

A treatise on fevers : including the various species of simple and eruptive fevers / by A. P. Wilson Philip.

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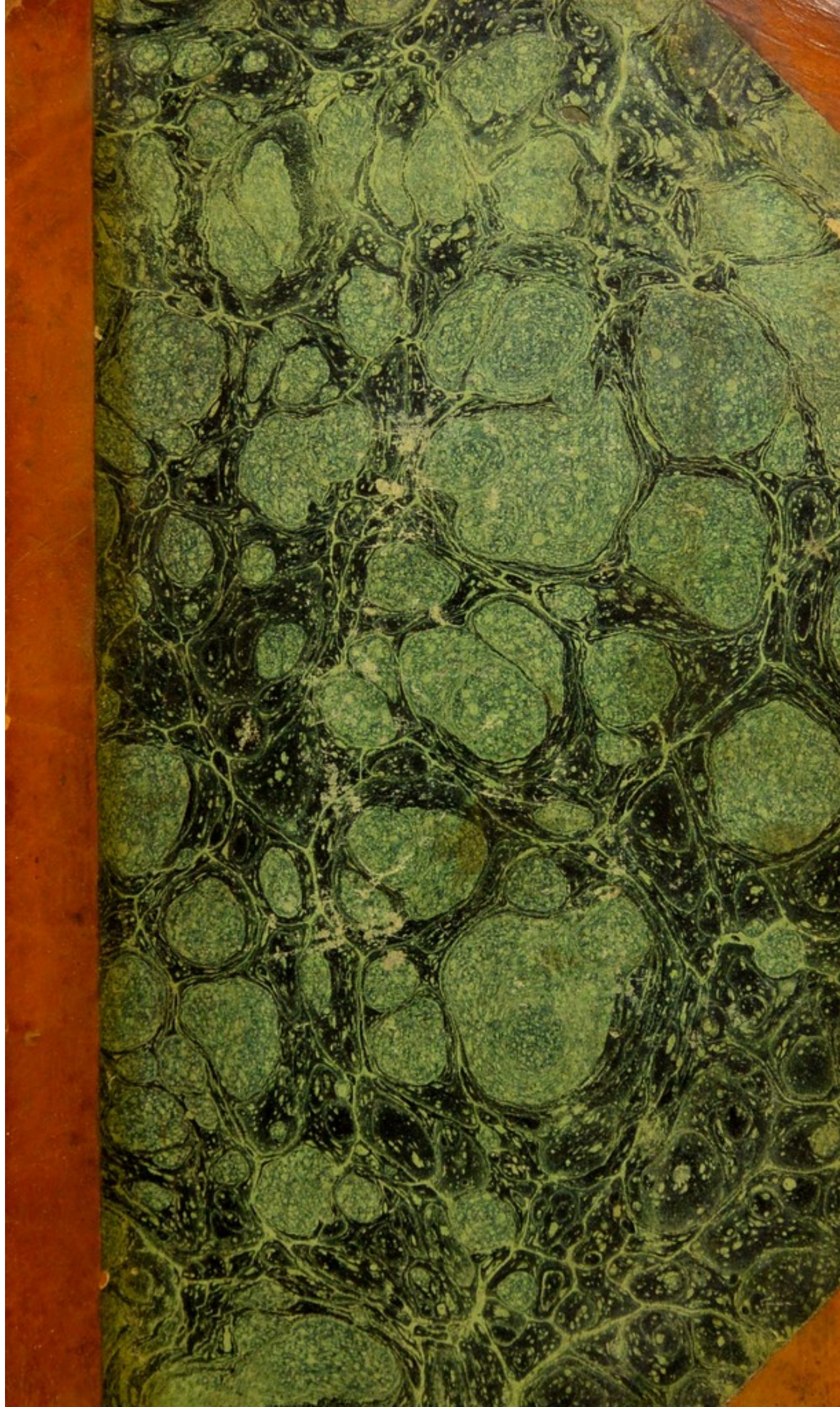
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TREATISE ON FEVERS,

INCLUDING

THE VARIOUS SPECIES

SIMPLE AND ERUPTIVE FEVERS.

BY A. P. WILSON PHILIP, M.D., F.R.S.E.

FELLOW OF THE ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH, &c.

THE FOURTH EDITION.

LONDON:

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TREATISE ON FEVERS

INCLUDING

THE VARIOUS SPECIES

OF

INTERMITTENT AND TYPHUS FEVERS.

BY J. H. WILSON, M.D., F.R.S.E.

LECTURER ON THE CLINICAL MEDICINE OF FEVERS IN THE HOSPITAL FOR FEVERS, LONDON.



THE FOURTH EDITION.

LONDON:

PRINTED BY THOMAS DAVISON, AND GEORGE HARRISON,

LONDON:

PRINTED BY THOMAS DAVISON, WHITEFRIARS.

TO

M. BAILLIE, M.D. F.R.S. L. & E.

PHYSICIAN EXTRAORDINARY TO THE KING,

FELLOW OF THE ROYAL COLLEGE OF PHYSICIANS IN LONDON, AND

HONORARY FELLOW OF THE ROYAL COLLEGE OF PHYSICIANS

IN EDINBURGH, &c. &c. &c.

DEAR SIR,

THE approbation, you were so kind as to express of the following treatise, has been a principal motive for the trouble it has cost me to bring it into its present, I hope, improved state. But this is only one of many reasons for addressing it to you. The testimonies of friendship I have received from you, the assistance I have often derived from

your excellent works, your rank in the profession, and above all, your character as a man, make this public declaration of esteem peculiarly gratifying to me.

I am, dear Sir,
With unfeigned respect,
Your obliged friend
And faithful servant,
A. P. WILSON PHILIP.

P R E F A C E.

I AM now called upon, for the fourth time, to prepare my Treatise on Febrile Diseases for the press. It has been my only endeavour, on each revisal of it, to make it more useful to the practitioner, and my increasing experience of the diseases treated in it, I hope, has rendered that endeavour not unavailing. I may, perhaps, on the present occasion, be permitted to say, that this hope is strengthened by the manner in which it has been received in other countries. I have had the gratification to be assured of its favourable reception in America by various circumstances, and particularly by the professor of the practice of medicine in the University of Philadelphia having, some years ago, inserted it in the catalogue of books recommended to the students. It has been translated into the German language by M. Topelmann, of Leipsic, and Dr. Letu has done it a similar honour. The first part of a French translation of it by this gentleman was published at Paris last March.

From its extent, and its treating of two distinct classes of diseases, it will, I think, be rendered more useful by being divided into two separate treatises. I shall therefore confine the present treatise to Idiopathic Fevers, and shall soon offer the remaining part of the work to the public in a treatise on Symptomatic Fevers. The essential difference in the nature and treatment of these two classes of diseases is pointed out in the introduction.

Both treatises being wholly practical works, I shall avoid all discussions respecting the nature of fever; but as I cannot help thinking that many experiments which I have had occasion to make with other views tend to throw some light on this subject, I shall here in a few words point out the opinion to which they have led, and without entering into any defence of it, leave it to the consideration of the reader. In reviewing the various phenomena of fever he will have an opportunity of judging how far it is supported by them.

It is impossible to subject the whole system to sufficiently minute observation, to make the immediate cause of fever the subject of experiment; but we know that there are local diseases capable of exciting fever, and it may be possible to ascertain by experiment the state of the part on which these local diseases depend, and thus to arrive

at a knowledge of one or more changes in the vital organs capable of producing fever; and by comparing the phenomena of these diseases with those of simple fever, to ascertain how far the same changes which we observe in the part obtain throughout the system, as soon as the irritation occasioned by the state of that part or any other cause produces fever.

It appears from some experiments made with the assistance of the microscope, related in the introduction to the second part of the former editions of this treatise, that inflammation arises from debility of the capillary vessels and their consequent distention by the *vis a tergo*, and that we can at will produce inflammation by debilitating the capillaries, and relieve it by increasing their action. Wherever therefore the symptoms of inflammation, increased temperature, redness and swelling appear, the capillary vessels are debilitated and preternaturally distended. Now, in the hot stage of fever, all the surfaces are affected with increased temperature, redness, and swelling; and as the debility and consequent distention of the capillaries of a part, as appears from direct observation, produce increased action of the larger arteries of the part, this general debility and distention of the capillaries produce increased action of the whole arterial system. In inflammation the debilitated vessels being comparatively

few, the *vis a tergo* quickly and to a great degree distends them. In fever, the debilitated vessels being very numerous, it produces its effect more slowly and to a less degree in proportion as the resistance is greater.

The causes of fever appear to be of two kinds. The most rare are those which act by so increasing the excitement of the heart and large arteries that the blood is thrown towards the extreme parts of the circulating system with such force, that preternatural distention and consequently debility of the capillaries are directly produced. In this way, for example, drinking largely of distilled spirits sometimes produces fever. In such cases there is no cold stage. But the most common causes of fever debilitate the powers of circulation, and even the cause just mentioned seems more frequently to produce fever by the debility consequent on the increased excitement than by the direct operation of the latter.

It is a law of the animal economy that all cavities embrace their contents. When the latter are diminished therefore, the sides of the cavities are thrown into proportionally greater contraction. When the powers of circulation are suddenly debilitated by a cause which does not soon permit them to regain a certain degree of vigour, the usual supply of blood fails in the extreme parts of the circulating system, and the capillaries accom-

modating themselves to their diminished contents, the surface appears pale and shrunk. If this goes to such a degree as to impede the functions of the capillaries, the cold stage of fever takes place, and continues till the power of the capillaries being impaired by their preternatural contraction, they allow themselves to be distended by the remaining *vis a tergo*, and their distention soon going beyond the natural degree excites an increased action of the larger vessels, as it appears from the experiments above referred to, distention of the capillaries always does in the case of inflammation. Thus the hot stage of fever is induced. If the cause is slight and the remaining vigour of the system considerable, the increased action of the heart and larger arteries soon excites the languid capillaries, the proper balance of circulation is restored, and secretion is again duly performed. If not, before this balance is restored or death puts a period to the patient's sufferings, a long train of symptoms ensues, all of which are easily referrible to the cause of derangement here stated.

If in any part the vessels are weaker than in others, they suffer a greater degree of morbid distention than the rest. Hence arise the congestions and inflammations so frequent in fever. These act as we have seen inflammation does in other cases, in supporting the morbid excitement of the heart and larger arteries. Thus it is evi-

dent why the treatment of these affections, when they do occur, is of so much importance in determining the course of the fever; and I cannot help thinking that the public is greatly indebted to those late writers who have done so much to direct our attention to these affections in the treatment of fever. I cannot, however, agree with Dr. Clutterbuck, that fever is always supported by a determination of blood to the brain, because I see fevers where neither the symptoms nor the appearances on dissection show any particular determination; and others in which the particular determination is evidently to other parts than the head. Nor can I agree with Dr. Armstrong, that such determinations exist chiefly, if not wholly, in the venous system. I conceive them to exist equally in the arteries and veins, an opinion which I believe dissection will be found amply to warrant, if it be recollected that in fatal determinations, the blood in the affected part is found either wholly of an arterial or venous colour, according to the state of the general habit and the period at which death happens, and according as the determination approaches more or less to inflammation or congestion, that is, to accumulation in the capillaries or larger vessels; and that the accumulation of venous blood in the right side of the heart is observed after all deaths, except those which are instantaneous throughout the system; and arises

from respiration, as appears from many experiments, being, with the exception of such cases, the first vital function which fails in dying*, in consequence of which the circulation is first arrested in the lungs, and the blood necessarily accumulates in that part of the circulating system which in the course of circulation precedes them.

I have endeavoured to show in my Inquiry into the Laws of the Vital Functions, that inflammation is the only local disease which excites fever. Dr. Cullen arranges all local diseases producing fever under the three heads of Inflammation, Hemorrhagy, and Profluvium, but the two latter only excite fever in proportion as they are attended with inflammation.

* See the tenth chapter of my Inquiry into the Laws of the Vital Functions, &c.

PREFACE

TO THE

THIRD EDITION.

IN revising the following treatise, my only object has been to render it more useful to the practitioner. I have endeavoured to reduce it into as small a compass as the nature of the work admits of; for it was offered to the public not as an outline, but as nearly the sum of our knowledge on the subject.

