jaw. These local bleedings, although they give great temporary relief, are seldom admissible, but when deemed necessary, the above situations are the best. It must be remembered that leech-bites are apt to cause in scarlatina, and numerous examples of this are recorded. Erysipelas are not well borne in scarlet fever.
At the commencement of the disease, if the bowels were confined, I should give a dose of Colonel and Salaz, or Colonel and Thibault, to produce a mild but not excessive evacuation. If any further apparatus was required during the course of the disease, I should give a small quantity of St. Vicini, or a few grains of Pul. Whey along with propriety of Hygro. c. cura. The hypogastric cathartics are inconstant, except in the debility. Emetics are little used now. 12 Mitteray gave three daily while the fever continued. Of course this is never done now. S. Jofland thinks that emetics have been unduly neglected of late years. They are only useful at the onset. I should be inclined to give an emetic of tartarate of antimony and specacum, if I saw a case early, and a purgative afterwards, if required. The action of an emetic much resembles that of the pod malt, causing the diaphoresis, and tending to restore the equilibrium of the circulation.

Salmi Acetosis, or called Fornifages.

The usual fiber mixtures may be given. Citrate of potash is very grateful to patients. I have used it, also the citrate of potash, when there was tendency to diaphoresis, or the tartrate of soda when the bowels were latent confined. The big. Red, Amony is usually prescribed, and the citrate of ammonia with or without an excess of the alkali.
Along with these remedies, or a combination of them, small doses of spirit, ether, etc., are usually given. Dr. Watson recommends the sal. chlorat. P our 3d. in 3 x 4 as a brine in this and other fevers. Stimulants and tonics

Two remedies especially have been declared to be

specifics for scarlatina, ammonia, and bark of guine. Mono-privets have been written upon

these. Ammonia has perhaps obtained more weight than any other remedy, and now and then during the last fifty years some one has given it extravagant praise. Dr. Watts speaks highly of ammonia, but considers that if used freely it is liable to cause convulsions. Dr. Furnell and others recommend the carbonate of ammonia in

this form only once or twice a day. From the statements of authors, there is the misconception that ammonia is our most reliable medicine in scarlatina, and it should be given from the commencement in acute asthma cases, and in all cases as soon as there are symptoms of exhaustion. St. Vincent's formula, the citrate with an excess of three or four grains of the carbonate, seems to be the best. I have not had much experience of it, for I had great difficulty in getting children to take the "burning medicine." A good formula to disguise the taste is much wanted. Dr. Witt has written a monograph on the
26th March 1858

W. Wood on Taunton Farm. p 97

Cancel. Dec 4th 1858
use of ammonium. He gives three grain doses of the carbonate, or salt... carbonate, frequently, and
excludes all acids. After
Aichrota, and more recently, gramine have also
been much used. Mr. Head Styles in the "therapeutic
anchor in the successful treatment of scarlatina"... He considers that it is injurious if administered
without previous fermentation, but if this is attended
by, he states that it prevents the throat ulceration,
and causes the phenomena of the disease to
be mild, and regular in sequence. He calls it
"the antidote to the specific poison of scarlatina."
He gives to a child of six years old, one grain and a
half of gramine, with eight minims of dilute half-
acetic acid, and half a drachm of a drachm of Dr.
Aichrota, or Dr. Armenian, in an ounce of water,
each dose sweetened with a drachm of glycerin.
These grain his remarks at length, as though
Aichrota, his qualities, they seem to be founded on lengthy
experience.

Among the remedies lately proposed for scarlatina,
iron has been mentioned, with a good show of
arguments in its favour. The fluid Ferae Siricus,
deemed to answer best during the actual disease,
and the ammoniac citrate after the crisis had
taken place.

Alcoholic tonics are recommended by most
authors, in the form of wine or brandy, bitter
(a) Lancet, March 18 1858.

jeans alone in frequently repeated doses, or along with fats, beef-tea, meat juice &c. They are sometimes combined with guaiac or ammoniac, but the latter will frequently answer instead. When these fail or are rejected, and in T. maligna, brucy, &c. will be our chief reliance. They own injurious, however, as that when we can diagnose with alcoholic tincture, they ought to be used altogether, as the risk of renal involvement, or aggravation of that already existing, is much increased by their use.

