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*Thesis**on**Scarlatina.*1855*John Robert Robertson.*

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In its best marked forms Scarlet
fever is well known to observers as a
formidable and often a fatal disease.
Considering its frequency, no less than its
virulence, and that the majority of children
in this country are liable at some period
or other of their lives to its attacks, the
successful treatment of this disease comes
to be a matter of the utmost importance.
There are some diseases which appear
at intervals as epidemics, raging with
stunning violence during the period of their
visitation, and vanishing after a given time
as suddenly as they come. The Asiatic
Cholera as it appears in this country is
a disease of the kind, and with whom
nearly most of us are acquainted. It
may be doubted however, if Cholera with
all its intermittent desolation, can in the
aggregate bear comparison with some more
familiar, and therefore less striking diseases,
which in the sense of their national visitations
are remittent; that is they are diseases,
which vary in their character and intensity.

yet they never entirely disappear from amongst us. If Cholera for example has numbered its victims by hundreds in a month, Scrofula has probably consigned to the tomb its thousands in the course of a given year, during which the two diseases have simultaneously affected our population.

Viewed in this light, some of the diseases with which we are most familiar, ought to be considered the most important, and deserving of our constant attention. Thus the diseases of infancy and childhood, although they act as it were a less conspicuous part, yet probably they produce a sum total of destruction far exceeding any other class of diseases, and therefore we can scarcely over-estimate the importance attached to a close observation of the phenomena presented by them.

Such considerations may form a sufficient apology, for the remarks which I have to offer concerning one of the most frequent and fatal of the epidemics of childhood; more especially as regards the severe forms

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of the disease, and its treatment; but before doing so I shall first give a systematic account of the disease and its varieties, commencing with its history.

With regard to the origin of scarlatina, no description is given by the Greek or Roman authors applicable to this disease. The first writer who distinguished the disease is stated by Hildenbrand and Frank to have been Ingrassias. Cuytew described an epidemic which prevailed at Portiers in 1557, which resembled scarlatina. According to Schenk the disease appears to have been prevalent in lower Germany in 1564 and 1565. The first description of it in this country was by Sydenham, who describes an epidemic extending from 1667 to 1673, which however from his account of it, appears to have been comparatively mild, whilst that observed by Morton, from 1672 to 1686 appears to have been much more severe, and was regarded by him as an aggravated form of measles, in which the

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eruption had assumed the confluent form. The disease first appeared in Edinburgh in 1680, and was described by Sir Robert Sibbald. It was not however until the latter part of the eighteenth century, that the disease was thoroughly distinguished from measles, and chiefly through the writings of Withering. From this period it became gradually more and frequent, the attention of physicians being directed to its treatment by its extensive prevalence and fatality. At the present day it is generally present either in a sporadic or epidemic form in every country in Europe.

When *scarlatina* pursues its regular course, three stages are usually observed. — 1st The stage of incubation, — 2nd The stage of eruption; and 3rd. The stage of desquamation. But it is to be observed that these stages are not always distinct; for when the disease departs from its regular course, one or more of them may be indistinct, or even may not be observed.

External Jaws

I. The period of incubation, or the time included between the reception into the system, of the poison peculiar to this disease, and the accession of the first febrile symptom, is exceedingly various in different individuals: in some it may be only a few hours, in others ten or twelve days, and in rare cases four or five weeks have elapsed from the time of infection, until the appearance of the disease.

The first symptom which present themselves, are general uneasiness, lassitude, rigors, headache or giddiness, with anorexia. These are succeeded by great heat of skin, quick pulse, and urgent thirst; by pain and stiffness of the throat with difficulty of swallowing. If the fauces be examined at this period, they will be found swollen and congested; the redness and congestion extending to the pharynx and posterior nares, and occasionally hoarseness may be observed, indicating its extension to the larynx. There is always some degree of fever present, although it may be slight; yet

it is often severe, the pulse being rapid and full, and the face congested or swollen. The tongue is loaded with a whitish or yellowish fur in the middle, through which the enlarged papilla protrude, and is red at the tip and edges.

The bowels are generally costive; the urine scanty and high coloured, sometimes albuminous, although not so frequently as during the later stages of the disease. These symptoms are in general succeeded by the eruption, in the course of the second day; occasionally however they are prolonged until the third or fourth day.

II. The second stage or the period of eruption generally commences on the second day; sometimes about the close of the first day, and occasionally not until the third or fourth day of the disease. The eruption first appears on the face and neck in the majority of cases; sometimes on the trunk or extremities. It consists of a great number of minute red points, situated

in the midst of patches of variable size, having a rose tint, which disappears for a moment under pressure. These patches at first distinct, ultimately coalesce, forming a diffuse redness, which extends more or less over the surface of the body. The skin is now hot and dry, and although at first quite smooth, is now somewhat rough to the touch.

The fauces and pharynx are of a bright red; the tonsils and adjoining glands are swollen, the former being frequently covered with patches of a whitish exudation. The tongue sometimes remains coated, as frequently however it gradually peels off, leaving a dry and polished surface.