In one branch I have been particularly careful to avoid any omission of importance. It is evident that much must depend on a minute knowledge of the symptoms of diseases, by which we acquire the power of accurately distinguishing them, and of ascertaining by the variation of their symptoms the changes which are taking place internally.

Although, for the sake of compression, I shall less frequently enter on the opinions of others or give quotations from their works, and many years' additional experience has enabled me to speak more frequently from my own observation than in the former editions, I shall not suppress any of the authorities there adduced.

Of the observations which have been made on this treatise, there are two which I feel myself called upon to notice. I have been accused of disrespect towards Dr. Cullen, and said to espouse the practical tenets of Dr. Brown.

It is true that, after a very short discussion, I rejected Dr. Cullen's doctrine of fever, but it was admitted by its author to be hypothetical, and confessedly brought forward only for the purpose of connecting the different parts of the subject. It is not Dr. Cullen's praise that he invented an ingenious hypothesis, but that he new-modelled, if I may use the expression, the whole practice of medicine; that in his *Synopsis Nosologiæ Methodicæ*, he defined and arranged diseases with an accuracy that is still unrivalled; and in his *First Lines*, reduced their treatment to a degree of simplicity formerly unknown. In every part of the treatise these merits of Dr. Cullen, the highest a medical writer can boast, are acknowledged not only with frankness but with pleasure; for I had no less reason to love and esteem him as an individual, than to honour and admire him as the first physician of his age.

Dr. Brown, in forming his certainly very simple and ingenious hypothesis, proceeded on a different principle. It was not his object merely to connect together the different phenomena of fever, till we arrive at a more accurate knowledge of the nature of disease. He maintained the truth of his opinions, and founded them on principles whose truth all must admit, and whose truth indeed was universally admitted long before he wrote. But I was so far from adopting these opinions, that many pages were devoted to pointing out that his chief inferences are false; and with respect to the application of his doctrine to the cure of diseases, the following is the opinion given in both the former editions of this treatise. "We come now to that
"part of the Brunonian system where truth for the first
"time wholly forsakes us. In other parts if errors have
"appeared, they are the errors of rash induction; that we
"are about to consider is, *as far as I am capable of judging,*

“altogether unfounded. I mean the application of the Brunonian doctrine of excitability to explain the phenomena and treatment of general diseases.”

As the small-pox has now become a less interesting disease than it has long been, and it is to be hoped will be every day becoming less so, I have greatly abridged my account of it. I shall still, however, give a detailed account of its symptoms, and insist on those parts of the treatment in which it bears a strong analogy to the diseases with which it is classed; for none of these have attracted so much attention, and consequently been observed with so much care; and did the small-pox no longer exist, in observing the phenomena and improving the treatment of the other Exanthemata, we should long have occasion to refer to the observations which have been made on it*.

* I take this opportunity of requesting M. Topelmann, of Leipsic, who has done the following treatise the honour of translating it into the German language, in case the present edition falls into his hands, to give from it, in an appendix, such alterations and additions as seem worthy of notice.

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A

T R E A T I S E

ON

F E V E R S, &c.

INTRODUCTION.

FEBRILE DISEASES may be divided into two great natural classes. In the one the fever is idiopathic, in the other, the consequence of a local disease. Some nosological observations on these classes, and on the various genera arranged under them, form a necessary introduction to the following Treatise.

The symptoms of a disease may be divided into those which form the diagnosis, that is, distinguish it from others; those which form the prognosis, namely, those from which we prognosticate the event; and those which in the present state of our knowledge serve neither purpose.

It may be said that we should confine our attention to the two first sets of symptoms, and that a knowledge of the other symptoms can be of no use to the physician. To this it may be answered, that these symptoms may throw light on some of the functions, they may assist in ascertaining the nature of the disease, and consequently the proper remedies. But should they serve none of these purposes, it is necessary to be acquainted with them, that their appearance may not disconcert us, and because it is possible that as our

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knowledge extends, an acquaintance with them may prove more useful.

Those whose observations have served most to advance the knowledge of diseases, have accurately observed and recorded every fact which presented itself. And many facts which appeared useless have, in a more advanced state of science, served to point out distinctions and analogies, which could not have suggested themselves to the first observer.

Of the foregoing sets of symptoms, that which forms the diagnosis is the most important. The diagnostic symptoms of diseases have been collected into short sentences, which have been termed their characters or definitions, by means of which the learner is assisted in acquiring the power of distinguishing them; and for the purpose of farther aiding the memory, these characters have been variously arranged, or digested into systems.

The general principle on which such systems are constructed is very simple. From the symptoms common to the characters of those diseases which resemble each other, a general character is formed, under which the particular characters are arranged, and which is termed the character of the order. And in like manner from the characters of several orders, having certain symptoms in common, the character of a class including these orders is formed. Thus diseases are arranged under classes, orders, and genera. The genera being occasionally divided into species, and these into varieties.

There are two things, then, aimed at by the nosologist; the first, to give an accurate character of each disease, by which is meant (as appears from what has just been said) not an account of all the symptoms, not a description of the disease as it really appears, but merely an enumeration of a certain set of its symptoms, which either at the same time or in succession constantly attend it, and distinguish it from others.—The second thing aimed at by the nosologist is to arrange the characters of diseases methodically, that is, in such a way as best assists the memory. In each we shall find difficulties which appear to be unsurmountable, so that a perfect system of nosology is not to be expected; but we have reason to believe that there is still much room for improving our present systems.

Dr. Cullen's system, both in its arrangement and definitions, so much excels those which preceded it, that it will

be unnecessary to take particular notice of any of them*. He divides all diseases into four classes, Pyrexia, Neuroses, Cachexia, and Locales. The first class comprehends those, which I am to treat of. It is divided into five orders, Febres, Phlegmasia, Exanthemata, Hæmorrhagia, and Profluvia. The class he defines,

“Post horrorem pulsus frequens, calor major, plures functiones læsæ, viribus præsertim artuum imminutis†.”

The first order arranged under it (the Febres) he defines,

“Prægressis languore, lassitudine et aliis debilitatis signis, pyrexia sine morbo locali primario.”

The second order (the Phlegmasia) is defined,

“Febris synocha; phlogosis; vel dolor topicus, simul læsa partis internæ functione; sanguis missus, et jam concretus, superficiem coriaceam albam ostendens.”

The third order (the Exanthemata) Dr. Cullen defines,

“Morbi contagiosi, semel tantum in decursu vitæ aliquem afficientes; cum febre incipientes; definito tempore apparent phlogoses, sæpe plures, exiguæ per cutem sparsæ.”

His definition of the fourth order (the Hemorrhagia) is,

“Pyrexia cum profusione sanguinis absque vi externa; sanguis missus ut in phlegmasiis apparet.”

The last order (the Profluvia) is defined,

“Pyrexia cum excretionē aucta, naturaliter non sanguinea.”

Such is Dr. Cullen's mode of arranging febrile diseases. I shall here point out in what I mean to deviate from it, and my reasons for doing so; which will make the reader acquainted with the plan to be pursued in the following work.

The orders arranged under Dr. Cullen's class of Pyrexia materially differ from each other in the following circumstances:

The fever in two of these orders (the Febres and Exanthemata) is strictly idiopathic. It is true indeed that local affections accompany the Exanthemata; but these, appearing a considerable time after the commencement of the fever,

* The reader will find a short view of the nosological systems of Sauvages, Linnæus, Vogelius, Sagare, and M'Bride, in the first volume of Dr. Cullen's *Synopsis Nosologiae Methodicæ*

† Characters of diseases are generally expressed in Latin, because it is difficult to remember accurately what is expressed in the language employed for the common purposes of life; we are apt to change the mode of expression, and consequently often the meaning.

cannot be regarded as its cause. Besides, its degree is not at all proportioned to that of the local affection; in some instances so much the contrary, that the more considerable the local affection, the milder is the fever. This is the case in the plague and the simple scarlet fever; nay, where certain causes conspire to prevent the fever, the local affection of the Exanthemata often exists, and that to a considerable degree, without fever. This frequently happens in the plague. We shall find also, that in the Exanthemata, the fever, with all its peculiar symptoms, has often appeared without any eruption; this is true of the plague, small-pox, and measles, and probably of all the others. So far indeed is the local affection from occasioning the fever, that the latter generally suffers an abatement, and is sometimes wholly removed on the appearance of the eruption.

In the Exanthemata, then, the fever is as truly an idiopathic affection as in fevers properly so called; and in laying down the practice in those diseases we shall find it treated as such. The first and third orders of Dr. Cullen's *Pyrexia*, therefore, agree in the most essential point—in that which, we shall find, more than any other, influences our practice in febrile diseases.

On the contrary, in the three remaining orders, (the *Phlegmasia*, *Hæmorrhagia*, and *Profluvia*) the fever always accompanies some local affection; being not only proportioned to it, but varying in kind as the local affection varies, and the principles on which the practice in these orders of diseases is conducted are so modified by this circumstance, as to differ widely from those which regulate the treatment of the *Febres* and *Exanthemata*.

In the one set of diseases, the fever is the primary disease; in the other, merely the consequence of some local affection. In the former, our whole attention is directed towards removing the febrile symptoms; in the latter, the local affection demands our chief attention; and experience has taught us that if we succeed in removing this, we at the same time remove the fever which attends it.

These circumstances considered, does it not appear a necessary alteration of Dr. Cullen's mode of arranging febrile diseases, to divide his *Pyrexia* into two classes, the idiopathic and symptomatic fevers?

To arrange the *Phlegmasia* after the *Febres*, and before the *Exanthemata*, (diseases so much allied to the *Febres*)

and after considering the Exanthemata, to return to the Hæmorrhagiæ and Profluvia, (diseases in their nature so nearly resembling the Phlegmasiæ) unnecessarily taxes the memory, and tends to perplex our ideas of the different orders of the Pyrexiaë.

Dr. Cullen and other systematic writers seem to have adopted this mode of arrangement, either because they regarded the Exanthemata as diseases compounded of the Febres and Phlegmasiæ, and consequently considered it proper to treat of both the latter sets of diseases before the former; or they thought that their account of the inflammatory affection which appears in the Exanthemata would be more readily understood after treating of the Phlegmasiæ; and thus repetition be prevented, which it cannot be if we first describe the eruptions of the Exanthemata, and afterwards the different species of inflammation.

The idea on which the former of these arguments is founded, is false, if by Phlegmasia we mean any thing more than a local affection, (as will presently more plainly appear) and may lead to errors in practice:

The latter seems a better argument; for almost every thing we say, when we describe the Phlegmon in the small-pox, for instance, must be repeated in describing Dr. Cullen's first genus of the Phlegmasiæ, the Phlogosis. This objection, however, is less in a system of practice, than in a nosological system. In the former, for the sake of perspicuity, nearly the same description of the eruption in the Exanthemata is necessary, whether the Phlegmasiæ have been previously considered or not.

Here, then, on each side we find an obstacle opposed to our advancement in nosological accuracy: a probable inference from which is, that we are not proceeding on a proper plan. The error seems to be, that we are considering the more complicated, before we have treated of the more simple diseases.

Not only the Pyrexiaë, but the Neuroses and Cachexiaë, ought to be placed after the affections which are merely local, by far the greater part of which are constantly occurring in the general and more complicated diseases.

In the class of local diseases, there should be an order for simple inflammations, for such inflammations as are not attended by fever, as pimples, and that habitual and superficial redness of the face and hands which never produces fever.

Such an order indeed would include some diseases of importance, certain species of Ophthalmia, for instance, and the Aphthæ Infantum. No symptom of these is mentioned in Dr. Cullen's definition of Pyrexia. They might as well be arranged under any other definition of his nosology.

The Phlegmasiæ, as defined by Dr. Cullen, are diseases compounded of simple inflammation and fever. There are the same reasons, therefore, for treating of simple inflammation before the Phlegmasiæ, which have induced nosologists to arrange the latter before the Exanthemata. But the Exanthemata also are compounded of simple inflammation and fever, not of Phlegmasiæ and fever. When a Phlegmasia supervenes on an Exanthema, the combination is of quite a different nature from that of the primary fever of the Exanthema and the simple inflammation which attends it.