Inhalation of oxygen has also been employed. It was used by the way, and guaiac, diluted sulphuric acid and scy. arsenic acid Cidocinata grain internally as Antituberculous. Chloric acid has been much used, especially by some authors, grain internally dissolved in water, or in the form of the soluble chlorides. It has also been used beneficially as a febrifugal agent. In Graves used the inward minus externally in cases of scrofula, phthisis, and traumatic hemorrhage &c.

Dr. Bennett gives small doses of colchicum &c. to aid in the direction of lethargy, when the crisis takes place.

**Special Remedies.**

**Joggles, injections &c.**

The majority of cases occurring in children, joggles are inapplicable. For other patients, Dr. Watson
at 67. Meigs on life of children p 572
was solution of Chloride of Iodine, I have used t. col.
of sulphate of alum. & Captisii combined with Sulphate
of Sulphuric acid, and I have lately heard of a
grapple of Sulphate of Potass & Sulphate Aniuric acid.
In the latter is said to be agreeable and cooling.
A very good formulae prepared in the
north of England is infusion of sage, to which some
acetic acid is added. Here are also the infusions
of Eucalyptus Camphora, t. Brand axes infusion
of Captisii, and 3j. soda Chlorii. In cases of
hoarseness, chloride is especially useful, either
as gargle or injection.
Of more concentrated applications, astringent and
eparactic, we have many of ouritional
12 grains used Acid Aniuric in the throat.
Dr. H. P. Hilliard and Know they are a mixture of Acid.
Aniuric. 3j in 3ij in a ounce of Soft Potassium
Dr. Meigs uses Sulph. Album; Sulph. Captisii, and
Potassium Sulphate. Of each three gills in
one ounce of Soft Potassium, two or three times daily.
He also tells Sul. Argent Nitrit. six to twelve in 3ij
three times daily. Dr. Kiefer used equal parts of
Honey and Lemon juice.
Dr. Meigs gave a valuable hint. Dr. to remove
the mucus from the throat with a Piece of Yeast
previous to injection or application of escharotic.
This might be accomplished by the means
recommended by Jamesell Webster, a
(c) Lord on Sculcute - p. 123
... close finger tipped with a piece of lint.

In young children, whose throats can easily be reached, this is most essential, as in such cases especially, there is much internal swelling, and tenacious mucus from the large cysts of the tonsils, which prevents the proper action of the injections or caustics.

Dr. C. plank recommends a solution of 2 in 30 of sulphuric acid, or in bad inflamed throat, corrosive and pyroxylic acid. Dr. Wood uses a gargle, which may be swallowed, and I should think it very useful and applicable in certain cases. It consists of the juice of one large lemon, and a tablespoonful of honey, in a pint of thick, sweet like, barley water.

Most authors also advise the application of the irritant's agent, if a strong gargle, from forty to sixty in thirty per cent. This is by far the best remedy, of which I can speak strongly from experience. I have always used the solid stick, once and in some cases twice daily repeating it for from three to six days, and afterwards, if necessary, as long as intervals.

In many cases, it acts as a charm, dries the swelling, renders the ulceration healthy, and removes wholly or in great part the poisons. I have been much struck by the
as I wrote. 12 March, 1856
Difference in the form of the symptoms of scarlet fever patients who have been treated by this agent, and those who have not, as is well observed, the patient may develop the primary fever, but the system is disinoculated from the throat, and a fatal result often follows. So essential do I think the use of nitrate of silver, that, were I restricted to some therapeutic agent wherewith to treat scarlatina, I would at once choose this slightly corrosive and astringent remedy.

I have even been in the custom of applying to the throat as a preventive of elevation, when no local signs were present, but there was reason to suspect scarlet fever, in patients perhaps only enfeebled, from the disease being in the family or neighborhood. This may seem extreme, but I think that it is quite as reasonable as the recommendation of Mr. Gravely, viz. that enfeebled persons or children should be excised, so that they may be more free from danger if attacked with scarlatina. The hands should also be attached to, and infuse with cold, or warm water, a drop of 3 grains of Bismuth, or a grain of Bismuth subnitric in lea of 2 grains of Bismuth carbonate, and in very bad cases the bimetallic acids, and along with these,
As regards external agents applied to the throat or elsewhere, blister plasters were much used, as they caused blushing or teeming ulceration. The skin seems to be better for some time after scarification. I once applied a blister to the throat of a boy recovering from scarlet fever, who had an attack of erysipelas, and many weeks elapsed in the elevating healed, and a scar was left.