The eruption generally reaches its height about the third or fourth day; it is redder during any excitement; paler in the morning and deeper at night, when the fever is highest. The temperature of the skin in this disease is remarkably elevated, often reaching as high as 106° or 107° Fahrenheit. After the appearance of the eruption, the fever is generally in some degree alleviated. When

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the disease is severe the countenance presents an expression of suffering; the eyes are bright; delirium frequently occurs at night; and sleeplessness is caused by the heat and unpleasant sensation of the surface. The bowels are generally constipated; but occasionally it is replaced by diarrhoea.

After five, six, or eight days duration, the efflorescence fades; at first assuming a violet tint, and afterwards a pale rose colour; and is succeeded by the third stage.

III. The period of desquamation commences with the subsidence of the fever, and redness of the surface; the time of its occurrence varies in the different forms of the malady. If the fever and eruption be slight, it may follow on the fourth or fifth day; if however both are intense, it is generally not observed until after the seventh, or even in some cases not until the ninth day. Occasionally this stage is ushered in by a slight increase of the febrile symptoms, followed by a critical discharge of turbid urine, depositing

on cooling a whitish or pinkish sediment,
or by a slight diarrhoea or epistaxis, or by
free diaphoresis having a pungent odour.

At this period of the disease, the Oxyria
generally becomes less severe. The pulse is
less full and quick, although still accelerated
and weak. As desquamation proceeds the
surface becomes paler; the epidermis peeling
off in small scales on the trunk, and in
larger scales, or stripes from those parts where
the epidermis is thick, as on the hands and
feet. The epithelium of the tongue also under-
goes desquamation, leaving it of a bright red
colour, and sometimes very tender.

The hair and nails, especially the former,
frequently drop off. Dr Graves mentions a case
of the latter.

With desquamation the function of the skin is
gradually restored, and convalescence
commences. In some cases desquamation
does not occur for several days after the redness
and congestion of the skin have disappeared.

Having thus sketched what may be called

the normal form of scarlatina; the next point to be noticed is the principal modifications which occur, both as regards the eruption and the type of the disease.

The various appearances which the eruption presents, are deserving of attention for the purpose of diagnosis. It may be partial, confined to one part of the body; sometimes it is extensive and of a deep hue; at other times it is slight or pale; and not infrequently milium vesicles are interspersed forming the scarlatina miliformis of some authors. In malignant cases of the disease, the eruption frequently assumes a livid appearance; its intensity being generally in proportion to the malignancy of the malady; and in some of these cases petechiae are found scattered more or less abundantly over the surface. Besides these irregularities in form and appearance, the eruption may vary in its course and duration. Thus it may not make its appearance until the third, fourth, or fifth day of the disease; and this is frequently the case when some internal complication occurs. On the other hand, in favourable

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cases, the eruption may appear early. Sometimes it immediately follows the fever. The eruption may assume a remittent character, the remissions generally occurring on alternate days.

It is now generally allowed that a person may have the constitutional symptoms of scarlet fever, with or without sore throat, during the prevalence of an epidemic of the disease, the eruption being totally absent; and further, that the eruptive form of the disease may be propagated by it.

With regard to the modifications in the types of the disease, there is no kind of fever, which presents greater diversity in its nature, according to the prevailing epidemic constitution, than scarlet fever. Upon whatever this epidemic constitution may depend, there can be no doubt of its influence. — an influence which has been recognised not only in this, but also in other diseases.

For convenience of description authors generally divide the disease into several varieties, they are however not always distinct, but often run into each other by insensible degrees. The

varieties usually described are three:— 1. the *scarlatina simplex*; 2. *scarlatina anginosa*; and 3. *scarlatina maligna*. The modifications of the disease are however more extensive than can be comprehended under these three heads. Later observations have proved that other two varieties may be added to these; one in which the fever and affection of the throat are present without any appearance of eruption; the other in which all the characteristic appearances of the disease are absent, the nature of the disease being indicated by those secondary affections which are apt to occur after an attack of *scarlatina*, together with other circumstances such as the proximity of the disease &c.

I. *Scarlatina Simplex*.— In this variety the fever is of a mild form; the eruption generally appears about the second or third day, or earlier, and disappears when desquamation commences, which it usually does from the fifth to the seventh day; and there is little or no affection of the throat. It commences with the usual febrile symptoms, on or about the second day of which presents numerous red points, which

gradually extend and coalesce, so as to form a diffused redness more or less over the whole surface. The eruption is usually most intense about the fourth day, and on the fifth it begins to decline. In general the course of the disease is short, and convalescence rapid, unless it be interrupted by some of the complications or sequela hereafter to be mentioned.