There is no better reason, then, (resulting merely from a view of the diseases themselves) for arranging the Phlegmasiæ before the Exanthemata, than for arranging the Exanthemata before the Phlegmasiæ. But since in both two more simple affections are combined, these should be considered before either. And since in the Exanthemata the fever is idiopathic, they should be arranged with other idiopathic fevers, and consequently before the Phlegmasiæ.

Dr. Cullen is led into other difficulties, by treating of the Phlegmasiæ without having previously considered simple inflammations. In the definition of the Phlegmasiæ, Phlogosis is mentioned; but Phlogosis is a genus of this order, so that this disease is arranged under an order, of whose definition it forms a part; as if we were to define the Exanthemata, fever attended with eruption, and then arrange eruption as a genus of the order. Besides, Phlogosis is the name of a disease, and is here used before the disease has been defined.

Dr. Cullen perceived the difficulty; it is one indeed which it was impossible for him not to perceive, and, in order to make it less apparent, has recourse to a degree of obscurity. In the definition of the Phlegmasiæ he says, "Febris synocha phlogosis," &c. evidently implying by Phlogosis, nothing more than a simple external inflammation, and immediately after he informs us, that it is a febrile disease.

If Phlogosis is made a genus of the Phlegmasiæ, it must

be a febrile disease ; if not, there is no place for it in Dr. Cullen's system. It would have been easy for him in the definition of the Phlegmasiæ, instead of the term Phlogosis, to have used some other, expressive of simple inflammation ; but he must then have mentioned a disease not to be found in his nosology.

The same circumstance forces him into a similar error, in his definition of the Exanthemata.—There again the want of a term expressive of simple inflammation recurs, and he is again obliged to employ Phlogosis, which he has defined to be a febrile disease. Phlogosis is an external inflammation occasioning fever ; the eruption in the Exanthemata, instead of occasioning, usually relieves it.

Had Dr. Cullen treated of simple inflammations, as well as simple fevers, before the more complicated diseases, he would have avoided all the foregoing difficulties. There would have been no reason for interrupting the consideration of idiopathic fevers, to introduce the order of Phlegmasiæ, which, although the sixth or seventh part of the whole nosology, stands in his system as in a parenthesis, for it is impossible by any mode of arrangement to alter the nature of disease. Idiopathic and symptomatic fevers form two natural classes. The individuals of the one class differ essentially both in their nature and symptoms from those of the other, while the similarity amongst themselves is such, that each class may be regarded as but one disease, greatly varied indeed, but whose nature, and consequently the general principle of whose treatment, never change.

He would not have been obliged either to exclude from his system the simple inflammations, or to arrange the genera of this order among febrile diseases*.

He would also have avoided smaller inaccuracies. He would not have found it necessary to employ the name of a disease before he had defined it, nor to arrange as a genus under an order, a disease the name of which he finds it necessary to use in the definition of that order. In short,

* Dr. Cullen might have formed an order in the Locales for simple inflammations ; but introducing them into any part of his system after the Phlegmasiæ would have only rendered the difficulty of forming an accurate definition of the Phlegmasiæ the more apparent. The only means of avoiding the difficulties which have been mentioned seems to be making the Locales the first class of diseases.

general, as well as local diseases, would have admitted of a more systematic arrangement.

Such are the circumstances which have induced me to divide Dr. Cullen's Pyrexia into two classes, the idiopathic and symptomatic fevers. I am now to make a few nosological observations on each of these classes.

The former, which is the subject of the following work, I have already had occasion to observe, comprehends only two of the orders of Dr. Cullen's Pyrexia, the Febres and Exanthemata.

However different the symptoms which distinguish the different genera of idiopathic fevers, there are certain symptoms common to all of them, and which may therefore be allowed to constitute fever, or in other words to form the definition of this class of diseases. Let us endeavour to determine what these symptoms are.

We are informed by Van Swieten, that Boerhaave, with much labour, collected from a great variety of authors all the symptoms which they had observed in fevers. From these he threw out such as did not appear in all fevers, and was much surprised to find the catalogue of symptoms common to all kinds of fever so short. It was reduced to the three following, shivering, or, as it has been termed, rigors, a frequent pulse, and heat.

But it may be observed that no one even of these symptoms constantly attends fever. The shivering is almost always confined to the commencement of the fever, or to that of its exacerbations, and sometimes is not observed at all.

Many of the ancients, although they did not wholly overlook the state of the pulse, as appears from several passages in the works of Hippocrates, seem to have regarded the last of the three symptoms just mentioned (the increase of temperature) as that which constitutes fever.

It is well known, however, that in certain kinds of fever the temperature of the body often falls below the natural standard. In the commencement of the cold stage it generally does so, and very often in the progress of that species of fever which has been termed the low nervous fever. The shivering, or sense of cold, then, and increase of temperature, are symptoms, not only not present at every period of these diseases, but not even at any period essential to fever.

Thus one symptom only remains to constitute the disease, a frequent pulse, and to this conclusion Boerhaave was led. But although a frequent pulse is the most constant of all the symptoms of fever, it is not universally present in this disease; in malignant fevers the frequency of the pulse is often observed to be no greater, and sometimes considerably less, than natural. It has been found to beat only 40, sometimes only 30, times in a minute. Besides, by considering fever as present wherever the frequency of the pulse is increased, we should class together the most dissimilar affections; fever and palpitation, for example.

The inference from these observations is plain, that no one symptom can be regarded as characteristic of fever. We ascertain its presence, not by attending to one, but several of its symptoms. In selecting the train of symptoms which characterise it, there is much difficulty. The following is the selection made by Dr. Cullen: languor, lassitude, and other signs of debility, followed by Pyrexia (that is, by rigors, frequent pulse, increased heat, and derangement of the functions, particularly a want of vigour in the limbs,) without any primary local affection.

Although I quote this, as the best definition of fevers which has been given, even its author confesses its faults, but pleads justly the difficulty of the subject. The most exceptionable part is the definition of Pyrexia contained in it.

Fever, it has just been observed, is not always attended by rigors; even increased heat is not uniformly present during its progress. Increased heat, however, it is necessary to retain as a part of the definition of fever, since it is very generally present, and the frequent pulse, without increased heat, often attends diseases of a very different nature. The derangement of the functions, particularly the debility of the limbs, does not very properly enter into the definition; since the derangement of some of the functions is observable in almost all diseases, and the derangement particularly specified (the debility of the limbs) is frequently absent in fever, in which indeed the vigour of the whole system is often preternaturally increased. For by Pyrexia in this definition, Dr. Cullen does not mean to express the symptoms of the commencement of fever only.

From the nature of his arrangement Dr. Cullen found it necessary so to define Pyrexia as to express the characteristic

features of a great variety of diseases. If we lay aside this term, we shall considerably lessen the difficulty of giving such a definition of idiopathic fevers as shall apply to all cases. They may be defined as follows:—*Prægressis languore lassitudine, et aliis debilitatis signis; pulsus frequens, calor auctus, sine morbo locali primario.* This is the definition of Dr. Cullen's first order of the *Pyrexia*, with this change, that *pulsus frequens, calor auctus* is inserted, instead of *Pyrexia*. He uses the definition as the character of an order, only comprehending fevers properly so called. I shall use it, with this alteration, as the character of a class, comprehending both fevers properly so called, and the *Exanthemata*.

Under this class may be arranged three orders; *Intermitting and Remitting Fevers*; *Continued Fevers*; and the *Exanthemata*.

Dr. Cullen gives the following definition of intermitting and remitting fevers:—"Febres miasmata paludum ortæ, paroxysmis pluribus, apyrexia, saltem remissione evidente, interposita, cum exacerbatione notabili, plerumque cum horrore, redeuntibus, constantes; paroxysmo quovis die unico tantum."

In this definition Dr. Cullen, very properly, I think, includes both intermitting and remitting fevers; because (as he observes) they arise from the same cause, are cured by the same means, and in the same person the fever often changes from the one form to the other.

"Paroxysmo quovis die unico tantum" seems exceptionable, as both in intermitting and remitting fevers there are often two paroxysms in the same day.

Without this part, the definition is sufficient, we shall find, to distinguish the fevers arranged under it. It is simple and short, at once directing the attention to the leading features of the disease. The species and varieties of this order I shall presently have occasion to consider at some length.

The second order of idiopathic fevers, that is, the second section of Dr. Cullen's first order of the *Pyrexia*, (continued fever) he defines, "*Febres sine intermissione, nec miasmata paludum ortæ, sed cum remissionibus et exacerbationibus, parum licet notabilibus, perstantes, paroxysmis quovis die binis.*"

The latter part of this definition, "*paroxysmis quovis die binis,*" must be regarded as exceptionable, this cir-

cumstance being seldom distinctly observed in continued fevers.

Dr. Cullen observes, that since continued fevers consist of repeated paroxysms, it may sometimes be difficult to distinguish them from remitting fevers; and this difficulty may seem increased by the change I have proposed in his definitions. The truth is, that these two kinds of fever run into each other. The only difference, which can be specified between remitting and continued fever, is that of the degree and length of their remissions. There is no symptom of the one, which does not occasionally attend the other. In this, however, and similar difficulties, we shall find, that when the symptoms of two diseases imperceptibly run into each other, the same is true of the modes of practice suited to them; so that a perfect diagnosis between them is unnecessary, for nosology is only important in proportion as it is subservient to practice.

The ancients mention fevers, in which there was no remission. Such, however, are seldom if ever observed. It is therefore to fevers with slight remissions, that we apply the term continued.

Continued fevers have long been divided into acute and chronic; and many disputes have arisen concerning this division. In acute fevers the symptoms are more violent than in chronic, and the disease is sooner terminated. Some have confined the term acute, to those fevers which terminate before or on the twentieth day. Others extend this period to sixty days; and Galen divides the acute fevers into acute, which extend to any day between the seventh and the twentieth day; and peracute, which terminate before or on the seventh. The peracute he subdivides into exactly peracute, which are not protracted beyond the fourth day; and not exactly peracute, which extend to the seventh. The acute he in like manner subdivides into, exactly acute, which terminate on the fourteenth day, and not exactly acute, which are protracted to the twentieth. All these days, we shall find, were regarded by the ancients as chief critical days*. These divisions are altogether arbitrary, and of no use in practice.

The division of continued fever into Inflammatory and Nervous, or, as they have been termed, Synocha and Ty-

* Days on which the great changes of fevers most frequently happen.

phus, is one of more consequence, and at present more generally adopted by physicians. It points out the only species of continued fever, which can be well defined; and greatly assists us in laying down the mode of treatment in this varied disease.

The following is Dr. Cullen's definition of Synocha, "*Calor plurimum auctus, pulsus frequens, validus, et durus, urina rubra, sensorii functiones parum turbatae.*" Many objections might be made to this definition, but it would be difficult to give a better. In forming it, Dr. Cullen chiefly kept in view the circumstances which distinguish this species of fever from the Typhus; and he rather gives the symptoms of the more strongly marked cases of Synocha, than of Synocha in general.

The same observation applies to the definition of Typhus, "*Morbûs contagiosus, calor parum auctus, pulsus parvus, debilis, plerumque frequens, urina parum mutata, sensorii functiones plurimum turbatae, vires multum imminutae.*"—Nor does it seem possible to avoid this inaccuracy, since as Synocha and Typhus insensibly run into each other, it is only in the more strongly marked cases, that they can well be distinguished.

A simple Synocha or Typhus is a fever which we rarely, if ever, meet with. For however high the inflammatory symptoms at an early period may be, those of Typhus always, at least in this country, sooner or later supervene; and however well marked the symptoms of Typhus may be in the progress of fever, in almost every case the first symptoms are more or less inflammatory.

On this account Dr. Cullen makes a third species of continued fever, which he terms Synochus; and defines, "*Morbûs contagiosus, febris ex Synocha et Typho composita; initio Synocha, progressu, et versus finem, Typhus.*"

The fevers mentioned by authors, under the names Synocha and Typhus, are in fact no other than varieties of the Synochus. When the symptoms of debility predominate, the fever has been termed Typhus; when the inflammatory symptoms are most remarkable, and present through the greater part of the disease, it has been called Synocha.

There are other varieties of continued fever, however, which are better marked. Eruptions of different kinds often appear in this disease; and as they seem to modify its symp-

toms, or at least, as each particular eruption is most apt to shew itself when a certain train of symptoms is present, they may serve to distinguish some varieties of it.

