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Observations.

Scarlatina

by
James Barnston

March 31st - 1852.

Having had occasion to witness
 a severe Epidemic of Scarlet Fever, as it
 occurred in the Town of Selkirk during the
 whole period of last Summer - and
 having possessed a favorable opportunity
 of carefully observing its origin and pro-
 -gress, and of minutely investigating many
 interesting and instructive points in con-
 -nection with the Disease, as it presented
 itself in 120 Cases, which came under
 my notice, - it is my intention to de-
 -vote the following pages of this Dis-
 -sertation, in the calm and deliberate
 consideration of the whole subject of
 Scarlet Fever - trusting, that the ob-
 -servations which fall as the result
 of experience - however limited - may
 prove a faithful and accurate
Account

account - worthy of reception.

To found any important doctrinal views upon so limited experience or to draw from it hypothetical conclusions differing from those of able authorities whose opinions are highly and justly estimated, would be obviously presumptuous. This is not my design - My sole object, in bringing forward the subject is to narrate those observations and matters of fact, calculated to illustrate the views, establish the doctrines and confirm the practice - all which have been more or less universally received and adopted - Liberty being taken, however, to discuss fairly and deliberately those important points, where diversity of opinion prevails -

Having offered these explanatory remarks, I shall proceed to lay out the order (as nearly as possible) in which the subject will be taken up - viz. 3 as follows.

I - An Outline of the Origin and Progress of the Epidemic of Scarlet-Fever, as it appeared in Seltkirk and its Neighbourhood during the Spring and Summer of 1851 - then followed by some General Remarks on the Primary Origin and supposed Nature of the Poison, which gives rise to Scarlet-Fever and its modes of Propagating that Disease -

II - The Effects of the Poison, when introduced into the Human System - in other words - the Symptoms presenting themselves in the different marked Varieties of the Disease -

III - Its Complications and the Relative Effects of the Fever on the Production of what are called its Sequela -

IV - The principal Indications of Remedial Treatment of the Disease, its Complications and Sequela -

Nature of the Origin & Progress
of the Selkirk Epidemic of Scarlet
Fever, — with General Remarks &c

During the month of April (1857) and pre-
 -vious to this period, the Town of Selkirk
 was considered healthy in spite of much
 variable cold and stormy weather. Sub-
 -sequent to these atmospheric changes,
 which are common, in spring, in situations
 so highly elevated, a Calm succeeded,
 and with the exception of a little rain,
 the weather was upon the whole favorable.
 It was at this time that Scarlet Fever
 made its first & unexpected appearance,
 by attacking, simultaneously, three
 Families, living at some distance from
 each other in the Town. In one of these
 Families, all the children - six in number
 laboured successively under the Disease,
 which affected two of them very severely.
 The two children of the second Family - both
 under three years of age - took the Disease
 - the eldest in the malignant form which
 proved fatal. The only child - six
months.

Months old - of the third Family who lived in another part of the Town, was seized with typhoid fever, which also proved fatal in this case. The Disease next appeared in a Family who lived a mile and a half distant from the Town and whose communication with it was entirely cut off. Here - seven out of eight, including the mother, suffered from the Disease, & out of four of these cases, which proved typhoid in their nature, three deaths resulted.

Not to particularize any further into individual cases - the Disease increased very rapidly after its commencement. It was not observed to focalize itself in particular localities and gradually spread from one house to another in its neighbourhood. So far from this - the Epidemic diffused itself widely and rapidly over the whole extent of the Town - various sections of it appearing to be poisoned, as it were, at one and the same time.

Again, it was particularly observed that those close restrictions which many Parents put upon their Children, by

separating

Separating and confining them from the remaining beyond the boundaries of contact with others who had either been already infected or had mingled with the diseased. - I say - these instructions, just and appropriate as they were, proved no guarantee for their preservation and safety.

Their Constitutions were not proof against the infectious Principle which pervaded the Atmosphere throughout. I verify this Statement, I select the three following instances - The first was that of a Merchant who lived at one end of the Town and who, from the first, confined his only Child at home and carefully prevented her from any intercommunication with others; It, strange to say, she was the first to take the Disease in that Quarter and altho' the fever was mild she suffered severely from secondary symptoms. - The second was that of a Gentleman whose Residence was situated upon an Elevation at some distance from the other Extremity of the Town, and altho' he prohibited his Children from overstepping the precincts

of

of his private domain, one of them suffered from scarlatina in the form of angina - and that too in spite of the previous administration of Belladonna Globules -

The third instance I have mentioned was that of another private gentleman, whose family resided nearly two miles from Town in a fine healthy situation, yet three months seclusion did not exempt one of his children from the disease - nay more - this same one suffered from a second and more severe attack about a month subsequent to complete convalescence from the first -

Another feature of this Epidemic, worthy of being observed, was the invariable relationship between the evident changes in the atmosphere and the condition of the disease - not only in respect to the numerical increase & decrease in the scarlatina patients but also in reference to the different types the disease assumed. At the commencement of this Epidemic, the disease was very frequently of a typhoid nature, demanding the use of powerful stimulants, but as the heat of summer advanced

advanced and the temperature of the Atmosphere rose, it assumed a acute form decidedly inflammatory, in conjunction with the rapid increase in the number of persons infected. In July, abundance of Rain fell for a few days, followed by high winds, which effectually cleared up and rarified the Atmosphere and checked in some measure the progress of the Disease and in no small degree diminished its intensity and virulence.

This mitigation was, unfortunately, however, of short duration. At a distant period, a fresh impulse was given to the Extension of the Disease, which not only broke out with new vigour and intensity, but was likewise propagated of this peculiar sort. The invariable tendency to serious Renal Disorder, accompanied by inflammatory Effusions - for it was especially observed, that in almost every case which occurred at this stage of the Epidemic - however mild the fever itself - the kidneys became seriously affected, either during the existence of the primary fever or at the commencement of

of convalescence - exhibiting symptoms of the most decided inflammatory nature & evincing the greatest obstinacy to every remedial means of treatment. A febrile so marked and characteristic could not be overlooked when compared with the circumstances, that, at the commencement of the Epidemic, the discharges of the kidneys was slight and Effusions - peritonitis or several others or even occurred.

In Change for the better took place in the Epidemic, till about the beginning of October, when the Venereal disease of the Scarlatine patients became evident, and from that time the disease gradually declined and dwindled away, similar to the state of the Atmospheric Constitution. The disease was not wholly confined to the Town. It encroached upon some rural families living in the next parishes - almost all within two miles of the Town, excepting in one direction - along the windings of the River Effrick to the extent of 20 miles. - In connection with this part

of

of the subject, Sir Jacobus knows that, during the period scarlet fever prevailed in Selkirk, there appeared but very few cases of it in Inverness and Galashiels - the two nearest towns to Selkirk. In the latter, whose population is double that of Selkirk, only two instances were observed of its occurrence during the whole period of summer.

The disease was almost solely confined to children, for in referring to the statistical accounts which I carefully read, I find that the vast majority of those who suffered from it were under the age of six - while beyond that period, the relative numbers of infected decreased in proportion to their advancement in age - up to that of fifteen; and there were only six instances of its occurrence in individuals who had exceeded that age - I may state, however, as worthy of observation in reference to the limited number of adults who were affected with genuine scarlet fever, that during the first two months of the Epidemic

and

and occasionally afterwards, some suppurating sore throats were very prevalent among adults - and altho' doubt might be entertained of the true nature of these cases, that is to say, whether they were scarlatinal or not, the whole train of evidence, when combined, sufficiently indicated, that they were local complaints - producing secondary or symptomatic disturbance in the system - at least, a marked line of distinction could always be made between such cases and those of genuine Scarlet Fever occurring, however, as they did - at one and the same time, it is not improbable nor unreasonable to suppose, that the same exciting cause which gave rise to the one class of cases, operated naturally in the production of the other.

The main points of interest and importance connected with the history of this epidemic are as follows -

- I. The sudden and unaccountable origin of the disease
- II. Its rapid diffusion over the whole

whole Town - immediately following its introduction

III. Its introduction into many Families in spite of all the appropriate preventive measures employed.

IV. The remarkable relation observed between the evident changes in the Atmospheric Constitution and the variable conditions of the disease, in respect both to its limitation or extension and to the typical forms it assumed.

V. The occasional prevalence of severe inflammatory affections of the throat in Adults, during the period of the Scarcity Epidemic among the Children.

VI. The limited sphere of the Epidemic Influence, which acted solely within boundaries of this particular District - altho' constant intercommunications existed between it and the several Villages and Towns surrounding it.

The Summary of Evidence given regarding this Epidemic seems to show pretty clearly the operation of Atmospheric Agency, in the diffusion, if not the Introduction of Scarlet Fever and the

afic?

exercise of its influence on the variable
 progress as well as the different forms
 of the disease; but as the whole sub-
 ject bears down or up reference to the
 general topic - viz. The generation and
 propagation of Scarlet Fever - the origin
 and diffusion of its poison - I pro-
 pose to give a general view of the
 different hypothetical views maintained
 upon this head by various authorities.

It was at one time very
 generally supposed that Scarlet Fever
 was a disease *in genere* - of spon-
 taneous origin - that is to say - generated
 within the human body, independent
 of external agency; but few at the
 present day subscribe to this opinion
 and the universal belief now is, that
 the disease - as representing itself in its
 various forms - is the result of a
 morbid action, excited in the system,
 by a peculiar morbillous matter or
 specific poison, introduced from
 without. - It would be beyond
 the limits of this paper, to enter into
 detail.

detail - respecting the Summary of Evidence upon which this belief is founded, & the more unnecessary, it is for me to do so, since the Doctrine of the Dependency of Scarlet Fever upon a Morbillous Infection, as its proximate exciting Cause, is now so universally admitted and so generally acted upon.

From the careful Analysis of individual and multiplied Instances, of the retention of Scarlatina, as it ordinarily occurs - as well as from the Histories of the Disease in its Epidemic form, we cannot but infer the existence of some external Morbific Agency, which possesses the inherent power of producing and exciting the disease. I elucidate this Remark - Let us suppose - as is frequently the case - that a healthy individual visits, at some distance, a friend labouring under Scarlet Fever, and takes the same Disease at some period sooner or later subsequent to his departure. The question comes then - Was the Attack merely a Coincidence or Casualty, or was

Is the result of the transmission, by what-
 ever means, of a morbid poison from
 the sick to the healthy person? Let
 us suppose, again, that this individual,
 who has newly taken the disease, remains
 during his illness in a house or room where
 a family of children reside - say - they
 were previously healthy and that sub-
 sequent to his illness, they became suc-
 cessively affected with the same di-
 sease. Was this merely an accidental cir-
 cumstance or was it the result of the
 communication of a peculiar morbid
 principle? Lastly, let us suppose,
 that scarlatina breaks out in a ju-
 venely healthy town or district in the
 epidemic form - affecting, at one and
 the same time, numerous families in
 different classes of society - inspecting
 of their advantages & their disadvantages -
 are we to infer, that the epidemic oc-
 currence of the disease was a true Cas-
 uality, or was it connected with the dif-
 fusion of a peculiar morbid agent, which exci-
 ted the same disease in many in-
 dividuals

individuals at the same period?
 If these instances were the sole result
 of coincidence, the number of such
 coincidences of a similar nature occur
 so frequently - Is it not decidedly more
 reasonable to infer, as no other rational
 explanation can be given, the existence
 of an external Miasmatic Agent - of what
 nature that Agent may be - whose
 inherent power is the production of the
 disease in the human subject? But
 we may not only draw the inference -
 we possess demonstrative proof of the
 existence of a Scatological poison, by
 direct inoculation - Thus, among others,
 Sir Basil Harwood - in the hope of pro-
 ducing a mild form of Scarlet Fever -
 inoculated several healthy children
 with the serum of the vesicles, which
 sometimes appear in that disease. The
 result was in many instances successful,
 the disease was produced, but un-
 fortunately not in a mild form, for
 it proved to be as severe as in or-
 dinary spontaneous cases. -

We may therefore, with safety, state our belief in the existence of a Scalfebrile Poison - The next question, which naturally arises, is - What is the primary origin of this Poison? Whence does it originate? and what is its nature?