II. *Scarlatina anginosa*.— In this variety the fever is generally intense, and is ushered in by rigors, stiffness of the throat, and by severe inflammation of the throat. The tonsils are swollen and covered with patches of a greyish or whitish lymph. The appearance which the tongue presents is highly characteristic of this disease, being covered with a white fur through which the enlarged papilla protrude. The eruption in most cases is well marked, in some cases faint, and in others irregular. The temperature of the skin in this form of the disease is much exalted, it being higher than any other fever of this country; it generally varies from 104° to 108° ; and has been observed as high as 112° Fahrenheit. There is great thirst;

the pulse is much accelerated, full and strong. The angina is often so severe, and accompanied with so much swelling as to impede or even prevent deglutition. The fever is increased at night and often accompanied with delirium. If during the third or fourth day, the eruption suddenly disappears, some internal complication of an inflammatory nature may be looked for.

The parts which show a tendency to morbid action at this period of the disease, are the mucous surface of the digestive canal, the membranes of the brain, the lungs or pleura, or even the pericardium or peritoneum; the kidneys are also sometimes implicated, although not so frequently as during convalescence.

III. *Scorlatina maligna*. — In this variety of the disease, there is usually great depression of vital power from the commencement, especially in weak subjects, and in those living in low and damp situations; sometimes however the disease presents an inflammatory character at its outset, and soon afterwards assumes a typhoid form.

The first symptoms are languor, lassitude and

weakness, succeeded by giddiness, chilliness or shivering, followed by great heat. Faintness is often present, with pain in the head and sickness and vomiting. The face usually appears flushed, but occasionally pale and sunk. Heat and soreness are felt in the throat, and stiffness and tenderness in the neck.

The pulse is rapid and small from the first; in some cases soft and full, but devoid of that firmness observed in inflammatory diseases. Either coincidently with the appearance of the febrile symptoms or soon afterwards, the fauces and parts in the vicinity, become red and swollen, and are covered with patches of an ash coloured exudation, having the appearance of sloughs.

The tongue is of a deep red or brown colour, dry and glazed, and sometimes chapped and readily bleeding. The throat becomes of a livid hue, and the exudations upon it become darker, and often cover gangrenous ulcers. The eruption in this form of the disease is generally irregular. When it is abundant it is often of a livid colour; and sometimes petechiae are interspersed.

The salivary glands swell and become painful,

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and the quality of their secretion is altered, becoming more viscid. The lips and cheeks present an aphthous appearance, and an acrid discharge exudes from the nostrils and mouth.

The affection of the throat sometimes extends along the Eustachian tubes to the ear, causing destruction of that organ. The larynx also is sometimes implicated, occasioning sudden asphyxia.

In young children the febrile action is often attended by coma, and in older subjects by low delirium. In the more violent cases of the disease, the eruption either suddenly changes to a livid hue, or disappears; the fauces become black, and the breath of an offensive odour; the swelling of the neck increases rapidly; and the excretions are passed involuntarily, the faeces having a most offensive odour. The tongue becomes dry and cracked; the breathing laboured; the surface cool, and in fatal cases the patient dies comatose with great alteration of the state of the blood.

IV. *Scarlatina faucium*. — This variety the *Scarlatina sine exanthemate* of Dr Copland

Principles of Medicine

On Cutaneous diseases

Medical Times July 3rd 1852.

and the scarlatina faucium of other authors, is met with more frequently among adults than in children. The affection of the throat is the most prominent symptom, and is generally severe. Dr R. Williams remarks that "there is seldom a year in which scarlatina has been in any degree epidemic. that cases have not occurred in which patients not having previously had scarlatina, are seized with severe fever and sore throat, unaccompanied by any eruptions; and on subsequent exposure to the contagion of scarlet fever, they have been found insusceptible of the action of that poison; and hence it is inferred that the disease they have passed through must have been a variety of scarlet fever." Dr Willan also observes that "it is evidently a species of scarlatina; because it affects some individuals of a family, while the rest are labouring under some other form of scarlet fever, and because it is capable of communicating by infection all the varieties of the disease." In some observations on this variety of scarlet fever, Dr Alex: Wood of this City, states that his experience is directly contrary to what

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is stated by Dr R. Williams, that this form of the disease occurs in those who have had no previous attack; all the cases seen by him having had the regular fever previously.

Not having seen any case in which the absence of the eruption could be established, I can offer no opinion regarding it; probably the observations made have been on too limited a scale.

By some the fever in this form, is said to be generally of an asthenic kind; by others it has said to vary as much in this as in the most perfect form of the disease.

V. *Scarlatina latens*.— According to some observers rare instances of dropsy occasionally appear during an epidemic of scarlatina, in which the two characteristic features of the disease, viz. the eruption and sore throat are not observed. By others this is referred to these symptoms having been so slight as to have been overlooked or escaped detection. Dr Graves mentions a case as having occurred in the family of a physician, and in which we can scarcely suppose this mistake to have occurred. It is however probable

Dictionary of Practical Medicine Art. Scantlatina.

that in some of these cases, the febrile and other symptoms may have been so slight as to have escaped detection; and yet as we see in cases where the eruption is slight, be followed by severe consecutive disease.