When physicians became acquainted with the Exanthemata; when they had observed that a certain train of febrile symptoms is always followed by an eruption of a particular kind, and that every one infected by a person labouring under such a fever is seized with a similar train of febrile symptoms, followed by the same eruption, they seem to have inferred, that wherever an eruption occurs in continued fever, preceded by, or attended with, a particular train of febrile or other symptoms, the disease is an Exanthema; that it is of a nature different from common continued fever; and that when communicated from one person to another, it would always be attended with its peculiar symptoms and eruption, as happens in the small-pox and measles. Thus they regarded the Petechial fever, thus they still regard the Miliary, the Aphthous, and several other varieties of fever, as Exanthemata.

A more particular attention to these diseases has long ago (at least in this country) convinced physicians of their error, with respect to the Petechial fever; and they begin to suspect it with respect to several others, which nosologists at present class with the Exanthemata. Let us consider the pretensions of each of those to the place it holds in our systems of nosology.

Although Dr. Cullen gives the Miliary fever a place among the Exanthemata, he expresses his doubts whether it properly belongs to this order; or I may rather say, he adduces sufficient arguments to prove that it does not.

“*Inter medicos, speciatim Viennenses, de indole morbi miliaris nuper acriter disputatum est; et imprimis an unquam idiopathicus, an vero semper symptomaticus sit, certatim quæritur. Quod nunquam idiopathicus fit, præter opinionem medicorum, a medio seculi decimi septimi in hunc fere diem, omnium, et contra sententiam medicorum hujus ævi quorundam spectabilium, affirmare non ausim; sed cum experientiam in hac re sæpe fallacem, at medicos plerosque imitatorum servum pecus fuisse noverim, dubitare cogor; et, utcunque sit, morbum miliarem plerumque symptomaticum fuisse, ex observatione propria, per multos annos frequenti, certo novi. Nunquam contagiosum, nec manifesto epidemicum, quibusdam licet temporibus solito frequentiore, vidi. Morbis febrilibus quibuscunque, tum inflammatoriis tum*

putridis, aliquando adjungitur; in nullis tamen, nisi regimine calido et sudoribus præuntibus, ortum, et in pluribus, regimine temperato, et sudoribus vitatis, morbum, alias expectandum, prorsus vitatum observavi. In quibusdam corporis partibus quasi arte excitatum aliquoties novi. Denique, cum contagionum specificarum plerarumque indolem materia, si qua datur, miliaris nequaquam imitetur, tum quod certo morbi die eruptionem non efficiat, tum quod non semel tantum, sed sæpius in vitæ ecursu, hominem afficiat*. De hujus igitur materiæ natura specifica, vel ad morbum quemvis idiopathicum gignendum apta, valde dubito. In hac re mecum sentientem experientissimum et peritissimum CAROLUM WHITE habere mihi gratulor. Vide *White on the Management of Lying-in Women*†.

Dr. Cullen, to overcome the difficulty as far as possible, consistently with the place it holds in his nosology, divides the miliary fever into two varieties, the idiopathic and symptomatic. The former, he confesses, he mentions, not from his own observations, but those of foreign writers. All the cases of miliary fever which he himself saw, he refers to the latter variety‡.

But I have found no facts in the writings of any foreign author who treats of the miliary fever, capable of warranting this division, or of setting aside Dr. Cullen's mode of reasoning with respect to any of the cases of which they give an account§.

* The miliary fever is even most apt to attack those who have formerly laboured under it. See Vogel de Cog. et Cur. Morb.

† See Cullen's Synop. Nos. Meth. genus 32.

‡ It is when the miliary eruption is of that kind which has been called the white miliary eruption, that the disease is supposed to have the best claim to be considered an Exanthema; but its claim seems no better founded than that in which the red miliary eruption appears; both kinds frequently appear on the same patient at the same time.

§ The principal foreign authors I allude to are Hoffman in his *Opera Physico-Medica*, Van Swieten in his *Comment. in Aph. Boerhavii*, Lieutaud in his *Synopsis Praxeos Medicinæ*, De Haen in his *Ratio Medendi*, Burserius in his *Institutiones Medicinæ Practicæ*, Vogel in his work de Cog. et Cur. Morb., Quarin in his excellent work de Febribus, Allionius in his treatise de Miliarum Origine, and Planchon in his work de la Fievre Miliare. The following works also, Welsch de Novo Puerper. Morbo, Fantonus de Febre Miliare, Fischer de Febre Miliare, Gastallier sur la Fievre Miliare des Femmes en Couche, have found their way to this country, but I have not been able to meet with them. I was the less anxious to procure these treatises,

The miliary eruption has doubtless now and then attended the prevailing fever; but this is also true of Petechiæ. A variety of circumstances, improper treatment for instance, (and we have reason to believe that this is the circumstance which has most frequently operated) may render the inhabitants of any particular neighbourhood subject to the miliary eruption, while labouring under fever. Can we suppose any thing peculiar in the fever produced by a fractured limb? Yet cases of this kind are often attended by the miliary eruption. In what fever does it appear so frequently as in the Puerperal, between which and the Exanthemata there is surely very little analogy? This eruption, in short, appears in all febrile diseases, when its peculiar causes happen to have been applied. It appears in the Exanthemata, the Phlegmasiæ, the Hæmorrhagiæ, and Profluvia, as well as in fevers properly so called; nay its appearance we shall find is not even confined to febrile diseases. It seems to be nothing more than an accidental symptom, which is most apt to occur in fever, but may appear in any disease whatever. And, like Petechiæ, it also sometimes appears unaccompanied by any other disease*.

There are nearly the same reasons for rejecting the Aphthous, as the miliary fever, from the number of the Exanthemata. "I doubt (says Dr. Cullen) whether or not the Aphthæ ought to be arranged under the Exanthemata. "Most cases of Aphthæ which I have seen (he observes) "appeared without fever; and if at any time a fever did "attend the Aphthæ infantum, the former generally super- "vened upon the latter. A fever indeed (he continues) "does accompany the Aphthæ of adults, but this fever is of "no particular kind, and the Aphthæ generally appear to- "wards its termination; nor as far as I know is there any "fever well defined, or even mentioned by medical writers, "which constantly attends Aphthæ."

The Aphthæ infantum is an idiopathic affection, and this

as I found, after perusing what is said of the miliary fever by a few of the authors just mentioned, there was little to be met with in the works of others but a repetition of the same observations. It must always happen that after six or eight authors, who have been conversant with a disease, have given a copious account of it, few important facts relating to it will remain to be mentioned by others.

* See Huxman on Fevers, White on the Diseases of Lying-in Women, Burserius Institutiones Medicinæ Practicæ, &c.

form of the disease has sometimes appeared in adults *. But a disease unattended by fever does not certainly belong to the order of Exanthemata. We have to consider how far those cases in which Aphthæ appear in fever deserve a place in this order.

I have just quoted Dr. Cullen's observation, that Aphthæ do not appear in a fever distinguished by any particular symptoms, as the eruptions in the Exanthemata are observed to do †. They appear in all kinds of fevers, in the symptomatic as well as the idiopathic. In many of the former indeed they are more common than in the latter. Sydenham declares, that there is no disease in which he found Aphthæ so common as in dysentery, and in those fevers on which dysentery had supervened. We know that this affection is one of the most common forerunners of death in Phthisis, &c. With what propriety then are Aphthæ ranked among the Exanthemata? We shall even find, when we come to consider them more particularly, that, when attended by common continued fever, they can generally be traced to causes different from those which produce the fever in which they occur; very frequently to affections of the primæ viæ, or suppressed sweats.

Dr. Cullen has also expressed his doubts respecting the propriety of ranking the Erysipelas among the Exanthemata; and regards the species which have been termed Erysipelas pestilens and Erysipelas contagiosum, as nothing more than Typhus attended by an Erythematic inflammation.

All the arguments urged for the exclusion of the miliary fever from the Exanthemata seem equally strong when applied to the Erysipelas: it is not a contagious disease; the

* Cases of this kind are mentioned by Boerhaave, by Ketelaer in his Treatise de Aphthis nostratibus, Arneman in his Commentatio de Aphthis, and others. Such cases, however, are extremely rare. Van Swieten lived for many years in a country where Aphthæ were very common, yet he never saw a case of Aphthæ in an adult not labouring under fever; and Dr. Cullen makes the same observation with respect to his own experience.

† Certain symptoms indeed generally precede all eruptions; but in the cases we are at present considering, the attending symptoms appear occasionally in all kinds of fevers, and at all periods of them. Whereas in the true Exanthemata, the fever from its commencement is of a peculiar kind, at least attended with peculiar symptoms.

eruption often appears, indeed, like those just mentioned, in contagious fevers, but it is not necessarily communicated with such fevers. Like the miliary eruption, it appears in various kinds of fever, in the symptomatic as well as idiopathic. External warmth and irritation are capable of producing the Erysipelas in the predisposed, as well as the miliary eruption. There is no particular period of the fever at which the Erysipelas shews itself; and with regard to its recurrence, it is even most apt to attack those who have formerly laboured under it.

We shall afterwards find, that there is another disease, in which the same kind of inflammation appears as in the Erysipelas, termed by Sauvages and Cullen (for other authors have used the word in a very indefinite sense) Erythema. The difference between the Erysipelas and Erythema is, that in the former, the inflammation supervenes on a fever; in the latter, the inflammation is the primary affection, and the fever merely its consequence. The Erysipelas seems to be nothing more than an Erythema, supervening on any kind of continued fever; and as such I shall consider it along with the other eruptions which appear in these fevers*.

* I have arranged the Erysipelatous fever among the varieties of Synochus, because, like those just mentioned, it has been arranged among the Exanthemata; but if the view I have here taken of it be just, and that it is so will I think more fully appear when we come to speak of its treatment, it should have no place in a system of nosology, since it is a combination of a Phlegmasia and continued fever; and it is of the combinations of symptoms, not of diseases, that nosology treats. It may be said, indeed, that as all the eruptions we have been considering occasionally appear unaccompanied by any other disease, the same objection holds against admitting the other varieties of Synochus into a nosological system. And this cannot be denied. But most of these eruptions appear so rarely as a distinct disease, and their appearance in continued fever, or rather the causes which produce them, so modify many of its symptoms without altering the nature of the fever, as we shall find the appearance of the Erythematic inflammation generally does, that it is useful in practice to regard those combinations as single diseases. The most methodical arrangement in a system of nosology is not always the most useful: for another proof of which I may refer to what was said of the definitions of Synocha and Typhus, in which we introduce symptoms not essential to these diseases, in order to draw a line of distinction which nature has not made, because the division is useful in the practice in fevers, and still more so in teaching the principles of that practice. Although, for the reasons just given, I have arranged the Erysipelatous fever as a variety of the Synochus, yet we shall find on considering it

The disease I am now speaking of is Dr. Cullen's first species of Erysipelas (the *Erysipelas vesiculosum*); the disease which he arranges as a second species of this disease differs from it considerably. This he terms the *Erysipelas Phlyctænodes*. It is the same which is termed by Pliny, *Zoster*; by Hoffman, *Zona ignea*; in English, the *Shingles**: it is certainly not very properly regarded as a species of Erysipelas; nor does its place in a system of nosology seem well ascertained.

Sydenham also ranks as a species of Erysipelas, the disease termed *Urticaria* (Dr. Cullen's 53d genus). This, however, we shall find differs essentially from Erysipelas, and seems to have a better claim to be regarded as an *Exanthema*.

Another disease to be regarded in nearly the same light with the foregoing is the *Pemphigus*, or vesicular fever. There is no particular kind of fever in which the eruption appears; there is no particular period of the fever at which it shews itself. Dr. Cullen says it appears on the first, second, or third day; Sauvages observes that it sometimes appears on the fourth; and Dr. Dickson†, who seems to be better acquainted with the disease than either of these authors, declares it may appear on any day.

The cases related by Salabert, in his *Observations des Fievres Inflammatoires*, are evidently cases of common continued fever, in which the vesicular eruption proved critical.