Altho' our present knowledge on this subject is very imperfect, it will not be out of place to make general mention of the various opinions held by different writers of different ages. When Scalfebrile Fever first became known and described as a distinct disease, it was supposed by many to originate - like other fevers - in a vitiated state of the fluids of the human body. Health, they argued, was balanced by the maintenance of a normal condition of the vital fluids; but if these changed, by any cause, to an unhealthy a change in their quality or relative quantity, the immediate result was the development of a morbid agent, which gave rise to a particular disease, characterized by a class of symptoms, which, after a lapse of time, declined on the gradual removal

Removal or Elimination of this exciting Cause.
 This morbid process was likened to fermentation, but few physicians of the present day subscribe to this doctrine, notwithstanding it is still a popular belief that fevers, more especially the Eruptive fevers may be bred in the blood, independent of any external agency.

Another doctrine, however, which had been previously promulgated in reference to the diseases of a like kind, was also applied to account for the origin of Scarlet Fever. It was maintained that this disease - like fevers of a similar class - originated from some peculiar state of the atmosphere - The exact nature of this condition of the atmosphere was not known but it was supposed to exist at certain seasons of the year and produced a deleterious effect upon the human constitution. This doctrine was mainly founded upon the supposed fact that Scarlet Fever occurred only in the epidemic form - and certainly the earliest & most accurate descriptions of the disease would lead us to suppose that

that such was the case. Thus, its first appearance in Europe was announced in Spain in 1610 - when it prevailed in a very severe and virulent form. It is said to have raged in Naples in the year 1618. About the middle of the 17th Century, Prospero Marchandi described the disease as it prevailed in the epidemic form in Rome at that period. In 1689, it first appeared epidemically in London, both in the mild & severe forms as recorded by Sydenham and Morton. Subsequent to this period Suxam, Fothergill, Withering and others have faithfully described the epidemic occurrence of the disease - characterized more especially by severe inflammation sore throat. There cannot be a doubt, however, that, altho' many histories of Epidemics of scarlet fever were faithfully and accurately detailed, very vague and unsatisfactory notices were maintained regarding its distinct nature. It was frequently, for instance, confounded with measles. Dr. Morton, in his works, entitled "De Morbillis et Febre scarlatina" -

blinds

Blindscarlet Fever with Measles and describes them both under the common generic name of Morbilli, evidently considering the former an aggravated species of Measles. The identity of Scarlet Fever & Measles continued to be maintained up to the period when Dr. Withering published his "Essay on Scarlatina," in 1793, in which he accurately describes Scarlatina as a distinct disease —

Moreover, the different types and varieties, which the disease assumes during its various epidemic distensions, added much to the confusion which so long prevailed on this subject and can it be supposed that, under such circumstances, even a small amount of accurate data could be obtained in reference either to the modes of origin or manner of propagation of the disease.

There is no foundation for the belief entertained by some — that Scarlet Fever originally sprung from Malaria or a specific miasm, generated from local or accidental circumstances in the Atmos.

— John

Thus itself. We do not deny that the Atmos-
 -phere in certain localities may become
 contaminated with the exhalations proceeding
 from animal or vegetable matter in ^{certain}
 states of decomposition or decay and thus
 become a source of disease. The origin of
 Ague or Intermittent Fever in Malasia, as
 its exciting cause, is a manifest instance
 of this; but we have no proof whatever
 of Scarlet Fever or any other Exanthema
 originating or diffusing itself in this way.

Thus is probably only the source - viz. the
 atmosphere - which we can reasonably
 regard as the exciting agent in the origin-
 -al production of the Exanthema from or spe-
 -cific poison of Scarlet Fever - as also of those
 of the other Exanthemata. Thus is no sub-
 -ject, perhaps, in Medical Science, involved
 in so much obscurity as the origin and
 nature of poisons, in general, which we
 know to circulate thro' the medium of the
 atmosphere and produce specific effects
 upon the human body when introduced
 into the system. Our means & opportunities
 for investigation are but limited and
uncertain

Shakti Chandra. Hist. of the Princes. Vol. I. p. 204.

uncertain, and the results of our researches however carefully made - are liable to all those fallacies which necessarily depend upon obscure & imperfect Evidence.

When we analyze the respective Histories of various Epidemics this order - with which Scarlet Fever is in this respect associated - the symptoms, in each, being specifically the same at all times - it seems reasonable to attribute their origin to specific exciting Causes, which are primarily generated in the atmosphere at the period of their occurrence and rapidly diffused thro' its medium - It is upon this supposition alone, that we can, at present, with any amount of satisfaction, account for the Epidemic occurrence of many Diseases - such for instance as Influenza, a disease known to arise very suddenly & spread very rapidly, and, with regard to the first appearance of which, I have observed that "it attacked at once and raged over all Europe, not moping a family and scaring a person" - Whooping Cough, a disease, which often prevails among the

Jewell's Pract. Med. Vol. 1. Cont. Small-pox, by Jr. Gregory.

Op. at. Cont. Treasles, by Jr. Burrows -

The Young at particular seasons the first
 attacks giving immunity from a second -
Small-pox. an infection? which, at stated
 times, appears in a more aggravated form
 and "spreads with extraordinary facility
 over a certain district of country - its
 ravages increasing for a certain length of
 time, attaining their crisis or height and
 then gradually receding" - Measles - which
 "we frequently observed to prevail Epidemic-
 ally rather than Sporadically, breaking
 out with great violence for a certain
 time and then declining" -

The same remarks apply to Scarlet Fever
 as is well observed by Dr. Joseph Brown,
 in his article on "Contagion". "Scarlatina ap-
 pears suddenly in the latter end of autumn;
 many are simultaneously attacked - so many
 at the commencement of the Epidemic, that
 it is wonderful when the Foci of Con-
 tagion exist to contaminate them; in its
 course, it manifests signs of Contagious
 power; it does appear sometimes suddenly,
 at others gradually, but long before
 subjects susceptible of the disease
 are

Cyclop. Pract. Med. Vol. I p. 462.

are wanting: no cases are seen for some months; and in the following Autumn the same course is recommenced and the same phenomena are displayed. Where lurks the poison whilst thus in abeyance, or does it exist any where?"

Such phenomena - Dr. Brown suggests - displayed by some of those diseases which are contagious, tend to excite a suspicion that such causes as atmospheric, may occasionally begeth them. - It has been remarked by

various acute observers, that Scab, Fever frequently arises suddenly and rages epidemically in localities or districts, where no sporadic cases have existed for a long time, even for many years, and it is equally certain, that, at the present day, Scab, Fever does arise suddenly & spread in the epidemic manner, in various parts of the world, in localities, where its previous existence was unknown, and where its first appearance in the human subject could not be, in any wise, traceable to any previous exposure or communication; and since we cannot, with safety, adhere to the doctrine, which supposes the original

or Primary Production of the Morbific form
 in the System itself; it is, on the contrary,
 more consistent with facts and reason
 to believe, that the Atmosphere, at par-
 ticular times, possesses the inherent power
 of generating & diffusing a Specific Morbid
 Principle or Agent, which, after its in-
 troduction into the system, produces those
 peculiar effects or symptoms which invariably
 characterize Scarlet Fever as a
 distinct Disease —

The Nature of the peculiar Morbid
 Principle, which excites Scarlet Fever in the
 System, is still involved in obscurity.

Many conjectures and Arguments have
 been advanced by different writers, in
 favor of its Animal or Vegetable, its Chem-
 ical, and its Electrical Nature — all possessing
 much plausibility, but equally devoid of
 any substantial support or demonstrative
 Evidence. Its Animalcule Nature was
 promulgated by Linnæus, who was disposed
 to attribute all Epidemic Disorders to the
 incursive & devastating visitations of swarms
 of minute Insects — the Phenomena resembling
 those

J. Holland. *Med. Notes & Reflections*. 1840. p. 597.

J. Hule. *Pathol. Researches*. *Brit. & For. Med. Review* -
April 1840.

J. Williams. *Principles of Medicine* -

Those of blights, which appear & disappear without evident cause. Within late years, Dr. Holland & Dr. Sule have advocated this hypothesis, which is also conceded to by Dr. Williams. - There are, however, no direct and substantial reasons for the present adoption of this doctrine; even the microscope, which has been made available in this inquiry, cannot discover any trace of animal or vegetable life, and it may be further objected against this hypothesis - as Dr. Williams justly remarks - "that the seasons, at which Epidemics sometimes appear, are not always those most favorable to the development of animalcule life." When we examine, microscopically, the serum of the vesicles which sometimes appear in Scarlet Fever or the lymph of the vesicles of Small Pox - when the respective poisons of these diseases are experimentally found to reside - no animalcule forms or vegetable spores can be detected.

Another explanation consists in attributing it to some peculiarity in the Electrical condition of the Atmosphere - which is supposed to be negative - : this condition being,

in the Minds of some, to furnish the essence of that principle, which is ordinarily deliq. - acted the Epidemic constitution of the Atmosphere. -

It is not an unreasonable supposition, that the morbid principle of Scarlet Fever is essentially Chemical in its nature, and that in Epidemic seasons, it may result from a general intemperance or disharmonious combination of the Elementary Principles of which the Atmosphere consists. The production of peculiar foreign principles in the Atmosphere - chemical in their nature - may probably serve to explain, conjointly and in a more satisfactory manner than any other, the distinctness of the specific symptoms of exanthematous Diseases, for instance, as also the great similarity of the general Fever - as displayed, in kind & sequence, in these Diseases. Moreover, in relation to these Diseases, there cannot be a doubt, that their poisons differ widely in constitution or composition. Yet modern Chemistry has not advanced so far as to test their differential virtues, which we already admit, since their Effects on the system are specifically diff. ferments

-ferent, nor has the Chemist been able as yet
 to analyze the elementary constituents of any
 one of them. Until Science furnish us with
 substantial Evidence, relative to the con-
 -stitution and Elementary composition of each
 and all of them, we cannot, without some
 degree of assumption, adhere to any hypo-
 -thesis - regarding an obscure subject, our
 present knowledge of which only amounts
 to total ignorance and uncertainty.

Altho' the Scarlet Fever Poison must be con-
 -sidered immutable in its nature & specific in its
 action, there cannot be a doubt that it varies in
 its Degree of Power - for we find that the Disease,
 which it produces, ordinarily, produces three distinct
 varieties and, likewise, exhibits different types
 in different Epidemics - which phenomena can
 -not be always referable to, nor can they be fully
 explained in all cases by, constitutional dif-
 -ferences, existing or supposed to exist in the
 Patients & hereby affected - In many cases,
 their Age, Sex, Temperament, Constitution
 nor Circumstances of the Patients can account
 for the Varieties or Types, the Disease assumes, in-
 -deed during the same season or in different Epidemics.

Having discussed, but imperfectly, the more important points which bear upon the primary origin and nature of the Scarlet Fever Disease, we now come to consider very briefly, its modes of propagation and communication - It may be observed, in the first place, that the scarlatinal Disease, once generated and introduced into the system, may be multiplied or augmented during the process of diseased action - in other words - that the disease has the property of multiplying the Cause, that has excited it - whereby it serves not only to maintain its existence, but likewise to preserve its power. This virtue, if granted to the Disease or those affected with it, will probably go far to explain its power of self propagation or communicability to the healthy -

The fact of the Communicability of the Disease from the sick to the healthy is universally admitted at the present day, and is one, which experience and daily evidence clearly testify. The Atmosphere is the ordinary Medium, by which this transmission of

of the Disease, from one individual to another, is effected. Let us suppose that a subject already diseased multiplies the poison - which the body has received - during the process of diseased action and ultimately exhalates & eliminates the morbid effluvia, which now circulates in the atmosphere surrounding the patient. The atmosphere thus impregnated forms the channel for the further extension of the Disease. Any healthy and at the same time susceptible individual, who breathes this atmosphere, receives the morbid effluvia contained in it. His body, in process of time, takes on the same diseased action & becomes, aita, a new focus, from which radiates the effluvia anew to serve for the further propagation of the Disease. This is the Rationale of the ordinary mode of communication & extension of Scarlatina. It may, therefore, be ranked among the class of Infectious Diseases or those, which a person may contract by merely being exposed to the patient's atmosphere.

"The rapid spread of the disease in schools & its frequent communication to healthy members

Swedish Pract. Med. Vol. I. p. 342. J. S. Burrows.

Members of families, whose children have returned home, labouring under the Disease or during convalescence, tho' several Weeks have elapsed from the period of desquamation - are among the more obvious proofs of its infectious Nature."