With regard to the cause of this peculiar variety of the disease. Dr Copland suggests that it may be owing to some peculiarity of constitution of the person affected; or to the poison having primarily affected the kidneys, or some other internal organs, and prevented the appearance of the eruption and sore throat, as we know the eruption may be retarded in the other forms of the disease, by some severe internal complication.

Complications.— The complications or intercurrent affections which are apt to occur during the course of scarlet fever are very important, both as regards the history and pathology of the disease; and it is remarkable that they occur more frequently in some epidemics than in others. They are generally inflammatory in their nature, and often combined with great depression of the vital powers; and in this respect

they differ from primary inflammations occurring in persons whose system is not contaminated by the presence of a specific poison.

The affection of the throat may extend by contiguity of surface to the parts in the immediate neighbourhood; and by far the most dangerous, although not the most frequent of these, is its extension to the larynx or trachea. Generally the former alone is affected, but in children especially the trachea is also liable to be implicated. The morbid action frequently extends to the nostrils; and pharyngitis is generally present more or less in severe cases of the anginous form of the disease, when it occurs in the malignant variety it generally ends in disorganization. The upper part of the oesophagus is also sometimes affected, rendering deglutition either difficult or abortive, matters being ejected by the nostrils on attempting to swallow them.

The extension of the inflammation along one or both Eustachian tubes to the internal ear, not infrequently occurs in the malignant form, causing destruction of the small bones of the

On Scenlatina p. 78.

tympanum, followed by an offensive discharge, and Dr. Graves mentions a case where hemorrhage occurred from the ear and proved fatal.

Diffused inflammation of the cellular tissue and glands of the neck, the result of local contamination spreading from the diseased throat, is frequently observed in malignant cases. In general it passes rapidly into suppuration or gangrene, but before it reaches this state the edema may be so great as to place the patient in danger of suffocation, as in a case related by Dr. Kennedy.

Gastro-enteritis is by no means a rare complication of *scarlatina*, although not a very formidable one. It is to be distinguished from the vomiting which frequently occurs during the first stage, and from the diarrhea which sometimes occurs when the disease is about to decline, and which may be considered beneficial.

In *scarlatina maligna*, a severe attack of diarrhea occasionally occurs at an advanced stage of the disease, and is accompanied by some degree of tension and tenderness; and is probably caused by the acid and irritating discharges

from the throat; and in a person whose vital powers are already much depressed, it may materially contribute to hasten the fatal termination.

Affections of the lungs, as bronchitis or pneumonia although not so frequently met with as in measles, yet they sometimes found to complicate the severe forms of the disease. When they occur in the milder forms, it is generally at a more advanced stage of the disease, or as sequelæ, and approach more to the usual characters of these affections. In severe cases the diffusion of the disease through both lungs, may be the immediate cause of death, by obstruction to the function of respiration.

Pleuritis may occur either separately, or in connection with other affections of the lungs, or with pericarditis; and the latter affection is frequently latent. It is met with in the first or second stage of the disease, but more frequently during the decline of the eruption or convalescence.

Peritonitis is rarely met with as a complication; more frequently as a sequelæ; it may however appear consecutively of diarrhoea. When

Dict. Pract. Med. Art. Scarlatina.

it does occur, it is recognised by the usual symptoms of peritonitis, but in malignant cases, where there is much depression of vital power these signs may be more or less masked.

Cerebral affections.— Headach and delirium are frequently observed during the first stage of secalatonia, but they rarely last for any length of time. Dr Graves mentions several cases in which convulsions occurred during the first or second day, and ending fatally by Coma.

In many cases which occur during convalescence they seem to be connected with dropsy.

The last complication I shall briefly is the affection of the kidneys, which although it generally occurs during or after the decline of the disease, is also liable to supervene during its course. Dr Copland who attaches great importance to its occurrence at this period, observes that "in cases attended by more or less edema or anasarca, during the period of the eruption, or associated with a deep or dark coloured eruption, the patient if not delirious or Comatose, generally complains of much aching in the loins, and pains in the limbs; and

the urine is scanty, high coloured, and sometimes albuminous; or it is more or less or altogether suppressed." When nephritis occurs in this early period of the disease, we have besides the affection of the kidneys itself, an accumulation of excrementitious matters in the blood, consequent on the suspended function of the kidneys; which matters by their poisonous effect on the system will tend to produce other complications.

The Sequela.— The same organs or parts which are described as being the seat of the complications, may also be the seat of those affections which constitute the sequela. The changes described as complications may appear so late in the disease as to be considered sequela, while on the other hand those usually viewed as sequela may appear so early as to be called sequela.

The most frequent affection consecutive of scur latina, is dropsy in the form of anasarca. The extreme limits of the period at which it occurs are said to be from ten to forty days; and the proportion of cases in which it is observed varies much

in different epidemics.