The celebrated Morton, the contemporary and rival of Sydenham, takes notice of this disease, but without particularly describing it. The name by which he calls it, however, seems to imply that he regarded it merely as a symptomatic affection, "*Febris Synocha cum vesiculis per pectus et col- lum sparsis.*"

more particularly, that it will be necessary to defer entering fully into its treatment till I come to speak of the *Phlegmasiæ*; because it partakes so much of the nature of a *Phlegmasia*, that the principles on which the practice in idiopathic fevers is conducted will not apply to it.

* See an account of this disease in the 2d vol. of Burserius's *Inst. Med. Prac.* in Schroeder de Feb. Erysip. in his *Opusc. Med.* in Vogel's *Prælect. Acad. de Cog. et Cur. Morb.* and Smith's *Essay on the different Species of Inflammation*, in the 2d vol. of the *Med. Communications*; see also Russel de Tabæ Gland. p. 124.

† See *Observations on Pemphigus*, by Dr. Dickson, Prof. of Medicine in the University of Dublin, in the *Transactions of the Royal Irish Academy* for 1787.

Dr. Cullen was but little acquainted with the Pemphigus, as appears both from what he says in a note, and from the definition which he gives of it, the most exceptionable perhaps in his nosology; yet the knowledge he had of it led him to doubt of its being an idiopathic affection. And all that Berseus says in favour of its being so is, that we must at least allow it to be idiopathic, when the eruption is unattended by fever*. This, he observes, frequently happens. In this country it is not unusual.

Like the foregoing eruptions, the vesicular eruption appears in other diseases as well as in fevers. We have a remarkable instance in which it accompanied a Phlegmasia (the Cynanche Maligna) in the Pemphigus Helveticus, of which there is an account in the *Acta Helvetica* by Dr. Langhans. Much difference of opinion has arisen among physicians respecting the nature of the disease described by Dr. Langhans, from their not admitting the vesicular eruption to be merely symptomatic; for, this granted, the difficulty is removed; we know that symptomatic eruptions appear in all kinds of fever, whether idiopathic or not.

I may also add, that the vesicular eruption, like some of the other symptomatic eruptions (Aphthæ, for instance), is not confined to the skin, but often attacks the œsophagus, stomach, and intestines; a circumstance which has not been observed of any of the eruptions of the true Exanthemata†. There is every reason to believe, indeed, that all the symptomatic eruptions, as well as the Aphthous and Vesicular, occasionally attack the stomach and intestines. That the Erysipelatous eruption does so, appears from what Dr. Cullen says of Gastritis and Enteritis. I have seen this eruption spread from the mouth and fauces to the stomach, and prove fatal. Of the miliary fever, Vogel observes, that the peculiar pricking felt in the skin when the miliary eruption is coming out, is also frequently at the same time felt in the intestines. And with respect to the petechial eruption, from what we know of its nature, there is every

* See a paper by Dr. Winterbottom, in the 3d vol. of *Medical Facts and Observations*, p. 10.

† It was once supposed that the small-pox was apt to attack the intestines; but since the publication of Cotunnus's *Treatise, de Sede Variolarum*, this is generally admitted to have been a mistake.

reason to believe that it may appear wherever there is a lining of cuticle.

The diseases we have been considering then, the Petechial, Miliary, Aphthous, Erysipelatous, and Vesicular fevers, are to be regarded merely as varieties of continued fever. After treating of continued fever in general, I shall consider each of them separately; that is, I shall point out the forms of continued fever in which these different eruptions most frequently appear, the peculiar symptoms which generally attend them, the causes which produce them, and the change which their appearance renders necessary in the treatment of the fevers in which they occur.

Petechiæ, it may be said, are improperly classed among these eruptions; being merely a symptom of debility, the consequence of morbid tenuity of the blood, and relaxation of the vessels. This, however, does not seem to be precisely the case; other circumstances than the presence of debility are requisite for their appearance. It often happens in Typhus, even where the debility is extreme, that no Petechiæ appear; this was the case, for instance, in the jail fever of Winchester, described by Dr. C. Smith; it is very frequently the case in the plague. Besides, Petechiæ are often observed where there are no signs of debility. Grant in his Treatise on the Fevers most common in London, Eller in his *Obs. de Cog. et Cur. Morbis*, and others, relate cases in which Petechiæ attended well-marked Synocha.

The second order of Idiopathic fevers, then, comprehends Synocha and Typhus, or the Synochus (for Synocha and Typhus are rather to be regarded as different stages of the Synochus, than different diseases) and its varieties, viz. the Synochus Petechialis, the Synochus Miliaris, the Synochus Aphthosus, the Synochus Erysipelatosus, and the Synochus Vesicularis; the definitions of which will be considered when I come to speak of them separately.

The third order of Idiopathic fevers comprehends the Exanthemata properly so called. The Exanthemata form the third order of Dr. Cullen's Pyrexia, and are defined by him, "*Morbi contagiosi semel tantum in decursu vitæ aliquem afficientes; cum febre incipientes, definito tempore apparent phlogoses, sæpe plures, exiguæ, per cutem sparsæ.*"

"*Semel tantum in decursu vitæ aliquem afficientes,*" though not strictly true of any of the Exanthemata, and

certainly very far from being true of some of them* ; yet as so much more characteristic of the true Exanthemata than of other eruptive fevers, seems properly admitted as part of the definition.

I have already offered my reasons for rejecting from this definition the term *Phlogoses* ; in place of which I shall use *Pustulæ*, which we must suppose to have been arranged, and consequently defined, among the *Locales*, which I have endeavoured to shew should form the first class of diseases.

The following then may be adopted as the definition of the third order of idiopathic fevers ; *Morbi contagiosi semel tantum in decursu vitæ aliquem afficientes, cum febre idiopathica incipientes, definito tempore apparent pustulæ, sæpe plures, exiguæ, per cutem sparsæ*. Under this order are arranged the *Variola*, the *Varicella*, the *Rubeola*, the *Scarlatina*, the *Pestis*, and the *Urticaria*.

The class of symptomatic fevers comprehends the three remaining orders of Dr. Cullen's *Pyrexia*, namely the second, fourth, and fifth, the *Phlegmasiæ*, *Hæmorrhagiæ*, and *Profluvia*, and may be defined,

Morbi locales primarii calore aucto, pulsu frequente.

Although I do not mean in the present work to enter on the consideration of symptomatic fevers, as I have been led to make some observations on the nature of those diseases in considering that of idiopathic fevers, I trouble the reader with the following observations, which will place in a clearer point of view what I have had occasion to say of them.

On the definitions and arrangement of this class of diseases, a few words will be sufficient ; but it will be necessary to premise some observations on that of the local affections which characterise them, and which frequently appearing unaccompanied by any other disease, should have a place in a system of nosology.

* The plague is generally admitted to attack the same person repeatedly : and there are many well-authenticated instances on record of all the other Exanthemata attacking the same person a second or third time, or oftener. See Burserius's *Inst. Med. Prac.* Rosen in Haller's *Disput. ad Morb. Hist. et Cur. Per. &c.*

Of the local Affection of the PHLEGMASIÆ.

Simple inflammation is of two kinds, the one vulgarly termed a pimple, the other a stain, blotch, or efflorescence.—Neither is included in Dr. Cullen's nosology. The former is different from his Phlegmon, the latter from his Erythema, both of which are febrile diseases. In the nosology of Sauvages pimples are mentioned in the definition of the Efflorescentiæ, the second order of his first class, Vitia. The definition of the order is, "Tumores humorales exigui gales, vel cutis elevatio per pustulas, papulas, phlyctænas varos, similesve asperitates." After giving this definition, Sauvages begins to explain the terms employed in it, demonstrating the imperfection of his arrangement, since pustules are not always symptomatic; Sagare makes them a genus.—They are defined by Sauvages, "Phyma parvulum apice ruptum." I shall adopt the term pustule from Sauvages, but not its definition, for reasons which will readily suggest themselves as we proceed.

With respect to the other species of simple inflammation, it is more difficult to find a technical name for it, which shall be unobjectionable. Such confusion of terms has crept into this part of medicine, that there are no less than three different affections known by the same names, and for each of which at least two names have been used. Before we can speak of these diseases, it is necessary to know the meaning of the terms we employ. A chronic inflammation of the skin, never occasioning fever, is called by some writers Erythema, by others Erysipelas, and by some the terms are used indiscriminately.—The same terms have been applied often with as little discrimination to another inflammation of the skin, which is a febrile disease. This disease (that is, the inflammation and [the fever it occasions) sometimes supervenes on simple fever, and to this combination, which I have already had occasion to mention, and which we shall afterwards consider at length under the name of Synochus Erysipelatosus, the same terms Erysipelas and Erythema have been applied.

Dr. Cullen, following Sauvages, confines the term Erythema to the diffuse cuticular inflammation occasioning

fever. By the term Erysipelas, we have seen, he expresses the combination of Erythema with simple fever; and with respect to the simple Inflammation, as there is no place for it in his nosology, he gives it no name. He has found much difficulty in his systems, both of nosology and practice, in distinguishing the Erysipelas and Erythema, and in the latter he is forced into a mode of arrangement which makes this difficulty conspicuous; for finding that in Erysipelas, the symptoms which precede the inflammation of the trunk and extremities are often hardly or not at all to be perceived, so that the disease has little or no appearance of an Exanthema, but that the preceding symptoms are generally considerable if the inflammation is about to appear on the face and head, the cause of which will be evident when we come to speak of Erysipelas; in treating of the disease he considers this case alone. "I suppose," he observes, "the Erysipelas to depend on a matter generated within the body, and which, analogous to the other cases of Exanthemata, is in consequence of fever thrown out on the surface of the body. I own it may be difficult to apply this to every particular case of Erysipelas, but I take the case in which it is generally supposed to apply, that of the Erysipelas of the face, which I shall therefore consider here." He thus refers other cases of the disease, if they are considered at all, to the order of Phlegmasiæ; so that if the inflammation in Erysipelas appears on the head, the disease is an Exanthema, if on the trunk and extremities, a Phlegmasia*. Besides, how shall we arrange the cases, in which the inflammation appears on the head without being preceded by any febrile symptom, for such we shall find occur? The question then still remains, how are we to distinguish the diseases termed by Dr. Cullen, Erysipelas and Erythema, for it is necessary to distinguish a disease evidently referrible to the Phlegmasiæ, and in which the mode of treatment, we shall find, is the same as in the other Phlegmasiæ, the fever being symptomatic; from the Erysipelas of Dr. Cullen, in which the fever is idiopathic, and must, as experience has taught, be treated as such, except as far as it has been modified by the appearance of the local affection.

The only way, as far as I can judge, to remove all difficulty, is to give a name to the simple inflammation, which is

* See Dr. Cullen's observations on Erythema, in his First Lines.

unattended by fever, and to the phlegmasia, the Erythema of Dr. Cullen, regarding his Erysipelas as a combination of this disease and fever, which never assumes the appearance of an Exanthema, and to which there is no good reason for assigning any name, we might as well give a name to the combination of Erythema, and worms: According to this view of the subject, I shall term the simple inflammation Erythema, and the phlegmasia, Erysipelas; the latter term will then be confined to the cases in which the local affection is preceded either by no symptoms of general derangement, or by such as frequently precede the local affection in the other phlegmasiæ.

In looking over the nosological systems of Sauvages, Linnæus, Vogelius, Sagare, Mc. Bride, and Cullen, we find the second species of simple inflammation mentioned as a genus only by Sagare. The Bacchia of Linnæus, Encausis of Vogelius, and Psydracia of Sauvages, seem to include it, but not very accurately.

Sagare terms it Bacchia, it is his ninth genus, and the fourth of the order *Efflorescentiæ*. The following is the definition of the genus, which is as readily understood without as with that of the order. “Maculæ rubræ vel efflorescentiæ nasi et partium adjacentium eidem, guttatae, plus minus prominentes, asperæ furfurascentes, diuturnæ; hoc genus ambigit inter maculas et efflorescentias.”

This definition does not very accurately apply to the inflammation we are speaking of, in which the surface is uniformly smooth. Such an inflammation, as Sagare here describes, frequently occurs, but were we to rank as a distinct genus every cutaneous inflammation which in any respect differs from every other, instead of two we might have fifty diseases of this kind. Our intention in a general system of Nosology is fully answered by dividing simple inflammations into two species, which comprehend all the others, if indeed there are any others well defined.