Scarlatina is also considered to be a contagious Disease - that is to say - one communicable by actual Contact with the Patient or with something that he has touched or some palpable matter that has proceeded from him - altho' this has not been proved to be an ordinary natural mode of extension of the Disease -

There is every reason to believe that the Poison may cling to the Clothing, Bed-furniture & other Articles which have been used by Patients during the Disease & which may thus be capable of infecting healthy individuals who may subsequently come into actual contact with them -

The Disease has been likewise artificially produced by the inoculation of healthy persons with the morbid matter, contained in the vesicles which sometimes appear in Scarlatina Patients.

Before concluding these General Remarks, it may be proper to advert shortly to the two following interesting points - viz: I. The period which elapses after the exposure to the influence of the Poison, before it produces its specific effects. II. The length of time a person, who has had the Disease, is capable of communicating the Infection -

With regard to the first Question, we are entitled to believe that the period which elapses between the first application of the Cause and the production of its effect, is usually of short duration - varying probably from 24 hours to 10 or 12 days at furthest. During the Epidemic which I have related - I met with an instance where the first symptoms of Scarlet Fever showed themselves exactly 23 hours after the exposure - The individual - a boy - visited his friends in a house, where Scarlet Fever was prevailing, between the hours of 8 and 9 o'Clock P.M. one evening. He returned to his home at some distance, and on the following evening at 7 o'Clock P.M. he was attacked with

Chirurgische Medicin. Tom II. J. 206.

with cold shiverings - followed by fever - the
 scarlatinal eruption appearing two days sub-
 -sequently - one week passed by, he
 communicated the disease to two children
 who lived in the same house... Instances
 - of which there are many - of the rapid
 succession of scarlatinal cases in habi-
 -tations where the disease has been introduced
 by one among many children, show clearly
 the very brief duration of incubation -
 if we may so call it - of the poison before
 it produces its distinct effects in the system.

Rostan, in his "Clinique Medicale", states
 that - in a case in which inoculation of
 the virus of scarlatina was effected -
seven days elapsed before the ap-
 -pearance of the eruption -

With respect to the second point,
 there is much uncertainty. There is every
 reason to suppose that an individual
 is capable of communicating the disease,
 from the first period of the eruptive
 stage to the termination of its emanation.
 That is, so long as the body exhales &
 repels the noxious effluvia.

But

Sanct for 1830. 1. pp. 392. 394. J. Elliptica.

But the Atmosphere, thus contaminated by the patient's 'Morbid Exhalations,' may continue long, after recovery, to be the Medium & Means for the further Propagation of the Disease among other healthy individuals. — Thus Dr. Elliston instances a particular Ward into which a Scarlet Fever Patient was admitted; and that, altho' subsequently cleaned and white-washed, for nearly two Years afterwards all the Children and Young Men, who were placed in the same Ward, took the Fever. —

I now proceed to consider the second Part of the Subject — as indicated at the beginning of the Paper. viz —

The Effects of the Poison when introduced into the Human System — in other words —
The Symptoms of the Disease —

During the Epidemic of Scarlet Fever the History of which I have related — the Disease, throughout, exhibited three marked & very distinct varieties —

I. An exceedingly mild form — in which there generally appeared a florid eruption on the Skin,

Skin, accompanied by a very slight inflammatory blush over the Tonsils & Throat, frequently almost imperceptible. - Scarlatina Simplex -

II. a more aggravated form - in which both the Skin & Throat were decidedly implicated, & the febrile excitement partaking more of an inflammatory type. - Scarlatina Lingnosa -

III. a still more aggravated variety, characterized by the severity of the affection of the Throat, on which the whole step of the Disease is laid, - the General Fever being Asthenic or Typhoid from the beginning. - Scarlatina Maligna -

I. Scarlatina Simplex.

With respect, then, to the first variety or mildest form of the Disease, I may, in the first place, remark - that its commencement was sometimes exceedingly obscure from the trivial nature of the febrile action - the eruption being in these cases the first and frequently the only symptom indicating the Disease. In the majority of instances, however, the precursory symptoms of fever - as Rigors, cold Chills, Nausea &c were present, tho' always in a slight degree. These continued from four to eight hours and

were succeeded by frequent-pulse, dry hot skin
 & thirst. The eruption generally appeared on
 the second day of illness and never later than
 the third. This statement is in accordance with
 the observations of Willou, and Dr. Smeedie, who
 remarks that "in the majority of instances the
 rash comes out on the second day of the fever;"
 altho' Dr. Cullen mentions the fourth day as the
 average time of its first appearance. The
 Rash became first visible on the face, neck,
 breast and limbs in the form of irregular patches.
 These gradually diffused themselves over the
 whole surface of the body, which in a few
 hours presented a uniform & continuous ef-
 florescence. When minutely examined, the
 efflorescence is found to consist of innum-
 erable bright red spots or specks, slightly raised above
 the level of the surrounding healthy skin and
 which, altho' at first distinct, rapidly coalesce
 & multiply so as to form a continuous redness.
 In one case particularly noticed, the eruption
 appeared more in the form of a Rosoloid
 Erythema, than that of a Scarlatinal Rash.
 Numerous circumscribed red patches showing
 themselves here & there, at different times, on
 the

The surface of the body. The Effluence generally presented a highly florid and scarlet colour, resembling very much the tint of a "brind Lobster". On the Neck, Loins and flexures of the joints, the eruption was of a deeper hue. It remained perfectly smooth and uniform till about the fifth day - i.e. after its first appearance - when the florid colour began to fade and a slight granular roughness became perceptible to the touch. Between the fifth & sixth day, all traces of the Eruption disappeared on the face, neck & trunk, frequently remaining dormant on the loins and flexures of the limbs - even so late as the seventh day. Such are the characters and ordinary course of the Effluence, as occurring in this variety of the Disease.

The affection of the Throat, in this variety, was so trivial, that many patients never complained of it at all. The Tongue & uvula, however, were always observed to possess a slight inflammatory blush, which sometimes diffused itself over the mucous membrane of the mouth in front & over the top of the pharynx behind. The Tongue never enlarged to any degree.

degree and never elevated on the surface -
 while the glands of the neck always present
 a hard knotty character, the smaller ones re-
 -sembling, to the feel, globular stones. The
 tongue, at first moist and clean usually
 becomes slightly furred with white on the
 beginning of the second day. About this time,
 simultaneous with the first appearance of
 the cutaneous efflorescence - the Papillae
 of the posterior portion of the tongue become
 enlarged and elongated and present a
 red shining aspect: this extends anteriorly
 along its center & sides; and gradually but
 rapidly, minute florid spots are seen to emerge
 every where, thro' the white fur, in which they
 appear, as it were, imbedded. About the
 fifth or sixth day (of the fever) the fur, originally
 white, becomes of a yellowish gray colour and
 gradually cleans off - so that the whole tongue
 denuded of its morbid covering, now presents a uni-
 -versal scarlet red - the numerous papillae also
 appearing much more prominent & brighter in
 colour; the edges & center of the tongue usually
 becoming, at the same time, dry & rough -
 These appearances of the tongue, as well as
these

Those of the Throat, subside between the seventh and eighth day, when the general febrile excitement, which is, ordinarily, always slight & proportionate to the amount of severity of the local symptoms, also abates. From this time, we may also date the period of Desquamation or separation of the cuticle, in the form of scurf or minute scales, which follows the decline of the Efflorescence.

II. Scarlatina Anginosa -

The commencement of the disease in the second variety was invariably ushered in by the accession of well marked febrile symptoms, such as the following - Rigors & cold Chills - more or less severe & alternating with irregular sensations of heat, which frequently terminate in a profuse flow of perspiration from limited portions of the surface of the body, as from the forehead, face, limbs &c., probably the result of the irregular distribution of the blood, throughout the system generally; Nausea - often remaining constant for two days and frequently so severe at times as to excite urgent vomiting - as symptom seldom or never present in the mild form. The fluids vomited presented a yellow, greenish yellow or, in some cases,

a dark green colour. The intestinal evacuations at this period, were, likewise, of a greenish or dark grey colour and possessed a very offensive odour. This was probably the result of primary disorder of the Liver - the over secretion of bile with accumulation in the stomach and intestines. The nausea & vomiting were accompanied, from the first, with marked debility of the whole system & prostration of its vital powers - indicated by depression of the nervous & muscular systems & by the feeble & sometimes irregular action of the heart. Reaction in the circulation soon follows. The pulse becomes quick and full - the nervous & muscular systems further enfeebled - there is headache and - as is generally said - a 'Lump' over the whole body - the functions of the different organs are all disturbed to a greater or less degree - as shown by loss of appetite, dryness & pungent heat of skin, alterations in quantity & quality of the biliary, renal & intestinal secretions. These deviations from the natural healthy standard all indicate a degree of morbid action, especially characterized by want of vital power and loss of wanted tonic.

The

The cutaneous eruption in this variety did not exhibit the same degree of regularity as in *Scarlatina Simplex*. Its appearance was often delayed till the third day, after the accession of the febrile symptoms; and, altho', as a general rule, it appeared over the whole surface of the body - in some instances it was mainly confined to the legs, arms, back of the hands &c. The eruption often became very rough & prominent on the third day and usually continued so till its decline; and this accompanied with an unnatural dryness & pungency of the surface caused much itching and pain - The roughness, which was quite evident to the touch, appeared to depend upon the circumstance of the different points of Efflorescence becoming hardened & prominent at their centres, which, under close observation & by aid of a lens, were seen as minute spots or dots of an opaque yellowish white colour and from which no fluid could be obtained.

In five very interesting cases, it was observed that the cutaneous eruption presented a very peculiar appearance - in fact - it assumed

assumed the vesicular form - an occurrence
 somewhat rare in Scarlet Fever. In one of
 these cases, where the other symptoms of Scar-
 latina were well marked, the cutaneous
 eruption was wholly vesicular. In the others,
 the vesicles appeared in rapid succession
 between the third & fourth day of the ordin-
 -ary scarlatinal efflorescence and were
 distributed here & there over different parts
 of the body - being most numerous on the
 abdomen and extremities. When examined,
 these vesicles were found to be of a nearly
 globular form & of a semitransparent pink
 colour; and, tho' small, they could be readily
 seen to contain a clear, thin, serous fluid,
 which coagulated on the second or third day
 & formed minute scales, which scaled off
 during the period of desquamation -

Altho' the cutaneous eruption, in this variety,
 proved very distressing to the patient, the decided
 affection of the throat was of a more serious
 nature. In the majority of cases, the throat
 became implicated previous to the appear-
 -ance of the rash upon the skin - It was frequent-
 -ly the symptom first complained of. The

Course

course, which this local affection ordinarily
 presents, may be stated as follows -

It generally commenced with a slight redness
 of the Tonsils & Uvula which gradually ex-
 -tended over the palate in front & the post-
 -erior part of the Fauces behind. This was
 accompanied by more or less considerable
 swelling & enlargement which was frequently
 confined to the Tonsils & Uvula - the surface
 of which, as the inflammation increased, pre-
 -sented a more highly florid colour, so char-
 -acteristic of Scarlatinal inflammation -

There were cases, however, occasionally occurring
 in which the colour became gradually darker
 & more livid till it assumed somewhat the
 appearance of Claret hue. In a day or
 two, small greyish-white patches of Coag-
 -ulable Lymph - exuded from the inflamed
 mucous Membrane - were frequently seen here
 & there on the surface. In the more se-
 -vere cases, small aphthous elevations ap-
 -peared on the surface of the inflamed &
 swollen Tonsils. It now and then happened
 that these superficial ulcers enlarged & deepened
 into the soft structures - proving very obstructive

to heal and difficult to cure. In some still more aggravated cases of Scarlatina Anginosa, the local inflammation was more acute and rapidly advanced to suppuration of one or both tonsils - terminating but rarely in sloughing and Gangrene.