In the anasarca consecutive to scarlatina the face is puffed, tense and elastic, and does not preserve the impression of the finger; and from it being accompanied with febrile symptoms, the face does not present the leucophlegmatic aspect so characteristic of confirmed Bright's disease of the kidney. The general symptoms which precede the anasarca usually diminish after it makes its appearance, leaving a slight degree of fever, which usually disappears in a few days, unless some other complication occur.

Often the symptoms preceding the dropsy are so slight as to escape observation, until commencing edema of the face or ankles show itself. After the face and ankles the parts which usually become edematous are the wrists and hands, and ultimately the trunk of the body generally.

The urine is generally scanty, high coloured, turbid, and albuminous; its specific gravity was found by M. Legendre to be slightly diminished; less so than in Bright's disease; on examination by the microscope it presents blood discs, epithelial cells, and fibrinous tube casts.

With regard to the cause of the dropsy after scarlatina, different opinions are held; some authors ascribing it to increased vascular action; others to the obstruction of transpiration from the surface of the skin, combined with loss of tone in the capillaries supplying the parts in which the effusion has occurred. recent researches however would seem to indicate the kidneys as in some way or other connected with the dropsy, either in the relation of cause and effect, or as a consequence of the same cause. In addition to the general dropsy liable to follow an attack of scarlatina, local dropsies sometimes occur either alone or in connection with oedema.

Effusion into the ventricles or on the surface of the brain, may take place singly or in combination with similar effusions in other parts. It is not so rapid in its progress, as when it appears early in the disease as a complication, neither is it so frequently attended with convulsions.

Effusions into the cavity of the pleura or peritoneum, also sometimes occur, and are

regarded by Dr Copland as depending essentially upon the affection of the kidneys, and the imperfect performance of their functions.

Various important sequelae arise from the extension of the disease from the throat to parts in the neighbourhood, more especially to the internal ear, which may run on to ulceration, and consequent destruction of that organ, frequently followed by caries of some portion of the temporal bone, from which the disease may extend itself, even to the membranes or substance of the brain, and ultimately causing fatal results.

The parotid glands, and lymphatic glands of the neck often remain enlarged after an attack of scarlatina, especially in those of a scrofulous habit; they are often troublesome when they advance to chronic suppuration or abscess.

I might mention numerous other secondary affections which have been observed during the course, or after an attack of scarlatina but as they occur much less frequently, they are of minor importance as compared with those

already spoken of. I shall therefore now describe the appearances observed on dissection in fatal cases.

Morbid appearances. — These vary remarkably according as the fatal issue has taken place at an early or an advanced period of the disease; in the former case when the eruption was present during life, it either entirely disappears from the surface of the body, or it may remain in the form of livid patches of greater or less extent. On dividing the integuments their vessels are found unusually injected.

The throat presents different appearances according to the variety of the disease, in mild cases the tonsils and fauces may appear merely congested; in the anginous variety they are frequently covered with patches of a greyish or whitish exudation; and in the malignant form, the mucous membrane may be found softened, ulcerated or gangrenous.

In malignant cases the intestinal mucous surface is softened and discolored; the glands of the small intestines are enlarged, and occasionally the mesenteric glands also. The lungs and

Cyclop. Anat. & Physiol. Art. Rev.

bronchial lining are often congested; and the heart and veins frequently contain semifluid or grumous blood.

With regard to the complications, I need not describe them. Each complication will furnish the morbid lesion peculiar to it; there is however one of great importance which I should like to notice, viz - the appearance which the kidneys present, and in doing so I may take the liberty of quoting the description of Dr. L. Johnson, as regards the condition of the kidneys in the acute desquamative nephritis consequent on sepsis. "The kidney in these cases, is enlarged apparently by the deposit of a white material in the cortical substance; the vessels in the cortical portion, where they are not compressed by this new material, are injected, and of a bright red hue; the medullary cones of a dark red colour, in consequence of the large red veins which occupy these portions of the gland being distended with blood. The entire appearance of the organ is quite that of a part in a state of acute inflammation. On microscopical examination the convoluted tubes are seen filled, in different

degrees, with nucleated cells, differing in no essential character from those which line the tubes of the healthy gland. Some of the tubes contain blood, which has doubtless escaped from the distended Malpighian vessels. There is no deposit exterior to the tubes."

Different views are held of this condition of the kidneys in the dropsy with albuminuria after scarlatina; some with Dr. Graves regarding the disease as only functional; while others regard it as dependent upon Bright's disease.

In some cases of dropsy with albuminous urine, which had proved fatal, Dr. Hamilton found the kidneys in a state of congestion resembling incipient Bright's disease; and Dr. Christison and others in more chronic cases have found the granulated condition of the kidneys, so frequently observed in Bright's disease.

On the other hand, there are many cases of anasarca after scarlatina, in which the urine contained no albumen, and also of albuminous nephritis without dropsy, as were noticed by Dr. Kennedy.

Although we have sufficient evidence to prove the existence of congestion or inflammation of the kidneys

yet in the present state of our knowledge on the subject we would not be justified in regarding the two diseases as identical.