The Pustule and the Erythema are distinguished in the following manner.

In the former there is an evident swelling rising in the shape of a cone, the apex of which is sooner or later formed into a small cavity, filled with yellow matter called pus.—In the Erythema there is no swelling of this kind, although some general swelling of the part it occupies is always more or less observable; the surface is uniformly smooth, there is

no sudden elevation of the cuticle, and pus is never formed. Of both, redness is a characteristic symptom, but in the former it extends only to the little cone, and a short way around its base; in the other it is more diffuse, frequently spreading over the face and hands, the parts most frequently occupied by it, in a perfectly uniform manner. In both, the temperature is increased. They also agree in being frequently attended with some degree of pain, although this is by far the least constant symptom. In the Pustule it is more obtuse and pulsatory, in the Erythema often stinging.

All inflammations, then, for as I have just had occasion to observe, they are all included in these, agree in being attended with redness, increased temperature, pain, and swelling.—These Symptoms may therefore be assumed as the character of simple inflammation, forming an order of the Class *Locales*. “*Notæ vero inflammationis,*” Celsus observes, “*sunt quatuor, Rubor et Tumor cum Calore et Dolore.*” The genera arranged under this order, then, are the Pustule and the Erythema: the former may be defined,

Inflammatiō tumore circumscripto, in fastigium elevato, sæpe in apostema abeunte.—The latter,

Inflammatiō rubore uniformi serpente, tumore partis sæpe vix evidente.

As species of these should be arranged (as has been observed above) some diseases which Dr. Cullen, from the want of such an order, arranges among the *Pyrexiaë*.

The local affection in the *Phlegmasiæ*, we shall find, does not differ in its nature, but only in degree, and the parts of the body it occupies, from simple inflammation.

Of the Local Affections of the HÆMORRHAGIÆ and PROFLUVIA.

The local affections of these, as of the *Phlegmasiæ*, occasionally appear unaccompanied by fever. The local affection of the one consists of a flow of blood, of the other of an increase of some colourless secretion; and it is common, whether fever attend or not, to call the disease hæmorrhagy, catarrh, &c.

In a strict nosological point of view, however, the same observations apply to these affections as to Inflammations.—They frequently exist without fever, and should therefore have appellations, and a place in nosological systems to distinguish them from febrile diseases; and when the reader is

informed, that the plan of treatment when they are, and are not febrile diseases, is very different, he will be surprised that this distinction has not been generally made.

To avoid the introduction of new terms, I shall use Hemorrhagy and Profluvium to express the local affections, and to express the more complicated diseases, Febrile Hemorrhagy and Febrile Profluvium. These local affections belong to the fourth order of Dr. Cullen's last class, Locales, which I have given my reasons for thinking ought to be the first in a system of nosology. The order termed Apocenosés is defined, "*Fluxus sive sanguis aut humores alii, solito uberius profluens, sine pyrexia, impetive fluidorum aucto.*"

Hemorrhagy is his first genus which he terms profusio, and defines "*Fluxus sanguinis.*" For the local affection which I term profluvium, he has no term, his mode of arrangement not requiring such a term. It may be defined, *Excretio aucta naturaliter non rubra.*

Such are the observations which it seemed necessary to premise respecting the local affections of symptomatic fevers, previous to considering the definitions and nosological arrangement of those diseases.

Dr. Cullen's definition of the first order of symptomatic fevers, the Phlegmasiæ, (the second order of his Pyrexia), has been given.

According to the arrangement I have adopted, this definition must be made to include that of the class of which it is an order; and I think there are several reasons for rejecting the latter part of it, namely, "*Sanguis missus et jam concretus superficiem coriaceam albam ostendens.*" The appearance of the buffy coat on the blood, we shall find, neither uniformly indicates, nor uniformly attends inflammation. Besides, although it were a certain diagnostic, it should not enter into a nosological character, because its existence can only be ascertained after we have prescribed the remedy. I have already given my reasons for rejecting the term Phlogosis.

But as the other parts of the character are not always sufficient for distinguishing the diseases arranged under it, I would propose, instead of sanguis missus, &c. to insert pulsus durus, which more constantly attends the Phlegmasiæ, than the buffy coat of the blood. Febris Synocha is also perhaps exceptionable, as we shall find that in certain species

of Phlegmasiæ, the fever is Typhus; for example, in the Pneumonia Putrida of foreign authors, and the Cynanche Maligna. In the Gastritis and Enteritis too, notwithstanding hardness in the pulse, the fever certainly partakes more of the nature of Typhus than of Synocha. There is an evident inaccuracy in admitting Synocha into the definition of an order, when we find it necessary in several of its genera to call the fever Pyrexia typhodes. As far as I can judge, pulsus durus answers every purpose which Synocha can serve in this definition, and it seems proper for other reasons that pulsus durus should form a part of it.

I would propose the following definition of the Phlegmasiæ: Febres symptomaticæ, pulsu duro; quibus est pro morbo locali, vel inflammatio externa, vel dolor topicus simul læsâ partis internæ functione.

The Hæmorrhagiæ (the fourth order of Dr. Cullen's Pyrexia) form the second order of symptomatic fevers.

"Sanguis missus ut in Phlegmasiis apparet," cannot here be objected to, for all the reasons that "Sanguis missus et jam," &c. is omitted in the last definition. But as the buffy coat is not always observed in Hemorrhagies, and indeed may be regarded as belonging only to a particular species of them, as its degree is regulated by a variety of accidental circumstances, and as the definition, without this addition, is sufficient to distinguish the diseases arranged under it, it seems better to omit it. It is also necessary to alter the definition, in order to adapt it to the general mode of arrangement which I propose. It may be expressed in the following manner, Febres symptomaticæ, quibus est pro morbo locali, sanguinis fluxus absque vi externa.

The definition of the Profluvia, the third and last order of symptomatic fevers, (the last order of Dr. Cullen's Pyrexia) requires no further alteration than the mode of arrangement I follow renders necessary; Febres symptomaticæ, quibus est pro morbo locali, excretio aucta naturaliter non rubra*.

Such is the arrangement of febrile diseases which I would propose. It may be proper to present it to the reader at one view.

* I have changed sanguinea for rubra, because the menstrual discharge, though red, does not appear to be blood, but like all other healthy discharges, a secretion. When it is much increased, however, it seems always to be mixed with a large proportion of blood, and the disease, therefore, belongs rather to the Hemorrhagies than Profluvia.

ARRANGEMENT
OF
FEBRILE DISEASES,
AND OF THE
LOCAL AFFECTIONS WHICH CHARACTERISE CERTAIN
SPECIES OF THEM.

CLASSIS I.
LOCALES.

ORDO I.
INFLAMMATIO.

Partis rubor et tumor cum calore et dolore.

GENUS 1.
Pustula.

Inflammatio tumore circumscripto, in fastigium elevato, sæpe in apostema abeunte.

GENUS 2.
Erythema.

Inflammatio rubore uniformi serpente, tumore partis sæpe vix evidente.

ORDO II.
APOCENOSES.

Fluxus sive sanguis, aut humores alii, solito uberius profluens, sine pyrexia impetue fluidorum aucto.

GENUS 1.

Hæmorrhagia.

Fluxus Sanguinis.

GENUS 2.

Profluvium.

Excretio aucta naturaliter non rubra*.

CLASSIS II.

FEBRES IDIOPATHICÆ†.

Prægressis languore, lassitudine, et aliis debilitatis signis; pulsus frequens, calor auctus, sine morbo locali primario.

ORDO I.

FEBRES INTERMITTENTES ET REMITTENTES.

Febres idiopathicæ, miasmate paludum ortæ, paroxysmis pluribus, apyrexia, saltem remissione evidente, interpositâ, cum exacerbatione notabili, et plerumque cum horrore redeuntibus, constantes.

ORDO II.

FEBRES CONTINUÆ.

Febres idiopathicæ sine intermissione, nec miasmate paludum ortæ, sed cum remissionibus et exacerbationibus, parum licet notabilibus, perstantes.

GENUS 1.

Synocha.

Calor plurimum auctus, pulsus frequens, validus et durus, urina rubra, sensorii functiones parum turbatæ.

* I here of course enter no further on the Class Locales, than it is connected with febrile diseases.

† A single word would be preferable to the circumlocutions Febris Idiopathica and Febris Symptomatica, but I wished to avoid the introduction of new terms

GENUS 2.

Typhus.

Morbus contagiosus, calor parum auctus, pulsus parvus, debilis, plerumque frequens, urina parum mutata, sensorii, functiones plurimum turbatæ, vires multum imminutæ.

GENUS 3.

Synochus.

Morbus contagiosus, febris ex synochâ et typho composita; initio synocha, progressu et versus finem, typhus.

Species 1.

Synochus Simplex.

Species 2.

Synochus Petechialis.

Species 3.

Synochus Miliaris.

Species 4.

Synochus Aphthosus.

Species 5.

Synochus Erysipelatosus.

Species 6.

Synochus Vesicularis.*

ORDO III.

EXANTHEMATA.

Morbi contagiosi, semel tantum in decursu vitæ aliquem afficientes, cum febre idiopathica incipientes; definito tempore apparent pustulæ sæpe plures, exiguæ, per cutem sparsæ.

GENUS 1.

Variola.

* The definitions of those species, and of the following genera, shall be considered when I come to treat of them separately.

GENUS 2.

Varicella.

GENUS 3.

Rubeola.

GENUS 4.

Scarlatina.

GENUS 5.

Pestis.

GENUS 6.

Urticaria.

CLASSIS III.

FEBRES SYMPTOMATICÆ.

Morbi locales primarii, calore aucto, pulsu frequente.

ORDO I.

PHLEGMASIÆ.

Febres symptomaticæ, pulsu duro; quibus est pro morbo locali, vel inflammatio externa, vel dolor topicus simul læsâ partis internæ functione.

GENUS 1.

Phlegmon.

GENUS 2.

Erysipelas.

GENUS 3.

Ophthalmia.

GENUS 4.

Phrenitis.

GENUS 5.

Otitis.

GENUS 6.

Cynanche.

GENUS 7.

Pneumonia.

GENUS 8.

Carditis.

GENUS 9.

Peritonitis.

GENUS 10.

Gastritis.

GENUS 11.

Enteritis.

GENUS 12.

Hepatitis.

GENUS 13.

Splenitis.

GENUS 14.

Nephritis.

GENUS 15.

Cystitis.

GENUS 16.

Hysteritis.

GENUS 17.

Rheumatismus.

GENUS 18.

Podagra.

ORDO II.

HEMORRHAGIÆ.

Febres symptomaticæ, quibus est pro morbo locali, sanguinis fluxus absque vi externa.

GENUS 1.

Epistaxis.

GENUS 2.

Hæmoptysis.

GENUS 3.

Hæmorrhoids.

GENUS 4.

Menorrhagia.

GENUS 5.

Hæmatemesis.

GENUS 6.

Hæmaturia.*

ORDO III.

PROFLUVIA.

Febres Symptomaticæ, quibus est pro morbo locali, excretio aucta naturaliter non rubra.

GENUS 1.

Catarrhus.

GENUS 2.

Dysenteria.

* The Hæmatemesis and Hæmaturia, regarded by Dr. Cullen as always symptomatic, are sometimes, though rarely, idiopathic. I have seen the Hæmaturia idiopathic. The Cystirrhagia (his last species of Hemorrhagy) is never perhaps idiopathic.

INTRODUCTION

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APPENDIX

Appendix A

Notes on the text, and other matters of interest to the reader.

Notes B

Notes C

Notes D

Notes E

The following notes are intended to assist the reader in understanding the text, and are not intended to be a substitute for the text itself.

The following notes are intended to assist the reader in understanding the text, and are not intended to be a substitute for the text itself.

ON FEVERS.

IDIOPATHIC fevers, it has been observed in the Introduction, are distinguished by the following symptoms: languor, lassitude, and other signs of debility, followed by a frequent pulse and increased heat, without any primary local affection. This class comprehends three orders, Intermitting and Remitting Fevers, Continued Fevers, and the Exanthemata.

BOOK I.

OF INTERMITTING AND REMITTING FEVERS.