The Primary Fever, in the milder cases of this variety of Scarlatina, retains a Protracted character throughout & affords no immediate cause of phlegmon. It is generally heightened, however, on the appearance of the cutaneous eruption & the accession of local inflammation of the throat. During the first two or three days of the eruptive stage, it is frequently observed that there exists a marked and intimate relation between the degree of the general fever, on the one hand, and the severity of the cutaneous eruption & more especially the amount of inflammatory action in the throat, on the other. When the throat first becomes inflamed, the general febrile excitement becomes greater; - as the local inflammation advances, so also does the circulation increase in strength & frequency - and the more acute the local inflammation

is, the more sthenic will be the general fever. Altho' this sthenic condition of the fever coincides with, and varies according to, the sum of the local inflammation in the throat - thus in some degree symptomatic of the latter - there cannot be a doubt, on the other hand, that it is in a great measure, & in some cases alto-gether, independent of it - for we frequently observe, that the general fever assumes a decidedly inflammatory character previous to the attainment of any amount of local inflammation in the throat - that is to say - an amount so severe and acute as would had to, to be the cause of, so high a degree of fever. This is particularly observable in some epidemics of scarlet fever, as well as at different periods of any one epidemic. Thus, in the stage in the history of the epidemic related, the primary fever exhibited a well-marked sthenic type previous to the appearance of any appreciable amount of throat affec-tion - which latter could not be, on any wise said to be the source or cause of it - The general fever excited in the system must be considered independent of any local affectation

affection, as of the skin or the throat - both which are acted on specifically by the scarlatinal poison. At the same time, we must admit, that, whenever these are severely & acutely involved, they react, as it were, on the circulation and some materially to increase its excitement.

In this variety of Scarlatina and particularly when the fever is of a more inflammatory type, there is usually a marked tendency to early and severe head affection. The poison, which circulates in the system, without doubt, acts directly on the brain and causes that peculiar delirium & low muttering, so frequently observed during the periods of repose and which continues generally through out the whole course of the fever. This peculiar delirium is always present in Scarlatina anginosa & frequently in the Scarlatina sineulse and does not indicate the existence of any inflammatory action in the brain. In the more severe cases of S: Anginosa - in which the fever is sthenic, the brain becomes more acutely involved, not merely as the direct and immediate effect of the poison, but mainly

in conjunction with a local inflammatory action lighted up - either in the cerebral stuff or in its membranes. This local excitation is indicated by a more active delirium, flushing of the face, suffused redness of the eyes, nausea & vomiting, acute or dull heavy pain on the head, fits of convulsions - of a longer or shorter duration - if the latter, recurring frequently - the convulsions ultimately terminating in complete Coma and Death which usually takes place, in such instances between the third & fourth day of the Fever. During the Sclerotic Epidemic, two cases were observed, in which Death occurred from acute head affection at this early period viz. on the second day of the fever and in both it was preceded by active delirium & convulsions.

The sthenic character of the Fever does not generally continue throughout the whole course of the symptomatic stage. On the third day it frequently exhibits its first tendency to change its type and gradually become more or less asthenic - as indicated by a more feeble & compressible state of the pulse. It may not be so urgent, in many cases, as to demand

The

The administration of stimulants. In others, however, the gradual but rapid transition from the sthenic to the truly typhoid character of the fever is evident - the strength of the pulse decreasing & accompanied by rapid prostration of the vital powers. This transition of the fever to the typhoid type is always found in connexion with the suppurative & ulcerative stages, consequent upon the active inflammation of the throat - as also of the glands of the neck, which are always acutely implicated in the severer forms of *Scarlatina Anginosa*. During the period of suppuration or sloughing of the throat & glands of the neck, the typhoid fever becomes aggravated & assumes a character nearly allied to low Intermittent Fever. There is every reason to believe that, in such cases, absorption of malignant matter takes place, whereby the system becomes re-inoculated, as it were - The existing fever is extinguished - the pulse becomes quicker, smaller & thready-like - the vital powers of the system are further prostrated and the patient either sinks rapidly under the disease or lingers on in life - maybe a few unhappy weeks, under the continued administration of strong stimulants.

The Third Variety of Scarlet Fever is that known under the name of Scarlatina Maligna - which is not only the most variable & most liable to be complicated but is decidedly the most dangerous & fatal species of the Disease. The Symptoms do not observe that degree of regularity which generally characterizes the two other Varieties.

Their Malignant character, however, is always well marked & that frequently at the very commencement of the attack - In some Cases - & these are in the Minority - the Symptoms during the first two or three days, differ little from those of Scarlatina Anginosa. Some Rigors, Nausea, & vomiting occur in the attack. It then succeeds the reactionary fever, Thirst, Headache, general "Toremps", Muscular & nervous depression, diminished & protracted Secretions -

The Pulse continues soft & frequent up to the second or third day, when its excitement is heightened on the appearance of the eruption, which, in the milder cases, is diffused over the greater portion of the body and assumes a deep rose red tint as in S. Anginosa. No Dependence, however, can be placed upon the regularity of the symptoms, regarding either the time

of their appearance, or the characters they assume. The Cutaneous eruption generally comes out - but its appearance is often delayed beyond the second day - the average period being the third. The fourth is not an unusual day for its first appearance. I have seen it delayed in two cases to the sixth day, and after continuing visible - in one seven - in the other eight hours - disappeared very suddenly - leaving behind no trace of its existence but a slight lividif of the surface. When the eruption appears, it never remains permanent & is very uncertain in its duration - often coming and going at intervals varying from 12 to 24 hours. In some cases it suddenly disappears a few hours after it comes out and either never appears again or reappears three or four days subsequently, but only for a short period.

It may, thus, after its first appearance, suddenly recede & reappear several times -

The Character of the eruption is also very variable. In some cases, but especially in those where the eruption recedes & disappears at short intervals, it is just perceptible - its colour being very faint. In other instances, it

it presents at first a deep rose-red tint, which soon changes into a peculiar dark livid red. In such cases, the efflorescence is never diffused generally over the whole body, but is usually limited to certain irregular patches on the chest, abdomen or thigh. In one very malignant & fatal case, the livid eruption appeared in large circumscribed patches on the right chest, abdomen & thigh - remaining twelve hours, & on receding very suddenly from this side, it reappeared on the opposite side - the patches presenting exactly the same size, form & appearance. — In the very malignant & typhoid forms of this disease, the eruption does not appear at all - the surface of the skin assumes a peculiar pale dusky aspect - and is below the natural temperature. In some cases petechiae or livid spots appear here & there interspersed over the body - some of them covered with - others surrounded by, numerous deep red-coloured points whose centres present a bright shining appearance by reflected light.

The throat is invariably affected very early in this form of scarlet fever, and is frequently the first source of complaint. The

Effluvia.

inflammation runs an unusually rapid course
 and quickly terminates in ulceration, Sloughing
 & Gangrene. Altho' in the Milder cases, the
 Mucous Membrane of the Tonsils, Uvula & Pharynx
 at first present a deep scarlet tint, the colour
 changes rapidly into a dark red, brown or
 livid hue; and, in the most malignant
 cases, round purple spots appear over the
 Tonsils & Uvula - indicating the approach of
 Sloughing & Gangrene. Between the second
 & fourth day, small ash-coloured sloughs
 appear - disseminated over the Tonsils, Uvula
 & frequently over the Pharynx. On the separ-
 -ation of the sloughs, unhealthy excavations, more
 or less deep, are seen, surrounded by a dark
 livid base. These sloughs frequently extend,
 unite & form one or more extensive sloughs on
 either side of the Throat, and in many cases
 the Uvula & soft palate are completely des-
 -troyed & gangrened. It happens, at other
 times, that the Tonsils inflame, enlarge to a
 great degree & suppurate - discharging, when
 opened, dark sanguinous pus, mingled with
 blood. In all cases, the affection of
 the Throat forms a source of great dan-

-ger and is frequently a cause of death. The viscid secretion which forms in large quantity adheres tenaciously to the Lungs & may collect to such a degree as to threaten immediate danger & death by asphyxia especially in young children - since the little suffers - already extremely debilitated - have neither the energy nor the power to cough up the mucus - to clear the throat for the free admittance of air into the Lungs - As soon as the suppuration, Sloughing & Gangrene takes place, the Breath becomes extremely fetid - an acrimonious and highly offensive discharge proceeds from the Prostrils, which become irritated and inflamed. It is generally thin & dark-coloured at first, but afterwards thick & yellow, and from its continual flow produces excoriation of the Prostrils, upper lip &c.

The Mucous Membrane of the Mouth is also frequently & highly inflamed, and covered over with small aphthous ulcerations. The viscid & dark-coloured Mucus, which forms chiefly at the lips & angles of the Mouth, there causing irritation, excoriation & ulceration.

From the ineffectual attempts to
cough

cough up and discharge the viscid & acrimonious matters, which collect in the Fauces, the suffering patient swallows them; and, subsequently, they act not only as a source of irritation but excite a degree of subacute inflammatory action, in the Mucous Membrane of the Intestines. The Stools are frequent, dark-colored, acid & very offensive. The Diarrhoea becomes constant, distressing & proves only another source of debility and danger to the patient.

The inflammation generally extends from the Throat to the Cervical Glands. The parotid is more liable to be severely implicated than the submaxillary Glands. The inflammation gives rise to great swelling & enlargement. Frequently to rapid disorganization of structure, extensive suppuration & sloughing, & sometimes to Gangrene. The Inflammatory action is liable to extend downwards in the Cellular tissue of the neck & chest. Proving rapidly fatal. In one case of S. Maligna, which I witnessed, the right mammary Gland became the seat of acute inflammation, on the second day of the Fever, and was speedily disorganized. On opening what was considered the

a large Abscess. The whole gland was ex-
-tracted as a dead mass.

Scarlatina Infebrilis is always characterized by
some constitutional symptoms. As soon as the
system becomes influenced by the miasmatic
agency, there is an evident & marked dimin-
-ution or lowering of the vital powers, and
along with this general prostration, the functions
of the different organs of the body are prevented
& impeded. The General Fever assumes
the low typhoid or asthenic form, and dur-
-ates more or less of this character from the
first. The Heart's action is excited & impeded -
the Pulse is quick, small & irregular; - During
the progress of the disease, it becomes affra-
-vated & latterly its frequency & irregularity
is greatly increased, while its strength is pro-
-portionately diminished; the functions of
the brain are prevented; tho' the patient is
generally quite sensible while awake - the
perceptions are blunted - the eyes are dull
& heavy, the countenance dejected - a pro-
-fuse & shivering is frequent & low muttering del-
-irium & sleep is frequently disturbed & of short
duration - The intervals are characterized by
quiet

just as the pulse, feverishness & fullness.
 In the most malignant types, the Mus-
 -cular prostration is extreme - the pulse is
 very feeble, irregular & compressible or
 very rapid - its frequency ranging from
 112 to 140 or 150 - the Delirium more constant,
 with tendency to coma - eyes unaccountably dull
 & dejected - Conjunctivae suffused with
 kind redness - skin dusky-grey - Tongue
 dry, clammy or furrowed with black - Papilla
 red or dark-brown & very prominent - Mouth
 & lips parched - teeth & gums covered with
 sores - Insensible tremor - Stomach & sanguinous
 defecation difficult - & extremely painful -
 faeces cloagulated with viscid & tenacious
 mucus - respiration quick, short & oppressed -
 breath extremely fetid - and Diarrhoea excites.

On the approach of a fatal termination, these
 signs & morbid symptoms are aggravated -
 the pulse becomes quicker & more full - Diarrhoea
 is more constant - sometimes there is capillary
 disorganization, leading to hemorrhage from the
 nose, mouth, and bowels - Petechiae & rashes
 appear on the skin - the extremities become
 cold - the cutaneous surface, which is usually
 below

below the usual heat in *Scarlatina Infelexia*,
is now greatly diminished in temperature -
the respiration is much impeded & more &
more oppressed - till complete Coma superv-
- ens -

Scarlatina Infelexia is the most dangerous
& fatal variety of Scarlet Fever and the more
so that it is the most liable to be accom-
panied, & followed by, complications of
a very serious character -

In the first place, in some few instances,
a fatal issue may take place within 24
or 30 hours subsequent to the invasion, and
that too - though rarely - without display-
ing any ordinary symptoms of Scarlet Fever.

The following instance, which I witnessed -
will illustrate this remark. It was that
of a boy, 12 years of age - (one out of six of the
same family all lying ill of *Scarlatina*) -
who was attacked at 10^o. on the Thursday
morning with violent shivering - sore throat -
extreme depression, slight headache & vomiting.
The pulse was quick, feeble & fluttering
from the commencement of the attack. The
pneumonia which rapidly increased and the
Ocular

Muscular Energy became completely exhausted. The vomiting continued - uncheck'd by all Remedial Means - Coma gradually superven'd & deepens, and the patient died at 10^o. on Friday morning - exactly 24 hours after the commencement of his illness -

The occurrence of death at so early a period from the first invasion of the disease is comparatively rare. It may be observed, however, that the rapidity of the fatal termination is much more frequent & striking during some Epidemics than in others - It is stated, for instance, that in an malignant Epidemic of Scarlattina, which prevailed in Paris in 1743 - "Every individual, who was attacked, perished - many indeed within nine hours from its first invasion".