Diagnosis. For all practical purposes it may be said, that the only diseases with which *scarlatina* is liable to be confounded, are measles and roseola. From the former it may in general be distinguished by the shorter period which elapses from the time of exposure to infection, until the appearance of the first febrile symptoms, and by the earlier appearance of the eruption after the commencement of the fever. In *scarlatina*, the eruption usually appears about the second day of the fever, while in measles it does not present itself until the fourth day. In the former the patches are large, generally diffused over a large surface; in the latter the eruption consists of excentric patches, slightly elevated and rough to the touch. The color also differs, in *scarlatina*, it is of a vivid red; while in measles it approaches a raspberry hue.

The tongue in *scarlatina* presents appearances highly characteristic, from the enlarged papillae protruding

through the fur with which the tongue is loaded, which together with the inflammation of the fauces are never present in measles. In the latter disease the fever is ushered in by sneezing or coryza, and the affection of the throat is either absent or very slight, whilst cough is often severe.

Roseola sometimes very closely resembles scarlatina, but in general the fever is slight, no sore throat, and the whole course of the disease is much shorter than scarlatina.

Although after the appearance of the eruption, the diagnosis of scarlatina is generally easy; yet it is often difficult or impossible to distinguish the primary fever if the angina and eruption be absent, and here other circumstances must be taken into consideration, — whether the disease has appeared in the vicinity, or in the same family; and in these circumstances, the rapidity of the pulse and acuteness of the attack, should induce suspicions of scarlatina, although neither eruption, nor sore throat be present.

Causes. — Concerning the exciting causes of scarlatina very little is known; it is caused

by a specific poison emanating from an individual already the subject of the disease, and although the phenomena which it produces are very evident, yet its nature and origin are wholly unknown.

The media by which the poison is transmitted from the affected to the healthy, are the atmosphere and fomites, or substances which absorb the poison, and afterwards impart it to the atmosphere.

The facility with which the poison will affect individuals will depend greatly upon the state of the air as regards motion, moisture &c. as well as predisposing causes existing in those exposed to its influence.

Fomites are frequent media, by which the disease is transmitted. The duration of the period in which fomites are capable of infecting, will differ according as the substances have been freely exposed to the atmosphere, or have been excluded from it.

That the disease is capable of being communicated by personal contact, is proved by the experiments of Sir B. Hanwood, who succeeded in inoculating the disease with the fluid from the vesicle, which are sometimes intermingled with the eruption of.

Dict. Pract. Med. Art Scarlatina.

scarlatina. Dr Copland met with a case in which the disease was produced by the contact of a portion of the discharge from the throat of a patient affected with the malignant form of the disease.

Scarlatina may exist at the same time with other eruptive fevers, more or less modified from its original form; thus it may co-exist with measles forming a hybrid disease, presenting in some measure the characters of each; and Mr. Marson Surgeon to the London Smallpox Hospital states that in the course of eleven years, he has seen seven persons who had variola and scarlatina simultaneously.

Among the predisposing causes may be mentioned the age of childhood, which appears to be the period at which the poison of scarlatina is peculiarly liable to produce its specific effects on the body.

The susceptibility appears to diminish with age, and as the number of those affected with the disease in childhood is very great, it follows that if the disease occur but once in a lifetime (which in general it does), the proportion of those susceptible in advanced age will be very small. As an illustration of this, out of 2614 cases given by Mr Farr in his fourth report, 2419 were children, 182 adults,

and 13 only of advanced age.

The concurrent causes depend for the most part upon those conditions which affect the individual exposed to infection, and upon those circumstances which favour the concentration of the poison.

Among the most frequent of these causes, may be mentioned, bad ventilation; putrid effluvia; insufficient or unwholesome food; bad clothing; uncleanness; and living in low and damp situations.

Treatment.— It is evident from what has already been said that no single plan of treatment can be laid down as applicable to this disease. According to the type which the disease presents; to the epidemic constitution; to the character of the complications when present, so will the treatment require to vary.

The mild form of the disease will in general require little treatment beyond attention to ventilation and diet, and to the excreting functions. If however there be much fever, with pain in the loins and limbs, and scanty urine, an emetic will be of service if administered early, and its action promoted by means of.

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diluent, and afterwards by diaphoretics, and the warm bath may be used to assist in promoting the functions of the skin. If the prevailing constitution of the disease be of a sthenic character, and if some internal complication threaten to arise, we are advised by some to have recourse to general bloodletting, but in most cases local blood-letting will suffice; and if the constitution of the disease be of an opposite character, dry cupping may be used with advantage. Although this form of the disease may seem at first mild, yet it may be rapidly converted into one of great danger, from the superintention of some internal complication.

In the anginous form of the malady the treatment will require to be of a more active kind. If the disease be seen at the commencement, an emetic administered early, will have a happy effect in modifying its future course. If there be much cerebral excitement, and if the kidneys shew a disposition to take on inflammatory action, it may be advisable to abstract blood from the nape of the neck, or from the loins either by leeches or cupping.