ACCORDING to the definition given in the Introduction, intermitting and remitting fevers appear in repeated paroxysms returning with an evident exacerbation, and generally with shivering, complete apyrexia, or at least an evident remission being interposed. I am now to consider the phenomena of these diseases more fully.

CHAPTER I.

Of the Species and Varieties of Intermitting and Remitting Fevers.

INTERMITTING and remitting fevers have long been divided into Quotidians, Tertians, and Quartans, that is, fevers whose

paroxysm returns every day, every second day, and every third day*.

Hippocrates mentions intermittents which returned on the fifth, seventh, or eighth day. Boerhaave says he saw a Septenary; and Van Swieten saw a Quartan change to a Quintan. Many similar observations have been made. Bursarius enumerates many authors who saw Quintans, Septenaries, and Octans, several who met with fevers returning on the ninth, the tenth, and even the fourteenth or fifteenth day. We also read of fevers which are said to have returned once a month, once in two months, &c. These have been termed *Menstruæ*, *Bimenstruæ*, &c. and some authors even speak of fevers which returned yearly, termed *Annuæ*.

How far the observations of those who mention fevers with such intervals are accurate, it is difficult to say; on comparing them with the observations of others, we cannot help suspecting their accuracy. Galen, whose practice was more extensive perhaps than that of any other physician, never saw a fever with a longer interval than a Quintan, and very rarely this†. The particular state of the weather at certain times of the year, by producing fever in the predisposed, often gives rise to the appearance of an annual intermittent. But in such cases the fever is of the continued kind.

In some intermittents the return of the paroxysm is irregular, that is, their revolutions are not performed in equal times. These are considered by Dr. Cullen as varieties of the Tertian and Quartan. They have been term-

* The interval or period, it must be remembered, is the space of time occupied by what is called a complete revolution of the fever, that is, the time from the accession of one fit to that of the next. And when physicians talk of a Tertian, Quartan, &c. they count from the beginning of a revolution. Thus, in a Tertian, the day on which the fever appears is the first day: the next, the second; and the next, on which the fever again takes place, the third. Some confusion of names has arisen from not attending to this mode of reckoning.

For the sake of brevity I shall use the term intermitting fever to express both intermitting and remitting fever, except where the contrary is specified.

† Even the Quintan has been suspected by later writers to be a variety of the Tertian.

ed Erratica Quintana, Septana, Octana, Nonana, Lunatica*.

Each intermittent has also been divided into Benigna, Maligna or Corruptiva, Primaria, Secundaria or Symptomatica, Periodica; Partialis, that is, affecting the body partially; Sporadica, Endemica and Epidemica. Such divisions (as may be inferred from the meaning of the terms) are quite useless.

Certain symptoms, coma, for instance, syncope, convulsions, an efflorescence on the skin, much sweating, great inquietude, nausea, vomiting, delirium, &c. have been assumed as a foundation for a division of Intermittents; hence the names Elodes, Assodes, Syncopalis, &c. This division is equally useless.

The same may be said of the division of intermittents, founded on their being accompanied with other diseases; Scurvy, Syphilis, Worms, Dysentery, Epilepsy, Gout, &c. and of that, on the nature of the remote cause. There is very little room, we shall find, for any division of this kind.

Of the various species of intermittents, it will be necessary to consider particularly only the three first-mentioned, the quotidian, tertian, and quartan. The others have not been accurately observed, very rarely occur, and are supposed by many, and not without reason, to be only varieties of these.

SECT. I.

Of the Varieties of the Tertian.

In considering the varieties of intermittents, it is proper to begin with the Tertian, because its varieties have been better marked, and are more numerous, than those of the Quotidian and Quartan. It is of such frequent occurrence, indeed, that many writers are of opinion that all fevers, whether continued or intermitting, are only varieties of this †.

The Tertian is defined by Dr. Cullen, "Paroxysmi similes

* There are many fevers of this kind mentioned in the works of Et-muller, Van Swieten, De Haen, by different authors in Haller's Disp. ad Morb. Hist. et Cur. Pert. &c.

† Dr. Fordyce's first Dissertation on Simple Fever.

“*intervallo quadraginta octo circiter horarum, accessionibus meridians.*”

The Tertian, whose paroxysm does not exceed twelve hours, is called the true simple Tertian; that whose paroxysm exceeds twelve hours, is called the spurious simple Tertian. The former frequently comes on about the middle of the day, and goes off the same evening; the other comes on earlier, and often lasts for eighteen hours. It is an observation as old as Hippocrates, that the paroxysms of Tertians, as well as other intermittents, are less frequently protracted when the patient is young, his general health good, and particularly when he is not troubled with visceral obstructions.

The Tertian varies in the frequency of the recurrence, as well as the length of its paroxysms; instead of every second day, it sometimes returns every day; it is then distinguished from the Quotidian by its alternate paroxysms being similar, but more or less severe, in all, or some of their stages, making their attack at an earlier or later time of the day, &c. than the paroxysms of the intervening days. When the paroxysms recur in this way, the fever is termed *Tertiana duplex*. It has been observed that the most severe fit is followed by the most complete apyrexia. Double Tertians, if the fit does not exceed twelve hours, are termed true double Tertians; when it exceeds twelve hours, spurious double Tertians.

When the fits are so protracted that one begins almost as soon as the preceding fit ends, the fever has been termed *subintrant*, or *sub-continued*. *Subintrant* fevers are almost always remittents, complete apyrexia rarely taking place in them.

The Tertian sometimes returns twice every second day, the intermediate day having no paroxysm; it is then termed *Tertiana duplicata*.

It sometimes returns twice every second day, while one paroxysm takes place on the intermediate day; the fever is then termed *Tertiana triplex*. And Tulpius relates a case of the *Tertiana quadruplex*, which has escaped the observation of most authors, in which two paroxysms take place every day*. It is still to be remembered that the Tertian type

* The case mentioned by Tulpius supervened on a double Tertian. See his *Observationes Medicæ*, I. iv. c. 46.

is discovered by the paroxysms being similar on alternate days. In a quadruple Tertian, the remissions must be extremely slight, and the disease consequently must nearly assume the continued form.

When a single paroxysm takes place every day, but the remission between the first and second paroxysm is more considerable than that between the second and third, and so on *, the Tertian has been called *Hæmitritæus* or *Semitertiana*. Authors, however, do not employ these terms in the same sense †.

The interval of the Tertian, it was observed, is forty-eight hours, but sometimes it is rather less, the fit coming on earlier; and sometimes it is more, the fit coming on later. In the former case the fever is called an anticipating Tertian (*Tertiana prævertens*); in the latter, a postponing Tertian (*Tertiana tardans*). And Dr. Cleghorn has observed of the double Tertian, that the more severe fit often comes on a little earlier in each period, while the slighter fit returns at the same hour, or perhaps later.

It is remarkable, that postponing agues, after the accession of the paroxysm is postponed to eight o'clock in the evening, frequently have their next accession early in the morning of the day following that on which the fever should have returned; and in like manner, after an anticipating paroxysm has occurred at eight o'clock in the morning, the next accession is often on the evening of the day preceding that on which it should happen. A postponing intermittent is a safer fever than an anticipating one.

* This indeed is generally the case in double Tertians; but when it is more remarkable than usual, it has given rise to a particular division of this fever.

† Celsus, in his account of the *Hæmitritæus*, wholly overlooks the remission which takes place, according to the above definition, between the unequal and equal days. The sense in which others use the term *Hæmitritæus* differs still more widely from the above definition, and approaches very nearly to that given of the *Tertiana triplex*. It is used in this sense by Lommius in his *Observ. Medic. libri tres*, p. 22, and Eller in his *Observ. de Cog. et Cur. Morb. sect. 4*, p. 83.

SECT. II.

Of the Varieties of the Quartan and Quotidian.

The varieties of the Tertian having been considered at some length, a few words will be sufficient respecting those of the Quotidian and Quartan. The latter is defined by Dr. Cullen, "Paroxysmi similes intervallo septuaginta duarum circiter horarum, accessionibus pomeridianis."

Like the Tertian, it varies in the length of its paroxysms, and the manner and frequency of their recurrence. There are sometimes two paroxysms every fourth day; the fever is then called *Quartana duplicata*. Sometimes three every fourth day; it is then called *Quartana triplicata*. Sometimes, of the four days, the third only is without a paroxysm; a single paroxysm taking place on the first, second, and fourth days, each paroxysm being similar to that which occurred on the fourth day before it; the fever is then called *Quartana duplex*. The paroxysm returns sometimes every day; it is then called *Quartana triplex*.

The following is Dr. Cullen's definition of the Quotidian, "Paroxysmi similes intervallo viginti quatuor circiter horarum, paroxysmis matutinis."

This fever varies chiefly in the length of its paroxysms, and the state of the patient between them. These are the only ways in which Celsus regards the Quotidian as varying. According to Burserius, however, it varies also in having one, two, or even three paroxysms in the day; and these varieties he terms the simple, double, and triple Quotidian. But a Quotidian with the appearance of two or three paroxysms in the day, (for they are never very distinctly marked) is not to be distinguished from a continued fever. The terms anticipating, postponing, subintrant, &c. applied to the Quartan and Quotidian, are employed in the same sense as when applied to the Tertian.

All these fevers, it may be observed, are said in the definitions to make their attack in the day time. The Quotidian in the morning, the Tertian at noon, and the Quartan in the afternoon. It is remarkable of all fevers, that nine per-

haps in ten make their attack between eight o'clock in the morning, and eight in the evening. This observation is curiously illustrated by what is said above of anticipating and postponing agues.

CHAPTER II.

Of the Symptoms of Intermitting and Remitting Fevers.

THESE present so great a variety, that it will be necessary, for the sake of perspicuity, to consider them under different heads. In the first Section, I shall give a detail of the symptoms which more properly belong to intermitting and remitting fevers. In the second, I shall point out what may be termed the anomalous symptoms of these diseases; in the third, the symptoms which characterise the different species, or types as they have been called; in the fourth, the manner in which they assume more or less of the continued form; in the fifth, the diseases with which they are most frequently complicated; and in the last, I shall more particularly consider the prognosis, which is collected from what will be said under all the preceding heads.

SECT. I.

Of the more essential Symptoms of Intermitting and Remitting Fevers.

A short account of these fevers has already been given in their definition.

A regular fit or paroxysm of an intermittent is divided into three stages. The most striking symptoms of the first stage are, a sense of cold and shaking, from which it is termed the cold stage. The second, characterised by an increase of temperature, is called the hot stage; and the chief symptom of

the last, which is termed the sweating stage, is a copious secretion by the skin.

1. *Of the Symptoms of the Cold Stage of Intermittents* *.

The commencement of the fit is often denoted by frequent yawning and stretching; and an uneasy weariness over the whole body. Sometimes the weakness is such, that the patient is scarcely able to support himself. He is restless, soon tired of the same posture, yet feels the exertion of changing it painful. His thoughts succeed each other more rapidly than usual, and he feels it irksome to bend his attention for some time to one object. The pulse is now weaker and sometimes slower than natural. At the commencement of these symptoms the patient does not always complain of cold, but his skin, especially in the extremities, often feels cold to another person. The nails soon begin to grow pale, the same gradually happens to the fingers, toes, lips, &c. and the skin becomes rough as when exposed to cold, and less sensible than usual. He now complains of a sense of cold, generally referred to the back, and a trembling soon after begins in the lower jaw, and gradually spreads over the whole body †.

In some cases the sense of cold is partial, being confined to one or more of the limbs; while at the same time the rest of the body perhaps glows with heat; and while the cold is

* That the following account of the symptoms of intermittents may be less complicated, I shall omit many which will be mentioned under the head Prognosis, and shall here give those which may be regarded as more properly constituting the disease. It is necessary to have recourse to this, or some other such means when the symptoms of diseases are very numerous, in order to avoid confusion; which is not to be done, when the reader is at once presented with a great variety of symptoms. We have sufficient proof of this in the manner in which the symptoms of diseases are generally laid down by foreign systematic writers, Lieutaud, Burserius, Frank, &c.

† The teeth strike against each other, often with such force, that instances are on record of the teeth of old people being knocked out by the cold fit of a Quartan. The trembling over the whole body indeed is sometimes so severe, that after the cold fit the patient has hardly strength to move his limbs. Even syncope is apt to occur during this stage when the strength has been much reduced. It seldom occurs repeatedly without endangering life. In very severe and long continued cold fits, particularly in old people, the body has been known to become stiff almost like that of a dead person.

severe on the surface, a burning heat is sometimes felt internally.