In the majority of these cases - where the patient sinks, as it were, from the first - where the vital powers are rapidly exhausted & death speedily supervenes - no morbid appearances can be observed, or post mortem examination, that could adequately explain the cause of death - No congestion of the cerebral Vessels - no vasculature of the Pneumones

branes

- traces of the brain - can be discovered, and even the small amount of serous effusion, which is only occasionally observed within the ventricles, cannot in any degree account for the serious nature of the symptoms or the rapidity of the fatal termination. The pathological cause of death is therefore uncertain - altho' it is more than probable that the sudden & extreme vital depression, exhaustion & rapid death, are the result of the malignant nature of the morbid poison, which, when introduced into the system, operates either indirectly by producing a diseased condition of the blood & fluids or by otherwise proving a direct and immediate shock to the whole nervous system but more especially to the cerebral portion -

The tendency to acute inflammatory head affection is not so marked & frequent as in *S. luginosa*, where the fever is of a much more sthenic type. The inflammatory action in *S. maligna* is more liable to assume the subacute kind. In acute fatal cases - characterized by active & violent

delirium

Delirium, Rauce & vomiting, Convulsions &c. - The
 Membranes of the brain - especially the Arachnoid -
 are found very vascular - the latter sometimes
 presenting an opaque appearance - owing to the
 effusion of Serous-albuminous fluid underneath.
 The substance of the brain itself is studded
 throughout with minute red spots and ap-
 -pears unusually vascular. - In tubercle
 cases, the effusion of Serous or Serous-Sanguinolent
 fluids observed and that frequently confined
 to the Ventricles and base of the brain -

The fatality of the majority of
 malignant cases of Scarlet Fever is mainly de-
 -pendent upon ulceration & Sloughing or Gangrene
 of the Throat, suppuration of the Cervical
 Glands and subsequent emiculation of the
 system by Carbid Poison. In such instances
 death generally takes place between the fifth
 and tenth day, but the fatal termination
 may be delayed a fortnight or three weeks later.

The following description of the first very ma-
 -lignant case of Scarlet Fever, which occurred
 during the Siberic Epidemic is but the his-
 -tory of many of those fatal cases, resulting from
 severe affection of the Throat & Glands of the neck.

The Case was that of a Girl. ab. 10. whose first complaint was Sore Throat. which on the second day became violently inflamed and swollen. The Tongue - at first thickly coated with a whitish-fungus fur - was now totally denuded of its morbid covering - became exceedingly dry & hard and presented numerous red prominent Papillae on its surface - The vital powers became greatly prostrated & the fever assumed a marked sethmic type - The pulse being quick, small & feeble - No delirium - Slight suffusion of the eyes, but no intolerance of light.

On the third day, the Tonsils suppurated; the Glands of the Neck became swollen & enlarged, accompanied by a slight inflammatory blush on the surface. On the fifth day, a large slough separated from the Throat, followed by an ichorous discharge from the Mouth & Proctals - the latter presenting a peculiar glazed appearance. Diarrhoea followed & all the general symptoms became more aggravated. On the sixth day, the Neck became enormously swollen - The skin over it exhibiting a bright shining aspect, as if glazed; the right parotid suppurated &

when

Dr. Williams's Acct. of Scarlat. Fever & Sore Throat.

when opened, produced a most serious pers-
 -sult discharge. At this time, a fresh fever
 was lighted up - the pulse became quicker,
 smaller & more feeble, at the same time, irreg-
 -ular; the patient more restless & fretful; a
 low delirium occurred at intervals - The
 child lingered on, under the continued ad-
 -ministration of strong stimulants till the
 beginning of the ninth day - when she died.

This solitary instance proves sufficient
 to show the malignant nature of the Scarlet
 Fever poison, its specific action on the
 throat & glands of the neck and its power-
 -ful constitutional effects in the com-
 -plete prostration of the vital energies of
 the whole body. From this case, we may also
 learn, that towards the latter end, a new poison
 entered the circulation - the system became ac-
 -mulated by the absorption of unhealthy
 & malignant purulent matter - adding fuel
 to the flame and lighting up, as it were, anew,
 and essentially aggravating the already es-
 -tablished fever.

Dr. Withering speaks of his variety of uni-
 -formly fatal cases, under the following terms -
 "When

When the Scarlet colour turned to brown and the recovery (of the patients) might have been expected, the pulse still remained feeble & quick, the skin became dry & harsh, the mouth parched, the lips chapped & black, the tongue hard, dry & dark brown; the eyes heavy & sunken; they refused an Anusim Ball food & medicine increasing upon the least motion or disturbance. Thus they laid for several days, nothing seeming to afford them any relief. At length a clear Amber coloured matter discharged in great quantities from the nostrils on ears or both, & continued so to this change for many days; - Sometimes this discharge had the appearance of Pus mixed with mucus. - Under these circumstances when the Patients did recover it was very slow; but they generally lived for a month or six weeks from the first attack, and died at length of extreme debility."

Some cases of Scarlet Fever - especially of the variety Suppurosa - more cases of Maligina - exhibit a complication of the joints of a peculiar character - resembling very closely an inflammatory affection of Rheumatic kind.

kind. Its occurrence is not confined to any period in the progress of the disease, but it very frequently shows itself during the height of febrile action - between the fourth & sixth day. It is more liable to attack the smaller than the larger joints, altho' the latter are sometimes, but rarely, affected alone. I have seen the Ankles, the Wrist, & all the finger joints of both hands very severely affected. This complication is accompanied by much pain, often very acute, some degree of swelling with a red inflammatory blush, confined to the surface over the joints affected. The symptoms generally abate under the prompt administration of Nourishes, (Colchicum) combined with Diaphoretics (P. Doveri & Calomel) The cases which I observed with this complication all recovered -

The joints may become far more seriously & dangerously affected - the affection not being primary, but secondary - the result of purulent deposit. In relation to it, Dr. A. Sweetie remarks - "In a few instances we have seen the large joints suddenly become extremely painful, to which swelling with

Colp. Pract. Med. Art. Scarletina.

with evidence of fluctuation succeeded, & the joint was destroyed in a very short time. Subsequently, when speaking of the Proximal Anatomy of these fatal cases, the same Author observes - "There are not always marks of Inflammation of the Synovial Membrane. In the last case of this kind (hemorrh) which we examined, in which Pus was deposited in the left wrist & in both Ankle Joints, there was deposition of Pus anterior to the Wrist Joint, among the Carpal bones. The Synovial Membrane of the Wrist & Ankles was evidently thicker than natural, but there was no abrasion. We are therefore inclined to think, that these Purulent formations in the Joints may occur without antecedent inflammation; and even in the case alluded to, we doubt the co-existence of inflammation; it is more probable that the Pus, which was deposited, was not the consequence of the Inflammatory action, but that the Purulent fluid was deposited from the blood, in the same way as it is sometimes deposited in other parts of the body."

Also the Synovial Membrane of the
Shoulder

Prose is most frequently & most invariably checked in Scabiosa - the Mucous Membrane of various other parts may become the seat of primary inflammation, which is sometimes of a very serious nature. - tending either to endanger the life of the patient & accelerate death or, in the event of recovery from the fever, to impede the progress of Convalescence & produce, may be, permanent injury and discomfort to the patient - Thus -

a. The Mucous Membrane of the eyes may become the seat of acute inflammation, which, if not timely checked, may eventually prove dangerous by producing disorganization & leading to permanent loss of sight, or it may verge into the Chronic type - causing "weeping of the eyes". Such serious results frequently occur in Stomachic & cachectic constitutions. I have observed that the inflammation generally commences at the inner Canthus, on the edges of both lids, and have sometimes watched its gradual extension over the internal Mucous Membrane of the lids & the outer surface of the Conjunctiva & thence over the part of the eye usually visible. The discharge is at first

thin

Thin and watery, rather limy viscid, but essentially thick, yellow and granular.

b. The inflammatory action existing in the mucous membrane of the Throat may extend to any of the adjoining Canals or Tubes. Thus.

The nasal Cavities are frequently the seat of acute Inflammation, accompanied by copious discharge of Pus. It sometimes leads to permanent thickening of the Schneiderian Membrane and the partial or total loss of Smell. Rarely, ulceration takes place, with destruction of the inferior Spongy Bone —

The Mouth is sometimes severely attacked. Numerous small aphthous ulcers form, which have, on dissection, circular excavations surrounded by a hard white base. Sometimes the Uvula and Palate are wholly destroyed by extensive Sloughing —

A still rarer & more serious complication is the sudden occurrence of rapid Gangrene of the Mouth, extending to the soft Structures of the Throat, unpreceded & unattended by inflammation. This unusual & very frequently fatal complication is liable to supervene in young scrofulous or otherwise debilitated Con-

stitutions

situations - towards the latter end of the Fever,
 which, in such cases, exhibits the marked
 Typhoid Character - I had lately an oppor-
 tunity to witness & treat a case of this kind,
 when the progress of the local affection was
 as follows; - The subject was a girl - abt.
 11 - thin in appearance & feeble in constitution.
 She contracted Scarlatina Anginosa which raged
 on the fourth day into the Melancholia - When vis-
 iting her on the morning of the sixth day, I found
 that hemorrhage had taken place from the
 mouth - the blood adhesion very fine & dry
 to the teeth & lips. On looking into the mouth,
 I observed a dark slough of the mucous Mem-
 brane lining the left cheek. On the seventh
 day, the slough had enlarged & deepened
 into the soft structures of the cheek, which
 was now swollen & presented a pale shining
 glassy aspect. A small livid speck or
 Carbuncle also showed itself on the surface
 of the skin - exactly corresponding to the in-
 ternal slough. On attempting to detach the
 latter, it broke off in shreds - being adherent to
 the sound texture. The breath had an
 exceedingly fetid odour. By the evening
 the

The blood spots, observed in the morning had enlarged to the size of a four penny piece. It presented a dark ash-grey surface, was depressed beneath the level of the surrounding skin. Its margin was circular & well-defined & not surrounded by any red or inflammatory appearance. On the following day, the fungous mass had spread to the size of a two shilling piece - depressed in centre, shining & still retaining its circular form. The cheek was enormously swollen & highly glazed in appearance. This was a striking case of rapid destruction of tissue by Sanguine - which bore all appearance, was not preceded nor accompanied by the ordinary inflammatory process; and, notwithstanding the prompt measure employed to arrest its progress (Strong Nitric acid being applied locally) they were of little avail. The local disease spread with astonishing rapidity - a great portion of the cheek became a mass of Sanguine and the child died on the ninth day.

The Facial Inflammation is very apt to extend along the or both Eustachian Tubes to the internal ear - ending in suppuration.

ation and discharge of purulent matter from the external orifice, accompanied by temporary deafness. But the suppuration may form a complete destruction of the Membrane of the Tympanum, escape of the small bones and incurable deafness, with "Deaf of the facial nerve". I have seen one case of this last serious nature - in which, the throat was but slightly affected - where the Membrana Tympani of both ears were completely destroyed & the small auricular bones with two circular pieces of cartilage were extruded from the external meatus - subsequent to which a purulent discharge continued for three months & then ceased to flow. This patient has, in consequence, suffered complete & permanent loss of hearing.

The extension of the facial inflammation downwards into the Larynx & Trachea forms a complication more immediately dangerous to life. The Laryngeal inflammation may be accompanied by the effusion of a highly coagulable Lymph and the formation of a false Membrane, with all the symptoms of Inflammatory Croup - or the effusion may be of a viscid character, collecting rapidly in great abundance - causing a rattling noise in the Larynx on inspiration, obstructing the free admission

admission of air into the Lungs & threatening Death
 by Suffocation. The Inflammation is liable
 to extend further down the Trachea, affecting
 the bronchiae & smaller Tubes & causing a general
Bronchitis, which, when occurring in young Child-
 -ren & in the milder forms of Scarlatina, frequently
 proves fatal by asphyxia - or, again, the
 air cells may become the seat of inflammatory
 exudation - either in conjunction with or independ-
 -ent of Bronchitis. The Pneumonia may be
 acute, or more commonly it is of a subacute &
 latent type. It is apt to supervene towards
 the latter stages of the Disease or during the
 earlier period of Convalescence. In sturmerous
 habits & in debilitated constitutions with a tendency
 to tubercular Disposition in the Pulmonary tis-
 -sue, Scarlet Fever often aggravates this tendency
 & proves an immediate exciting cause of the
 tubercular Disease of the Lungs.