I before mentioned that the people in the north of England apply hot bacon to the neck, and Mr. Todd states that the peasants of Ireland use in a similar way a baked potato, cut open and applied when turning hot. Repeated hot poultices seem to give most relief to the throat symptoms. If other counter-irritants are used, cinchonism or the liquor ammoniac fort. on the best.

Dr. Copeland speaks highly of the "Erbalhamento D'embolotion," and applies it to the throat, chest, abdomen or loins. Erysipelas applied externally is attacked, and I should fear an injurious action on the kidneys, but this does not seem to have happened in his hands.

Treatment of Complications

Abcess of the neck & glandular or otherwise,
he must treat by localics & constructions. These abscesses are frequently indolent. I have been informed by a friend, that in such cases he has found some very useful, hastening absorption, if such takes place, or if there was suppuration, leading to limiting its diffusing tendency.

In Erysipelas and other Remonhogs, & Chelsea lye saltic acid, and many mention the Tincture of Ipecacuanha.

Intercurrent inflammations must be treated according to the usual rules, the debilitating action of the scabatinal miasm being kept in remembrance.

The fluids in the brown backs are generally the result of humble effusion, not inflammation, and their primary cause is the small veins. They are best treated through the kidneys, and some counter-irritation used if necessary.

If enlargement of the tonsils remains after Scarlet Fever, the rule seems to be to excise a part of their organs.

**Treatment of Scabatinal Disease.**

"In attempting to cure this disease, we must keep in view that there has been; first, a morbid state of the blood, accentuating and trialetic; and second, that in consequence of the latter, the blood has been contaminated by retained..."
(a) Dr. J. Johnson on Cutis Algamenta Republica,

(2) Headland on Actions of Medicines, p. 277-8.
me. I. The object will be to relieve the kidneys and eliminate the irritantitious matters by other means. This disease, though following on scarlatina, which does not bear depressing treatment, is beneficially treated by bleeding and purgation.

Cupping over the loins is very useful, but useless in very severe and chronic cases. I should prefer dry cupping.

Café au lait and warm baths at 90°-96° Fahrenheit are of great service, and some use the baths as a preventive, when dysuria is threatened. Dr. Copland recommends alkaline baths. The bath should be of milk and farinaceous matter, and diluents should be taken freely.

Theory would lead us to imagine that stimulant diuretics would act injuriously on inflamed kidneys. Experience would seem to prove the contrary, at least that they do no marked injury: for Dr. Copland uses tincturative applications to the surface, and in enemas, and Mr. Bond uses Dr. Digitalis. Still, I should like to leave the kidneys as quiet as possible, and this is best attained by acting on the intestinal mucous track and the skin.

Salines are our best remedies. These act as "puratives, stimulating, and diaphoretics," and not like remedies which must act on or be eliminated by the
(a) Visit on hist. of Children, p 453, 12 April 1848.
kidneys, when they refuse to act, pass off by the
trunks and chest.
It seems found the lodz potass. very useful.
Kist india running every three or four
hours, and Dale. Do not at bedtime, if not contra-
indicated. The other amm on the chin than the
fourth as. Dr. Churchill gives the following to an
adult: 130 x 100 of bin. Anton. 40 sp. every four
in the hours, ps. 5 of Dale. Do not with 4.7 of
Dale. Anton. above as thrice daily, and ps. 47-x of
Dale. Do not and ps. 6 of Anton. more at bedtime.
I have chiefly used small and frequently repeated
doses of sulph. magnes. rarely combined with
kist. Kist. Dale. Kist was given at bedtime
and Dale. It is also for 10 with ps. 4.7 of Calomel
every morning, or every second morning, as the
bowels required. I have had as much
success as I could derive by the use of the
alone remedies. I use the calomel as a pre-
ventive, and never gave it not injuriously.
Some use in severe cases the K. Anton. or Pota-
min. the formula in doses of 34.71 daily.
Healing sometimes takes place in such
unfavorable cases. Dr. Watson mentions a
case of convulsion and blindness, doubtless pro-
ceeding from effusion; which recovered.

bled from the arm, and salivates the patient.