General blood letting has been strongly recommended by Drs Macintosh, Armstrong and others, who speak highly of its good effects in moderating the fever, when used in the early stage. The general opinion now seems to be that it is not often necessary, and that it is mainly of use in those cases where the fever is of an unusually sthenic type, and where some internal complication is threatened. Epidemics of the disease have undoubtedly occurred, in which the prevailing constitution did admit of it, and in which the disease did well under this treatment.

The affection of the throat is a prominent symptom, and for the alleviation of which our efforts are to be directed. If it be severe and if there be much swelling, and the patient seem likely to bear the loss of a little blood; a few leeches may be applied to the angle of the jaw or behind the ears. Hot fomentations and poultices externally, and the inhalation of steam are of service in relieving the distressing pain of the throat. Cooling and astringent gargles, according to the state of the throat will be found

very soothing; in young children they may be injected into the mouth and throat; or the throat may be moistened with them by means of a camel hair brush.

If the bowels be constipated, they may be gently evacuated by means of castor oil, or some other laxative.

The cold affusion has been recommended by Dr Currie and others in the treatment of scarlet fever. Later observers have not found it of so much benefit; and it is thought to be not without danger, from its tendency to favour internal complications, and thereby aggravate the disease.

After the bowels have been gently evacuated, diuretic and diaphoretic salines are agreeable and tend to moderate the fever. Rubade of Ammonia combined with spirits of nitric ether will be found most appropriate.

In those cases in which the fever assumes the typhoid or malignant form, a gentle emetic at the outset of the disease is of service in modifying its course; but its action should be restricted to the period of invasion, for it is not of much

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benefit when the disease is further advanced. In some cases the progress of the disease is so rapid, and the depression of the vital powers so great, as to render the system unable to bear the shock of an emetic, and in such cases, Wine or other stimulents are indicated. When the eruption appears sparingly or retrocedes, efforts should be made to invite it to the surface, by means of the hot bath.

General bloodletting in the malignant form of the disease, is out of the question; even local bloodletting, which sometimes seems indicated by the symptoms, is rarely of benefit, and often injurious, either by still further depressing the patient, or from asthenic inflammation spreading from the leech-bites to the neighbouring parts. Dr R. Williams has drawn up a table of different epidemics which have prevailed from 1763 to 1834; and he concludes, "that the chances of recovery are diminished by the practice of bleeding, in the ratio of nearly four to one, as compared with the chances, supposing the patient not to have been bled." Dr Willan states that during the years 1785-6 and -7, he

never saw a case in which blood-letting was advisable. On the other hand Morton employed it largely in the epidemic which he described, and in the epidemic which prevailed in this city in 1733, it is stated that few died in which blood-letting was early and copiously used.

Cinchona and its preparations have been strongly recommended in the treatment not only of this, but also of other fevers which present a malignant or typhoid tendency.

Dr Copland observes that "it is often difficult to determine whether it should be given in combination with an acid or an alkali, in the malignant form of remittent. If the kidneys be not affected, it should be conjoined with hydrochloric acid, or the sulphate of quina may be given with dilute sulphuric acid.

When however these organs are implicated he generally prefers a combination of the decoction of cinchona, with the liquor ammonia acetatis, or carbonate of ammonia; or with either of the alkalis, in a state of effervescence with a vegetable acid." Dr Armstrong regards

stimulating and tonic remedies as "pernicious in the first stage and destructive in the second."

Caprylic acid was recommended by Dr. Stevens in the treatment of malignant scarlatina. He used it in about four hundred cases with great success.

Dr. Platt and Stewart speak highly of the sesquicarbonate of ammonia, in doses of from two to four grains, for children from four to seven years of age.

Chlorate of potash was recommended by Dr. Larnett more than half a century ago, with or without the decoction of bark, in cases of scarlatina maligna.

Having thus briefly adverted to some of the principal remedies employed in the treatment of the malignant form of scarlet fever, and many of them no doubt beneficial; I shall now simply offer my testimony in favour of the remedy, which has seemed to me by far the most successful. While engaged in attending some cases of the disease, I was induced to try the Chlorine, from having

noticed in the last edition of Dr Watson's valuable lectures, a paragraph recommending Chlorine, as worthy of a trial; and the following is a general outline of the method of treatment.

Having a due regard to the presence of unusual inflammatory symptoms on the one hand, to be met if necessary by cautious antiphlogistic treatment; and to sinking of the vital powers on the other, to be met by Wine, Quinine &c. I administer in frequently repeated doses of a tea-spoonful to a table-spoonful, according to the age of the patient; the chlorinated solution prepared after the formula given by Dr Watson; you may make it, says he for extemporaneous use in this way. Put eight grains of the chlorate of potass into a pint bottle, and pour upon it one dram of hydrochloric acid; after the violent action has ceased gradually add water until the bottle is full. In addition to its internal use, I have been in the habit of ordering a stronger modification of the above solution, as a lotion or gargle; and the assiduous

use of it in this way is perhaps the most important part of its application. From time to time, according to the urgency of the case, the patient's throat and nostrils should be cleansed of the acid discharge, by means of a camel hair brush dipped in the lotion. The great importance of keeping the nasal and pharyngeal passages, as free as possible from the irritating discharges with which they are clogged, can be appreciated by all who have had occasion to treat a case of *Scorbutus malignus*. Except in perhaps the very worst cases, namely those in which the prostration and sinking of the vital powers are so sudden as to leave little time for interference, I have witnessed the most beneficial results from the assiduous use of the Chlorine, both internally and as a lotion or gargle.