The inflammatory affection of the
 Pharynx & Oesophagus is sometimes well marked.
 The Scarlatinal eruption extends downwards as
 far as the eye can observe - presenting most com-
 -monly a dark brown or livid appearance.

When severe, it is characterized by Dysphagia -

a constant sensation of heat & burning - as the patient generally expresses it - and an intense acute stinging pain - as if scalded - on deglutition - during the passage of food through the Canal -

The Stomach is seldom the seat of Inflammation. when it is so, it is generally of a subacute kind, supervening most frequently during the latter days of Scarlatina Anginosa & Malig. being then much irritated by the Acid Matters from the Throat, which are, in a great measure, swallowed by the young children, instead of being expectorated - This Characterized by Pain in the Region of the Stomach, Sickness, uneasy sensation, catching & vomiting of food, shortly after its introduction into the Stomach. The vomiting of dark-colored fluid - like "Coffee grounds" - is sometimes observed to take place, particularly when softening & ulceration of the mucous Membrane occurs - as revealed by Post-mortem Examination in Cases of Death.

The same Acid Matters, which serve to irritate & inflame the mucous Membrane of the Stomach, very frequently affect the intestinal Canal and cause that peculiar

Diarrhoea

Diarrhoea, which is so often observed after sup-
 -puration & Sloughing of the Fauces; and which
 tends actually to debilitate the patient &
 aggravate the general Dyspeptic Symptoms.
 Nevertheless, in some Epidemics of Scarlet
 Fever, there is a marked tendency to gastro-
 -enteritis - occurring primarily and at an early
 stage of the Disease; - the general Symptoms
 being accompanied by Prothidic Acid and
 Clean Tongue, sickness, Vomiting, & constant
 Diarrhoea. "These Symptoms," remarks Dr. Quercus,
 "are not uncommon when Scarlatina prevails
 in the Autumn, at which season, bowel-
 -affections generally prevail, and constitute
 a leading feature of an Epidemic." The
 Dysenteric tendency is much more marked in
 some Epidemics than others - as well as at
 different periods in the same Epidemic.
 It is also worthy of remark, as recorded by
 some, that Dysentery, in the same Epidemic
 form, sometimes alternates with, at other
 times follows, an Epidemic of Scarlet Fever.
 The former appearing on the decline of the
 latter and either mitigating or ceasing alto-
 -gether on the renewal of the Scarlatina Epidemic.

Independent

Independent of, or, in general, conjoined with,
 Diarrhea or Dysentery - Hemorrhage - more or
 less profuse - takes place from the bowels.
 This same occurrence is rare; and when the
 bloody discharge is repeated, it further debili-
 -tates the Patient & proves of itself a source
 of extreme danger. In the few cases, where
 it occurs, there is also observed a tendency
 to Hemorrhage in other parts & organs of the
 body - as in the Lungs & Brain; - but the cu-
 -taneous cellular tissue is the most frequent
 and frequent seat of extravasation. The
 pathological conditions, contributing to the
 Hemorrhage - which is rarely confined to one
 part of the body, and most frequently observed
 to take place in the subcutaneous cellular
 tissue & from the mucous Membranes of the
 bowels - consist essentially in the disorgan-
 -ization and disruption of the capillary ves-
 -sels and in a diseased condition of the
 blood - in a state of extreme fluidity - pro-
 -bably owing to a diminution in the amount
 of its fibrinous element - or to some
 change, affecting its property of spontaneous
 coagulability. —

Medical Gazette. August 1850.

The exanthematic Inflammation of the skin
 sometimes extends to the Mucous Membrane of
 the Vagina - giving rise to abundant dis-
 charge of Mucopurulent matter, which, in some
 cases, is so acrid as to excoriate the Labia,
 Anus and Thighs of the Patient & thus prove
 a source of great suffering and discomfort.
 Since attention has been directed to the fre-
 -quent occurrence of Scarcatinal Vaginitis by
 Dr. Cornack - I have observed 4 severe cases
 in Children, under 10 years of age - where this local
 affection (occurring in S. anginosa) was characterized
 by great heat in the part, swelling & fulness,
 acute pain on Micturition, constant & copious
 discharge of Yellow Mucopurulent matter. ac-
 -companied by excoriation of the Thighs &c.
 They all recovered from it under appropriate
 Measures. It is important, that the Disease
 should be attended to, as the Increasing &
 Suffering its occasions, is great at the time.

In the Epidemic of Scarlatina in 1848-9 -
 Dr. Cornack relates that out of 23 female
 Patients, all of whom were cleanly, well nursed
 & in a respectable social position, 12 of the
 number had well marked Vaginitis. All
 were

were under 14 Years of age - with the exception of two females, who were respectively 26 and 28 and both Married - These two were attacked with Acute Vaginitis, much more severe than any of the Children; and one, who was pregnant, aborted —

The Kidneys are, above all organs, the most liable to become the seat of much disturbance in Scarlet Fever, both during the existence of the Primary Fever and during the period of Convalescence from it.

Throughout the whole, or during a period only, of some Epidemics, there is a marked tendency to grave Renal Disorder; and so prominent does this tendency appear, as to mark the character of the Epidemic - That not a few writers, who have witnessed it, have described Scarlatina Renum as a distinct variety of Scarlet Fever. Questioning the propriety of adopting a title so distinctive, the importance and comparative frequency, in some Epidemics, of serious Renal Disease cannot be denied and should warn the Physician to bestow particular attention to the condition of the Kidneys & the Secretion of Urine.

If the Urine be examined frequently from the beginning, in any of the varieties of Scarlet Fever, the following are the changes most ordinarily observed to take place - viz:

Its colour is altered - increasing in intensity and frequently presenting a pale Amber tint or reddish-brown colour; Its odour is more or less unnaturally increased; its reaction is acid; it is usually concentrated and rises, more or less, in density - the degree being very variable but generally slight. On cooling, it throws down a more or less copious deposit which, on chemical and Microscopical examination, is found to consist of amorphous Urate of Ammonia and Uric acid. These changes, however, were not always present. In some cases, careful examination failed to discover any evident alterations in the normal amount, colour & density of the urine.

During the eruptive stage, its reaction was invariably acid, and Uric acid was frequently found free & uncombined with Urates.

Towards the termination of the Fever, especially in severe cases, the Urine sometimes becomes alkaline & deposited Phosphates,

just

just as is observed at certain periods of Continued Fever;— while the commencement of the progress of Desquamation were marked by turbidity and cloudiness of the Urine, which contained a large quantity of Epithelium— detected by the Microscope, and Albumen, generally in small quantity, by heat and Nitric Acid; besides the occasional presence of amorphous Phosphate. Such are the more ordinary conditions of the Urine in Scarlet Fever— which vary little from the Urine in Continued Fever, about the same periods of the Disease.

There is one peculiarity, however, essentially indicated in Scarlatinal Disease, and that is the frequency of Albuminuria— the secretion or elimination of albumen from the blood by the kidneys. Judging from the many examinations made of the urine of the Scarlatinal Patients, it was found a rare exception to the general rule to find no albumen eliminated by the kidneys, during the progress of the Fever. The amount was generally small— but enough to indicate its presence— by Heat & Nitric Acid,— not causing a
hazinsp

haziness or feeble coagulability of the urine, -
 while Nitric acid precipitated the albumen
 so as to make it more apparent in the form
 of flakes or of pulpy matter at the bot-
 tom of the tube - The secretion of albumen
alone is far from indicating a diseased condition
 of the kidneys themselves. These organs have
 frequently been found quite healthy, altho' albumen
 has been observed in the urine, even for some time
 before death. In such cases, we must, therefore,
 consider simple albuminuria to depend upon a
 temporary disorder of the renal function - The re-
 sult of some pathological condition of the blood,
 which furnishes the albumen, and allows of its
 separation or elimination by the kidneys - This op-
 inion is also borne out by the circumstance, that
 Urea - a normal constituent, is almost invariably
 found in deficient quantity in the urine of such
 cases of scarlatinal albuminuria. But this, by
 no means, warrants us to believe in the opinion of
 some others, that albumen is formed by a
 species of transformation at the expense of urea,
 or is the mere vicarious of the other - Since Dr.
 Christison has observed - in relation to Bright's disease -
 that, when the urine was deprived of greater
 part

Part of its urea, the quantity of albumen contained in it was small; and, on the other hand, in cases where the urea was considerable in quantity, the albumen was also plentiful. Coincident, also, with albuminous urine, the blood has been found to contain a considerable quantity of urea.

But the morbid elimination of albumen, combined with other products in the urine of scarlatinal patients, is indicative of important organic changes going on in the renal organs. Thus, during the primary fever, and more especially towards the latter end of the eruptive stage of scarlatina anginosa, the kidneys are very liable to become congested & inflamed. This liability is more marked in some epidemics than in others, and the degree of inflammatory affection bears some relation to the amount & strength of the fever existing at the time. This, however, is by no means invariable, since, at some seasons, renal inflammation occurs in every variety of scarlat fever.

The pathological conditions of the urine, indicating congestion & inflammation of the kidneys in scarlatina, are as follows:— Its secretion is altered in quantity & quality; its scantiness varies according to

The Severity of the Inflammation - Some times its total amount in the 24 hours measured only a few ounces; it is often highly turbid & muddy, and contains a large quantity of albumen; sometimes it presents a dingy, dark-brown colour, like tea, which occasionally throws down the pink striations sediment, more frequently a dark brown deposit, which, on Microscopical examination, is found to consist mainly of the coloured corpuscles of the blood, some what altered in form & colour; numerous fibrinous casts, moulded according to the shape & size of the tubule uriniferum - as seen by the microscope - some firm & perfect, others broken down and irregular; with these are observed a large number of Epithelium cells of the kidney - some normal in shape and size, others detached, while many are irregular & broken down. The circumstances to be most relied upon, as indications of this form of acute the granular nephritis, are scantiness & turbidity of the urine, the detection of albumen by chemical tests, and of numerous tube-casts of the kidneys, with a multitude of Epithelium scales & occasionally blood corpuscles as observed by aid of the microscope -

It is a curious circumstance met, in some few cases, where the urine was for some time diminished to a few ounces, its secretion was suddenly and most unexpectedly increased to an enormous amount - accompanied by abatement of the symptoms. It seemed as if the channels of secretion were temporarily blocked up and then suddenly opened up to give vent to the free flow of the urinary fluid.

The supervention of acute renal affection, as a complication or a sequela of scarlatina, was generally well marked by its inflammatory symptoms - (altho' in the former case, they were occasionally masked by the existing fever) such as - pain, confined to the region of the kidneys & increased on pressure; givious languor and perviousness with restlessness and disturbed sleep; frequently nausea & vomiting & costive state of the bowels; increase in the strength and frequency of the pulse. Some or later, as the disease proceeds, Dropsical Effusion takes place, either into the subcutaneous areolar texture, or into some internal serous cavity or both. The face first becomes pale, chuffy & swollen, the hands, feet, limbs & abdomen swell; of the
internal

Internal Cavities, the Peritoneum & Pleurae are most frequently the seat of internal dropsical effusion and the accumulation is accompanied by marked dyspnoea & oppression in breathing. Sometimes the effusion takes place within the brain, as indicated by severe headaches, vomiting, dilatation of the Pupils, Convulsions and sometimes Paralysis —

Notwithstanding that many have considered Scarlatinal Anasarca to belong to the Class of Febrile Dropsies, I am much inclined to look upon it as a distinct form of acute Renal Dropsy — both Secondary & such is essentially dependent upon the Renal Disease; for this is generally — nay invariably — observed a well-marked connexion between the Inflammatory affection of the Kidneys and the subsequent dropsical Effusions. — And again, Careful examination of the body in many fatal cases, where the Serous Cavities are found full of clear fluid, cannot discover a trace of redness or vascularity or of any of the unmistakable products or events of inflammatory action. The accumulation must, in these cases, be considered

as a mere infiltration or passive elimination, from the blood, of its serous fluid, which is deprived of much of its albumen and is consequently diminished in density.