P. Kennard uses colchicum when he suspects the
presence of men in the blood. He Mr. Ford
applies red silk over the locus, as a means
of inducing local inflammation. The eschar
must be wiped from time to time.


Scarlet Fever

Inoculation with fluid from the vesicles sometimes
seen in scarlatina has been repeatedly found to
produce the disease, but nothing was gained
as the artificial disease was invariably less
lethal than the spontaneous. I am not aware
that inoculation has been tried from any of
the town animals suffering from diseases akin
to scarlatina, as described by Hamilton by
As regards the prophylactic power of Belladonna.
I presume that the question was left in the
negatives, until I had examined the literature of the
subject. So Christian says in his Disinfectary,
that it is not generally received in this country.
In his lectures, written 1855-6, he gives his opinion
against it. To the Continent, however, and in
America, many, the majority, I think, advocate
its prophylactic power. S. R. Williams, Christian,
Copley, Ratton, Dews, Withered, Hoffman,
and Schumman are against it more or less.

On the other hand, Dr. Sayre, Kippe, Kibler,
(a) Dr. Grigg in Dis. of Children, p. 526.

(6) About two thirds of a grain for each year of age.
and Bartley, Sayre, Boge, Henderson, Kendal, Schenk, Dugeland, Meps k, favour this view, or at least consider the question unsettled. The experimental trials by Mr. B. Bell, and Mr. B. Bell are not so conclusive as they at first seem. Compared with the mass of facts on the opposite side, those brought forward by the continental authorities especially.

Dr. Pachon, in the Charleston Medical Journal, for July 1851, states, after an examination of 600 volumes, on reviewing the testimony afforded by the facts, our opinions are solidly in favour of the prophylactic power of belladonna. (A) Dugeland's formula, according to Bellard and Bartley, is 1/3 of an extract. Belladonna 1gr. Alcohol 3gr. Agaro 3gr. 4th, 1st portion. One dose each night and morning for each year of the child's age. (c) The question extends much further than mere.

Dr. Whittier states belladonna is prophylactic against leucalatha, &c. He has one boy, James, which, on good authority, is said to be prophylactic against those remittents which is undoubtedly cases. Again, Dr. Ward states that a Dr. Longner treated thirty cases of leucalatha, many of them severe, with belladonna, and with uniform success. In this case we have a malarial poison, not a malaria, to deal with. But if we had proof that
Alabama was truly prophylactic; we might hope to find other drugs having similar powers against other zymotic and endemic diseases. This is mere speculation, but there is some allowance for enthusiasm in a student on the threshold of the profession. My impressions are against the prophylactic theory, but I think that it deserves further attention and research.

Of course, our most certain means are, early and complete inoculation of the patient, and strict attention to ventilation and cleanliness.

Prophylaxis of Holery.

Careful avoidance of exposure to change of temperature for at least three weeks is absolutely necessary. The clothing should be warm, and the food and drink light and unstimulating, and of a kind least liable to irritate the kidneys.

James A. Delvaux
List of Authorities, which I have consulted.

Sydenham's Works
- Cutaneous Diseases. p. 235. 1808.
- Dr. H. Williams on Incubid Poisons. p. 84-167. 1836.
- Dr. Neat on Dis. of Children. p. 589-600. 1840.
- Dr. C. J. B. Williams' Principles of Medicine. p. 85-103.

Lancets for 1856-7-8
- Marshall Stevenson on Dis. of Children.
- Registrar Sales Reports.
- Barlow's Practice of Physic.
- Stecking and Long's Pathology. 1852.
- Dr. G. Johnson on Diseases of the Kidneys. 1852.
- Dr. G. Gregory, on the Constitutional Fever, p. 118-157. 1843.
- Modern Dis. of Children. p. 482-546. 1853.
- Meigs on Dis. of Children, translated by Reid.
- Bonfils on Dis. of Children, translated by Reid.
258-264. 1852.
Ind. Chir. Trans. Vol XXX. 1847-
P. E. H.