With regard to the probable modes of operation of this agent; Dr Watson states, "I presume its disinfecting properties may partly account for the good it does; it probably deprives the foul secretions of their noxious quality."

As he only refers to its internal use, of course he means that the Chlorine does so, by affecting the patients general system, through the medium of the blood. Taking this view of the action of the remedy, which seems a very probable one, we are here furnished with an illustration of the decomposition or elimination from the system of a poisonous matter, by means of a substance acting as an antidote to that poison. However imperfectly we may be able to trace this presumed chemical action, as in the case under consideration, deducing it merely from the patients amelioration; yet possibly such a triumph may some day be achieved by the Chemistry of Medicine, over those poisons which so fatally affect the human frame in every contagious disease.

I shall now conclude this imperfect sketch with a short notice of two of the cases which occurred to me, illustrative of the method of treatment advocated.

The first case I shall mention was that of a boy aged 14 years. The disease commenced

with the usual febrile symptoms, consequent on exposure to cold; and from the child having cough, it was thought to be a case of bronchitis. On the third day of the fever, however, a mucopurulent discharge was observed to issue from the nostrils, which together with the circumstances of scarlatina being in the immediate vicinity, excited suspicion of the disease. On examining the throat these suspicions were confirmed by the appearance which it presented. It was much swollen, and of a dark red hue, and a small part of the mucous membrane covering the left tonsil presented a sloughy appearance. The parotid glands were swollen; and slight edema of the cellular tissue of the neck was present. The eruption was scanty, entirely confined to the face and neck, the rest of the body being pale; and from the flushed appearance of the former the little eruption present was somewhat hidden, in fact had it not been carefully looked for, it might easily have escaped observation. The tongue was dry and covered with a brown fur. The pulse 130 and rather weak. The fever assumed a decidedly typhoid character, attended

with great depression of strength, and to add to the danger diarrhea supervened

Under these circumstances, after gently evacuating the bowels by means of castor oil, recourse was had to the treatment by means of chlorine, which consisted in giving internally the chlorine solution according to the formula before given; and to which a little syrup had been added, in the dose of a teaspoonful every two hours; and in applying assiduously to the throat and nostrils by means of a camel hair brush, a solution of double the strength of the mixture. At the same time the child's strength was supported by means of wine; and when ultimately the throat affection became so severe as greatly to impede deglutition, by means of nutritive enemata. On the tenth day of the disease, and on the sixth from the first exhibition of the remedy; the child who had previously been in a semi-comatose condition, seemed gradually to revive, and under the continuance of the chlorine for a few days and afterwards a tonic plan of treatment, the patient progressed steadily, and in the course of

a month was completely convalescent.

The second case was that of a boy aged 3 years. When I first saw him, he seemed to be labouring under more of the *angine* form of the fever, than in the former case, although ultimately the fever assumed more of a typhoid form.

On examination, the throat was found to be highly inflamed; the tonsils enlarged and swollen, and covered with patches of lymph.

The parotid glands were also somewhat enlarged.

The eruption was well marked, principally confined to the arms and chest; and the heat of the skin was very great. The tongue was coated with a white fur, but the enlargement of the papillae was not well marked. The pulse 130 and full. Considering the inflammatory character which the fever presented, and from the circumstances, of the urine being scanty and dark coloured, three leeches were applied to the region of the kidneys, where the patient complained of pain.

The eruption in this case did not appear until the fourth day of the disease, its appearance being probably retarded by the renal com-

plication, which however was checked by means of the leeches.

Although the disease, thus far presented symptoms of an inflammatory character; yet on the seventh day of the disease, typhoid symptoms set in. The depression of strength was not so great as in the former case, yet they were sufficient to cause apprehension for the result.

The treatment, both local and Constitutional was conducted in precisely the same manner as in the case before mentioned, and on the tenth day of the disease, a marked improvement took place in all the symptoms; the pulse became lowered, and the heat of the skin diminished; the throat previously ulcerated began to granulate, and the patient rapidly advanced towards convalescence, which was not impeded by the superintention of any of the sequelae of the disease.

In conclusion. I do not share the extravagant opinions of some writers; that it is almost a specific for the disease, for in many cases I have seen it fail; but notwithstanding this I can add my testimony in favour of Chlorine. as a valuable remedial agent, and worthy of.

the attention of the physicians, in the treatment
of this fatal disease