Altho' the disease of the kidneys in Scarlathina is manageable in the milder cases, it sometimes proves a very troublesome & obstinate affection - especially when supervening, as a natural consequence, during the existence of the eruptive fever - Nay, more - its ultimate consequences may be formidable, for there is every reason to believe that it occasionally lays the foundation for more serious & permanent disease of the kidneys - with regard to this point, I cannot do better than quote the observations of Dr. Watson, on "Grippe following Scarlath Fever" - "It is an interesting fact," he remarks, "that the chronic form of renal Grippe, manifesting itself at some distance of time, has been distinctly traced back to its source in the acute anasarca, immediately consequent on Scarlath Fever. The sequence has occurred, in all probability, much oftener than it has been noticed; - and in proportion as facts, accurately observed, accumulate on this subject, the chain of connection becomes more clearly

clearly visible between the stage succeeding Scarlet
Fever, and chronic renal dropsy."

Treatment of Scarlet Fever - &c.

It would be vain, if not actually impossible, to lay down a decided mode of Treatment, to be followed up in all cases of Scarlet Fever. It has been already indicated, that the Disease ordinarily presents three very distinct varieties, well marked out both in reference to their general and local peculiarities. These varieties may all appear in the same Epidemic - at one & the same time - or in succession, at different periods of its history. Thus it was in the Epidemic related - while one period of its career was characterized by exceedingly mild cases, requiring little or no treatment - another presented instances of a decidedly inflammatory type, with a strong tendency to head & kidney affection - while a third specialized to a degree of malignancy in the cases - fatal in almost three-fourths, and little amenable to the most prompt & powerful remedial measures.

"Thus much", remarks Dr. Fothergill, "seems to be true in fact, that, in some cases, the Disease appears

appears to be of so mild a nature & so benign, as to require but little assistance from Art. Persons even recover from it under the disadvantages of unskillful and injurious Management, whilst in others the progress of the Symptoms is so rapid, and the tendency to Corruption so strong that nothing seems able to oppose it."

Our line of Treatment, therefore, must not only have reference to individual Cases and the various circumstances with which they may be associated, but it is, likewise, all-important, that we should regulate our practice according to the prevailing Type or Character of the Fever - as well as to the tendency to any particular set of Complications, which may characterise the Epidemic in question - while not observed in others.

It is our primary duty, therefore, to observe and disseminate carefully the different varieties of the Disease, to observe closely the prevailing Character of the Fever and the various complications, to which there is the most marked tendency, & at the same time, to watch minutely the circumstances, which serve to indicate a favorable or unfavorable event. It is only by a careful examination

examination & scrutiny of his mind and by a constant and persevering observation & watching of the progress of the Case, that we can, with any degree of success, accommodate our Treatment to the various forms of the Disease & the severity of the symptoms, avert or mitigate serious complications and conduct the Patient, with safety, through the Disease -

Acting upon these principles, I shall now enter into a short detail of the Treatment - in great part adopted in the Edinburgh Epidemic of Scarlet Fever.

1. Scarlatina simplex -

The mild and benign nature of this form of the Disease, forbids any degree of officiousness - much less, of active Treatment, on the part of the Medical Attendant - whose principal duty is to enjoin, rest, quiet & confinement to bed - rigorous exposure to cold & draughts - abstinence from all animal food - and the use of simple farinaceous diet, as Gruel, Sage, Arrowroot, Farina &c for the nourishment of the Patient, during the period of febrile disposition. At the onset of the Disease, the exhibition of a mild Purgative is always useful - to cleanse the bowels

and

and remove any irritative Matter, that may be present in them. In the subsequent management of the Case, the two following Circumstances should always be attended to. viz: The Condition of the Skin & the State of the bowels. The Eruption, however feeble, should be retained permanently out on the Skin and the action of the bowels regulated. To pursue both these Ends, nothing appeared so serviceable as the occasional Sponging of the body with tepid water and the Administration every Night or second Night - of a Compound Powder, containing Calomel, James's Powder, with a little Dover's Powder, and followed by a mild aperient in the Morning - such as Castor oil, Tincture of Senna, or Sublimed Sulphur alone or combined with Superacetate of Potash. The use of Sublimed Sulphur alone - this now fallen into comparative Disrepute - was, in many Cases, found exceedingly valuable - in regulating the action of the bowels, bringing forward the cutaneous Effluence and retaining it permanently out -

During the Course of the Fever & the Period

of Convalescence, special attention should be paid to the
fracturing or improvement of one or more of those com-
-plications to which all Scarlet Fever patients are more
or less liable, and base our utmost endeavours
to avert or overcome them, as speedily as possible.

Beyond this, our management is expectant, and
we should rather judiciously follow the progress
of the Disease and Convalescence therefrom, than
rashly advance before it and vainly attempt to
facilitate its career and termination -

4. Scarlatina Anginosa -

In the milder & uncomplicated forms of this variety
of Scarlet Fever, our management varies little from
that recommended in S. Simplex. The majority
of cases, however, require more assiduity and
watchfulness, and a more active kind of treat-
-ment. The onset of Disease is sometimes character-
-ized by severe recurrent rigors, slow & intermittent
pulsus, anorexia, with an aspect of extreme de-
-pression; the following often proves of great bene-
-fit in checking or diminishing the intensity of the
rigors, equilibrating the heart's action & regulating
the circulating fluid throughout the capillary system.

Rf. Aetheris Sulcis gr. ℥. x ad xxx } given at intervals as
ord. Rf. Spir. Ammoniac Aromat. gr. vi - xx } found necessary.

It.

It has been stated in a previous part of this paper, that to reaction any fever frequently assumes a more or less inflammatory form - When of a milder character, it may be readily influenced by mild Mercurial purgation, with the continued administration of Antimonial or Ipecacuan Wine, given in small doses &c. frequent intervals. This is preferable to large doses, at longer intervals, since we can regulate the action of the Medicine, according to the symptoms, much more easily and satisfactorily. When the patient complains of Thirst, which is often very great, the employment of acid & cooling saline drinks proves very grateful. a few drops of Nitric or Sulphuric acid, diluted with the requisite quantity of water, may be given with great relief - or a solution of Bitartrate of Potash in water. a variety of other cooling drinks have been proposed - all equally useful in tending to allay thirst, but it frequently happens that the patient loathes & bires of them and returns to cold water, as the most grateful & palatable beverage. The disagreeable sensation of thirst & dryness of the mouth & Fauces, is frequently mitigated & relieved by indirect means, such as the employment of

The Cold bath or Sponging the Cutaneous surface with Tepid water. The Cold bath or Sponging of the whole body is a means frequently resorted to, when the thirst is great, the skin dry & hot, the eruption rough, prominent & painful - accompanied by restlessness, - and not only proves grateful to the feelings of the patient, but affords the most certain & utmost relief from these distressing symptoms. Under these circumstances, it is a most effectual febrifuge and, according to Dr. Bateman, "the only sudorific & anodyne, which will not disappoint the expectation of the practitioner." I have frequently witnessed the remarkable rapidity with which benefit is derived by the patient and my experience accords with the testimony given by Dr. Bateman, who remarks, that: " invariably, in the course of a few minutes," after its employment, "the pulse has been diminished in frequency, the thirst has abated, the tongue has become moist, a general free perspiration has broken forth, the skin has become soft and cool and the eyes have brightened; and these indications of relief have been speedily followed by a calm refreshing sleep." In consequence of the tendency to inflammation of vitreal

organs

organs & from the fear of propelling the Effluence,
 The cold bath is in many cases contra-indicated,
 and the Patients will find equal & as ef-
 -fectual relief - without incurring the slightest
 risk or danger - from the use of the Cupid
 bath or, what is preferable, the frequent and
 daily sponging of the body, face & limbs with
 Cupid vinegar & water - in nearly equal parts.

It has been stated in a previous part of this
 paper, that the reactionary Fevers sometimes as-
 -sumes a decidedly inflammatory form, either
 independent of, or accompanied by, a strong
 tendency to - first - actual occurrence of - in-
 -tense local inflammation. Under such
 circumstances and more especially in young
 & phthoric habits, prompt & active measures
 should be resorted to, but always with due
 caution & discernment as to the Time & the
Amount to which they may be safely employed,
 since any delay beyond the proper period
 will render these measures less effectual - very
 absolutely dangerous & inadmissible; and any
 excess in the amount or activity with which
 they are employed, may prove hurtful to the
 Patient and greatly aggravate that tendency

to typhoid symptoms, which is so frequently observed, during the latter stages of the Disease - even in those cases where the fever at first showed an inflammatory Character. These Remarks equally refer to the Employment of General Bloodletting, Emetics, Purgatives & Cathartics - all which have been used with obvious & manifest Advantage in different Epidemics and more or less extolled and recommended by various authors - who are generally agreed as to the Propriety of resorting to them early & restricting mainly to the Period of Invasion. It must also be remembered that, altho' such active Measures are Decisive & beneficial at one Season, their Success does not warrant their Employment at another Period - even of the same Epidemic - since the Type of the Fever & the Character of the Symptoms are ever liable to Change. -

The well-known fact - of the Tendency of the Fever in *Scarlatina Anginosa*. to assume a more or less typhoid Character towards the latter end has led many Physicians of the present day to the Fever with the (more) active Measures of the general & more debilitating kind &

to resort to the Quills but not less effectual means of local treatment.

The same affection of the Throat should always be attended to. If severely inflamed at the first, from 2 to 8 Leeches, according to the Age of the Patient, should be applied under the Angles of the Jaw or behind the Ears, repeated, if necessary, at a subsequent period. To favor bleeding, warm Poultices should follow.

Free Scarification of the Tonsils has been recommended, and in two or three Cases, where it was employed, it proved very successful, in allowing a free discharge of blood & mitigating the intensity of the Inflammation. It is an Operation, however, neither very safe nor easily performed.

Subsequent to the topical abstraction of blood, marked benefit will be derived from large Sinapisms, applied every Night or second Night, according to Circumstances - with the employment of warm Bread, binded on warm Poultices during the Intervals.

Blisters have been recommended, but the propriety of their adoption seems questionable. They occasion a great deal of distress & irritation to the Patient and the blistered surface proves

very painful & very obstinate to heal, - at last this was found to be the inevitable result in those cases, where they were had recourse to.

The Inhalation of the Steam of hot water, with or without a small quantity of Turpentine, was frequently recommended, with the best effect of relieving the Pain, diminishing the tenderness of the throat & hastening the Stage of Suppuration of the Abscess - if that took place. When the Abscess is sufficiently matured, it may be punctured or freely opened or a Syringe employed - the Act of gargling the throat being sometimes effectual in breaking the Abscess. When Ulceration & Sloughing appeared the Local Applications of Solutio Chlorid. Sodii or Sol. Boracis, frequently employed, proved useful; but if they failed, a strong Sol. Nitrat. Argenti was resorted to and generally had the Effect of freeing the Slough, clearing the Ulcer & changing the unhealthy Action of the part.

When Gargles could be used, the two following were generally prescribed with the best Effects

R. Potassa Nitratii ℥ss. Tr. Candamom. Co. ℥i. Aq. ℥viii. ^{℥ss. M.}

R. Tr. Capivi ℥iii. Rosa ripsi ℥xij. Acid. Muriatrici dil. ℥i.

H. Sarg.

Any tendency to inflammatory head affection should be carefully watched and necessary measures, adopted to prevent the actual super-vention of disease. By shaving the head & applying cold evaporating lotions, by drawing a few ounces of blood from the temples or throat by means of leeches, and by the exhibition of Mercurial or Saline purge, we are frequently enabled to avert the superintention of serious mischief. But when the threatened symptoms have fairly set in, our treatment should be at once more active & depletory, since so serious a complication of this kind is known to run a very rapid course & terminate fatally in a very short space of time. The cold lotions should be continued & frequently changed, the leeches, in requisite number, should be renewed, or blood abstracted by Cupping behind the neck; the hot or warm bath employed, up to the middle, with or without mustard; strong counter-irritation; nauseating doses of Antimony or Ipecacuanum and free purgation. Should the pain become very acute, with great inflammation of the eyes, active Delirium & violent Convulsions, the employment of General blood-

Bloodletting is indicated, as the most speedy & effectual means of depletion, and should be carried to an extent, which circumstances may require. The effect of bloodletting, followed by an active Cathartic or strong Enema, is often immediate and remarkable.

Acute Laryngeal Inflammation, occurring usually at an early period, is most effectually encountered by abstraction of blood from the Jugular Vein or by Leeches, applied to the Larynx or to the feet in young children; by the early employment of one or two Emetics, if not otherwise contra indicated, followed by nauseating Diaphoretics, Purgatives & the Warm bath.

The early occurrence of Bronchitis or Pneumonia or both combined, should be met by Local bleeding, as a rule if necessary; by Antispasmodics or nauseating doses of Ipecacuanha combined with Opium in small doses; and when the acute stage is passed, strong Counter-irritation will be found useful. If they supervene in the later stages, when the system is more relaxed, Expectorants, gradually stimulating by the addition of Armonia, may be

be usefully combined with the former.

In still more severe cases of *S. Anginosa*, where the typhoid symptoms are prominent, depression great, pulse full, surface of the body & extremities cold & livid, breathing laboured, general sub-cupitons mucous râles heard over greater portion of the chest, we must rely mainly, if not wholly, upon the use of Stimulants, combined with Expectorants & with Diuretics, as Squill, Digitalis & Calomel, the employment of which are chiefly indicated.

When the region of the stomach manifests pain & tenderness, with nausea & vomiting, sometimes in conjunction with enlargement of the Liver & yellowness of the skin & eyes - the symptoms are generally allayed by Leeches over the stomach, by Calomel, combined with Opium or Dover's powder; and, in urgent cases, more especially if vomiting continue unabated, the employment of a blister over the Epigastrium is often followed by marked relief.

When the gastric irritation is accompanied by pain & tenderness over the abdomen, with Diarrhoea or even Dysentery - indicating

a congested & inflamed state of the Intestinal
Mucous Membrane, Laches over Abdomen,
Counter-irritation by Mercurial or Antimonial
Ointment (?) or by Sinapisms or hot Turpen-
tine fomentations; Calomel & Opium in
repeated small doses, or Hydrag. C. Creta
with Pulv. Spirit. or Dover's Powdr; in some
cases Plumbi Acetas or Vegetable astring-
ents which may be also given, with benefit,
in the form of Enema or Suppository.

When the Diarrhea occurs in the latter
stage - most frequently from the irritation
of Entamoeba Cauter - an occasional mild
Lascative, as Castor oil or Hydrag. C. Creta
with Rhubarb, may be judiciously given
& followed by astringent Correctives, as Chalk
Mixture &c. If there is distention - Assafoetida
may be usefully combined with the latter or
it may be given in the form of Enema with
Powdered Linchona or Quinine.

In all cases of Gastro-intestinal irritation, strict
attention should be paid to Diet, which should
be bland & simple & containing a little nourishment
always given in small quantities. The Thirst is best
relieved by cold water Potions or mild Effervescent draughts.

III. Scarlatina Maligna.

In Scarlatina Maligna, two general indications are to be followed out. These are of primary importance - viz: 1. To maintain the vital Powers of the System, which fall prostrate under the Disease. 2. To mitigate & subvert the severity of the local Symptoms and Complications to local Treatment, with as little possible sacrifice to the general System.

The employment of general Antiphlogistic measures can only be advised to in the very beginning of the Disease, and even then the propriety of their adoption is very questionable. The sudden & rapid diminution in the strength of the pulse, accompanied by a low depressed state of the general Powers, renders any amount of Depletion not only doubtful but hazardous.

The Exhibition of an Antimonial or Ipecacuan Emetic, at the onset of Disease, followed by an active Opium, proves all that is necessary in those few cases, where undue excitement demands the use of Antiphlogistic Measures.

Usually, the Violence & low typhoid character

Character of the symptoms demand our inter-
 -ference sooner or later & call for our ut-
 -most Endeavour to maintain the exhausted
 Vital powers of the system & avert fatal
 sinking. Such indications of treatment
 can only be fulfilled by the continued ad-
 -ministration of Cordial Tonics and dif-
 -ferent Stimulants - always taking care
 - to regulate their Employment, ac-
 -cording to the severity & urgency of the
 symptoms. As soon then, as the Qualify-
 -ng Character of the Disease becomes
 apparent, it behoves the Physician to sup-
 -port the Patients' strength by invigorating
 diet, animal broths, Wine in moderate
 quantity - best wine to Children, combined
 with Milk, in the form of Sac-Chy.

Various Medicines have been employed
 recommended & highly extolled by different
 Physicians for their Remedial Effects in
 Scarletina Maligna - Some of them being
 even regarded as Specifics - but erroneously.
 Among those, which have been selected
 & most generally employed with advan-
 -tage, may be mentioned the following.

Sturges' Acad. Com. 1787.

1. The Preparations of Cinchona Bark, recommended, in particular, by Dr Keen, Astruc, Cullen and Percival.

11. Sulphate of Quina, which will be found of the highest value, if given in full doses, and preserved in as long as the Typhoid symptoms continue. It does not purge the stomach, which it is apt to do when given in too large quantity, small doses may be substituted with advantage repeated at shorter intervals.

It may be combined with Dilute or Aromatic Sulphuric acid. I have frequently used it in the following way with success.

R. Quina Sulphatis gr XXX - ℥ij. Acidi Sulphurici Aromatici ℥ij. Infusi Rosae Gallicae ℥iij - ℥vi S. 27 m
 ℞. a differt Spoonful every 3 or 4 hours -

111. The Infusion of Capsicum, as recommended by Dr. Stevens - & a remedy successfully employed by him, during a severe Epidemic, which prevailed at St. Christopher's in 1787; and commended by several Writers since that period.

14. The Preparations of Ammonia, which, tho' erroneously ranked as a specific, by Dr Prast, in S. Malina, cannot be denied to possess highly diffusible Stimulant Qualities.

Princ. & Pract. of Physic. Vol. ii.

A. C. H.

and, on this account, of great value.

V. The use of Chlorate of Potash has been favorably recommended in Scalded Fever, more particularly by Dr. Watson, who prescribes it as a drink - a drachm of the salt being dissolved in a pint of water. "Under the use of a pint or pint & a half" he observes, "of this solution daily, I have remarked, in many instances, a speedy improvement of the tongue, which from being furred, or brown & dry, has become clean and moist."

The strong testimony of late, in favor of Chlorine itself, has led many to adopt its use; & certainly, judging from the few trials I have made of it in some cases of *S. Anginosa* and *Maligna*, I am inclined to regard it as a valuable Remedy. In two cases, particularly, where depression was great, pulse extremely feeble & quick, throat bloody, empytra livid, tongue dry & parched, surface of the body cool & extremities cold - I have seen struck with the almost immediate & most decided improvement of all the symptoms, after the first employment of this Remedy. I have used the Formula, recommended by Dr. Watson, for its preparation. -

11. The Unguentum Purioris Ferri has been, likewise, plausibly recommended of late, but in those cases, where trial was made, it seemed of little avail -

In all severe cases - where the depletion and exhaustion of the system is great and the danger of fatal sinking imminent, it would be error to trust to any of these measures alone - however powerful; and the physician is constrained to combine the more permanent & potent diffusible Stimulants, as Wine, Brandy, Alcohol &c; and, notwithstanding all, our utmost efforts are vain - our treatment too often proves of little avail -

Special attention should be paid to the Throat, which is always severely implicated in S. Maligna. It is only at the commencement of the inflammatory action, that local depletion proves of any avail. The inflammation runs a rapid course & speeds its termination in suppuration, Sloughing & Gangrene. The more ordinary local treatment - described in the Management of Anginous sore Throat, may be at first resorted to, but more stringent measures are generally requisite -

In adults and young Patients who are able to use Gargles, they may be prescribed. The Gargles which are found most Effectual are the Astringent Bitter Infusions, as of Cinchona, casparia, Contrayerva, oak-bark &c acidulated with Sulphuric acid or Nitric acid.

The Infusion of Capsicum will sometimes be of benefit, as also the Solution of Sulphate of Copper or Zinc or of the Nitrate of Silver - The Mouth and Fauces being afterwards well washed out with Cold or Warm Water. The Internal administration of Nitric acid - to the Amount of from 5 to 15 Drops 4 or 5 times a Day, after the performance of repeated Service - when combined with the use of the acidulated Astringent Gargles.

Children cannot employ Gargles, and the Physician must resort to expedients to Effect the same Purposes derived from the use of them in adults. Some Practitioners recommend the employment of the Syringe or Elastic bottle to inject weak Solutions, as of Chloride of Sodium, into the Proctum & against the Fauces. But this is more difficult & far less Effectual than the more simple Method

of applying a strong or weak solution (as the condition of the parts may require) of Chloride of Sodium or of Nitrate of Silver or Tartaric Acid - directly, to the affected parts, by means of the straight probe or of a mill terminated with a thick brush of hair -

By the employment of any of these measures as may be considered suitable - the inflammatory action is frequently mitigated, the sloughs separated & the aspect of the Ulceration improved; the ichorous discharges cease to flow from the nostrils & mouth, and the irritation of the Bowels & Diarrhoea cease to distress & debilitate the patient -

The Management of every Complication, that may occur in Scarlatina Maligna, must be conducted upon the same Principles as laid down in Scarlatina Maligna, ever bearing in mind, however, the Typhoid Nature of the disease, confiding mainly in local means of Treatment and adopting, at the same time, the use of general Stimulants and Tonics - in those cases where the Patient's strength and vital Powers threaten to succumb -

Treatment of Scarlatinal Dropsy -

Immediate attention should be paid to the Renal Organs when they become affected. From the impeded state of the body & from the morbid condition of the blood as well as from the impoverishing effect of the Disease upon that fluid - it is rarely that Emisection is demanded or can be done with safety. It is imperable to apply Leeches or Cupping Glazes to the Loins & at a later period, Sinapisms, warm fomentations or a Blister, if requisite. An active Cathartic should be given at first and repeated, if necessary, or if Diarrhoea exist, the Warm bath, followed by Calomel & Opium or Dover's powder, will often prove very beneficial. Should the Symptoms become more urgent & Dropsy supervene, more active Measures should be employed - such as - repeated abstraction of blood from the Loins, if admissable; the daily employment of the Warm bath; - The administration of Cathartics as Calomel & Jalap or Scammony; - of Diaphoretics

as James' Powder or Dover's Powder or the Li-
 -quor Ammoniac Acetatis; of Diuretics of a
non-stimulant kind - as Super Saturated of
 Potas. Digitalis, acetate of Potas; even
 these latter should be employed with great
 caution - since any stimulant to the flow
 of blood to the already congested & inflamed
 kidneys, naturally aggravates the local
 affection. A combination of acetate of
 Potas and Digitalis with one or two grains
 of Tincture of Antimony, was found the
 safest and most effectual means of
 acting upon the kidneys and of removing
 the massacra & tropical accumulations -

The treatment of Scarlatinal Papulitis consists of
 frequent ablution of the parts with cold or tepid water.
 The Labia should be separated by lint, previously soaked
 in warm Milk & Water or in some Anodyne Lotion. The
 best local remedy, which has been employed, is Tincture of Sil-
ver - used as an Injection in weak solution. When the
 Pain is very severe, great relief will be found from Opiate
 fomentations, and when Intention & Excoriation of the Labia &
 Thighs follow, acetate of Lead & Opium Lotion are employed with
 great advantage. If the discharge continues subsequently, the ge-
 -neral health should be likewise improved by Trines & otheratives.

The Critical Period of Convalescence from all the forms of Scarlet Fever requires careful and diligent watching, and every precaution should be taken, against errors by neglect and impudence in diet and regimen. The room should be well ventilated. The Diet mild, but nourishing and gradually increased in quantity, as the appetite improves. The Bowels should be regulated by mild laxatives. The patient confined to bed till sufficient strength is gained to rise and sit up. The clothing should be warm. Exposure to cold, wet or fatigue should be carefully avoided and the patient should not be allowed to go out of the house, until, or even for some time after, the process of Desquamation is fairly over.

The Period of Convalescence from Scarlatina maligna and Palpina is generally slow & protracted; and it is frequently necessary to administer Tonics and Cordials. Along with nourishing and vivifying diet & the cautious employment

employment of Wine, Quinine, Iron, Serravallo's
 Columba or any other gentle tonic & cordial
 preparations will be found very bene-
 -ficial, in promoting Convalescence and
 reestablishing the health of the patient.
 In Scrofulous & cachectic constitutions,
 Hydriodide of Potash, the Tonic of Iron or the
 Syrup of Iodide of Iron, with Cod. Liver-
 -oil, are indicated; and their exhibition
 is attended with the greatest advantage
 and improvement in Health.

James Farwell.