After the shaking has lasted for some time, the patient still complaining of cold, the warmth of his skin to the feeling of another person, or measured by the thermometer, gradually increases.

The pulse during the cold stage is small, frequent, sometimes irregular, and often hardly to be felt; the respiration frequent and anxious, accompanied with a cough, or interrupted by sighing; and there is a sense of weight and often of tightness and oppression about the præcordia, with great dejection of spirits.

The remembrance of things at other times desirable, now disgusts; and in the more severe cases the hurry of thought which attended from the beginning of the paroxysm increasing, some degree of delirium or stupor comes on. Delirium is a more frequent attendant on the hot stage, and stupor, or coma as it has been called, on the cold; the latter often appearing almost at the very commencement of the paroxysm.

Although neither delirium nor coma attend the cold fit, it is not uncommon for some of the senses to be considerably impaired; the patient often complains of numbness in the limbs; and in some instances both sight and hearing have been almost lost. When this happens, the stomach is generally loaded with bile*.

Pains of the back, limbs, and loins, or a sensation as if the body had been bruised, frequently attend this stage.

The extremities shrink so that a ring, at other times tight, drops off the finger. Ulcers often dry up, and tumours subside†.

* We know that the stomach is oppressed, when there is a bitter taste in the mouth, when the breath is fœtid, the tongue yellowish and covered with thick mucus, when the patient is troubled with eructations, anxiety, and a sense of oppression, pain or heat about the stomach, nausea, vomiting, heaviness or pain of the head, vertigo, thirst, and spontaneous diarrhœa. When these, or part of these, symptoms are present to a considerable degree, they form one of those useless divisions of intermitting fever above alluded to, termed *Intermittens Gastrica*. See a copious account of this species of intermittent, in the first volume of Frank's excellent Work, entitled *Epitome de Cur. Hom. Morb.*

† These effects are only temporary; during the hot stage, or after the paroxysm, tumours and ulcers return to their former state.

The natural functions are much deranged. The appetite ceases, and nausea and frequently a vomiting of bile succeed. In the intermittents, and still more in the remittents of sultry climates, and even of the warmer seasons of temperate climates, bile is often poured into the stomach and intestines in prodigious quantity. Sometimes the matter rejected by vomiting, is a ropy transparent fluid, nearly insipid; also frequently secreted in great quantity.

When there is much bile in the stomach and intestines, it is frequently (particularly towards the beginning of the hot fit) passed by stool as well as vomiting; bile indeed often predominates so much in these fevers, that the patient seems to labour under the jaundice, the serum of the blood and the urine giving a yellow stain.

The thirst is constant, the mouth and fauces dry and clammy. The urine, if not tinged with bile, is almost colourless and without cloud or sediment; and, if there be no bile in the primæ viæ, stools are uncommon at this period.

Such are the symptoms of the cold stage. In different cases, however, there is great variety. The foregoing symptoms are not always equally well marked, nor are all of them observed in any one case. Even the leading symptoms, the sense of cold, shaking, &c. have been absent, so that we can hardly say there was any cold stage.

Its duration varies much; sometimes it lasts four or five hours, or more, particularly in the intermittents of long periods; at other times not above half an hour, or even a shorter time, particularly in remittents, and especially in those approaching to the continued form. Its mean duration perhaps is between one and two hours.

The cold stage generally becomes shorter as the disease increases in violence, and, particularly, we shall find as it suffers a prolongation and reduplication of its paroxysms. See the third Section of this chapter.

2. Of the Symptoms of the Hot and Sweating Stages.

The hot stage seems sometimes to be induced by the vomiting which accompanies the cold stage; or the cold and shivering, after alternating for some time with short fits of heat, gradually abate, and more permanent heat is at length diffused over the body. The paleness and shrinking of

the skin, are succeeded by a general redness and fullness, which, however, give the appearance rather of turgescence than relaxation, the skin still remaining parched.

The heat in this stage often raises Fahrenheit's thermometer six or eight degrees above the natural temperature. Dr. Fordyce states 105° as the greatest degree of febrile heat which he has observed. Other writers mention higher degrees.

The pulse now becomes regular, strong, and full. And this state of it generally increases till the sweat breaks out. The breathing is deeper and more free, while the sense of tightness across the breast is in some measure relieved. In most cases, however, the breathing still continues more frequent and anxious than in health.

The sensibility which is impaired in the cold stage is morbidly increased in the hot. The patient cannot endure noise; and the light is offensive. The pains of the limbs continue; and the pain of the head comes on or increases, frequently accompanied with a throbbing of the temporal arteries and tinnitus aurium. The confusion of thought is upon the whole greater in this than in the first stage, and more frequently rises to delirium*.

The nausea and vomiting abate, but the thirst generally increases. The urine, from being limpid, often becomes high-coloured, but is still without sediment; in other respects the state of the natural functions is nearly the same as in the cold fit. Except when a diarrhœa attends, stools seldom occur till the end of the paroxysm, and then there is usually a loose stool.

Hemorrhagies most frequently occur in the hot stage. The blood flows from the uterus, from the rectum, if the patient happens to labour under the hæmorrhoids, sometimes from the lungs, from the ears, but most generally from the nose. If the hemorrhagy from the nose be free, it is almost always a favourable symptom, and sometimes brings immediate relief; but a few drops of blood falling from it, Dr. Cleg-horn says, he generally found to portend danger, and others have made the same observation.

* It is not uncommon at this period for the patient to complain of pain, heat, and tension, accompanied also with a sense of pulsation in the stomach and bowels; this, however, is a less frequent symptom, and seems generally to depend on the presence of some irritating matter, and sometimes indicates inflammation, in the primæ viæ.

The hemorrhagies which appear about the commencement of the hot stage, however, are generally the consequence of too rapid a circulation; and if not attended with relief are seldom to be regarded as unfavourable. When we consider the symptoms of typhus, I shall have occasion to notice another species of hemorrhagies, which seldom attend the fevers I am speaking of, till, in consequence of a debilitated state of the system, they have nearly assumed the continued form, and which are almost always unfavourable.

The appearance of hemorrhagies only assists us in judging of the event, when we attend to the symptoms which accompany them, and the parts of the body from which the blood flows. They may afford the most favourable or the most fatal prognosis. I shall only remark, at present, that when the excitement is considerable, they frequently prove favourable, and seldom do harm; when the excitement is too low, they are rarely beneficial, and often followed by the worst consequences.

When the fever has lasted for a considerable time, and the remissions have become less complete, especially when the epidemic is of a malignant nature; a variety of symptoms denoting great debility, and affording a bad prognosis, shew themselves. But these belong rather to continued, than intermitting, fevers.

The violence of the hot stage is not, at all times, proportioned to that of the preceding cold fit. Dr. Cleghorn informs us, that the most violent fevers he ever saw came on without any cold stage. It is often observed, however, that the longer the cold stage is, the more violent is the succeeding hot fit, the type of the fever being the same. With respect to intermittents of different types, this is by no means the case, but rather we shall find the contrary.

The hot stage is at length terminated by a profuse sweat. The sweating generally begins about the head and breast, extending gradually to the back and extremities. The unusual strength and frequency of the pulse now abate, and the breathing becomes free. The urine deposits a sediment like brickdust, which has been termed lateritious, or a light copious reddish or white sediment; and the patient generally falls into a sleep, while the symptoms of the fever abate, leaving him weak and wearied.

Although the patient, between the paroxysms of an inter-

mittent, is free from fever, he seldom enjoys perfect health, especially if they are severe. He appears dejected and drowsy, is easily fatigued, complains of want of appetite; if the skin is not parched, there is a greater tendency to sweat than in health, and vomiting and purging are not unusual at this period. In other instances the bowels are constipated. The more he is harassed by such symptoms during the apyrexia, the more reason there is to dread that the ensuing paroxysm will be severe.

All intermittents are apt to change to a more or less continued form, the tendency to become continued is unfavourable. The contrary tendency affords a good prognosis.

SECT. II.

Of the Anomalous Symptoms of Intermittent and Remitting Fevers.

The anomalous appearances of intermittents may be divided into four classes. The first comprehending those cases in which the order of the different stages constituting the paroxysm is deranged, or in which some of the stages are wanting. The second comprehending those cases in which the whole paroxysm or some of its stages are confined to particular parts of the body. The third those in which certain symptoms prevail so much as to alter considerably the appearance of the disease; and the last those in which other diseases or particular symptoms assume the form of an intermittent.

It is observed, by Cleghorn *, Senac †, and others, that the cold stage, particularly at an early period of the disease, is sometimes wanting. Sometimes it accompanies only some of the paroxysms: Frank ‡ remarks, that even the hot stage itself is sometimes scarcely perceptible; at other times, as in cases mentioned by Senac ||, the hot and sweating stages occur together. The hot fit, Frank observes, sometimes

* Dr. Cleghorn on the Diseases of Minorca.

† Senac de Febribus.

‡ Frank's Epitome de Cur. Morb.

|| De Febribus.

precedes the cold, and sometimes there is no sweating stage, the skin remaining dry during the whole paroxysm *. “The tumult and uneasiness (says Dr. Jackson †,) of intermittent fever, which terminate in most cases by sweat, went off in some by urine or stool, or perhaps declined in others without the appearance of any preternatural evacuation.” Dr. Cleghorn makes similar observations. And there are cases mentioned in the works of Burserius ‡ and Schenkii || in which the order of the stages was so far inverted, that, in one instance, the cold stage was the last, and in another, the sweating stage the first.

The second class of the anomalous cases of intermittents comprehends those in which the paroxysm, or some of its stages, is confined to particular parts of the body. Vogel § observes that the cold sometimes seizes on one member only, for instance, the arm, and is sometimes confined to one half of the head; nay, the whole fit is sometimes confined to a particular part of the body, which undergoes the symptoms of the cold, hot, and sweating stages, while the rest of the body remains unaffected ¶.

The third class comprehends those in which certain symptoms prevail so much, as to alter considerably the appearance of the disease.

“Sometimes one or two symptoms of the fit (Dr. Cleghorn observes) predominate with such violence that the rest are obscured or altogether eclipsed. Hence we so frequently meet with hemicranias, choleras, dysenteries, and chincough, returning regularly at stated periods; and several fevers of this class, upon account of some predominant symptom, have had particular names bestowed on them.” I have already had occasion to notice them. Dr. Cleghorn observes in another place, that intermittents are sometimes so complicated with pains of the head, breast, belly, back, or limbs, as to appear like a pleurisy, phrenzy,

* Senac de Febribus.

† Jackson on the Fevers of Jamaica.

‡ Burserii Institut. Med. Pract.

|| Schenkii Observat. Med. Rariores.

§ Vogel's Prælect. Acad. de Cog. et Cur. Morb.

¶ There is a striking instance of this kind related in the Nosologia Methodica of Sauvages.

hepatitis, or lumbago, particularly when the remissions are obscure.

I have known patients, says Stork*, who along with fever were every day, at a certain time, seized with palpitation of the heart, or great anxiety about the precordia, with fruitless and violent coughing; others were attacked with a violent pain of the whole or part of the head. Sir John Pringle observes†, that among the intermittents which prevailed in the army, there were some which attacked the head so suddenly, and with such violence, that the men, without any previous symptom of indisposition, ran about in a wild manner, and were believed to be mad till the solution of the disease, and its periodic return, shewed its real nature.

Dr. Rush‡, and many others, mention cases of intermittents coming on with delirium, particularly Mr. Clark, in the fourth volume of the *Medical Observations and Inquiries*. Great swelling of the tongue, a strangury, dreadful horror, with a desire to die, and boils on the skin, mentioned as frequent symptoms in the bilious remittent fever of Bus-sarah, may also be regarded as anomalous||. In the sixth volume of the *Edinburgh Medical Essays* there is a case related by Mr. Bain, in which epilepsy attended the paroxysms of an intermittent; and, in the fifteenth volume of the *Medical Commentaries*, another related by Mr. Davidson, in which the paroxysms were accompanied by amaurosis.

In short, the anomalous appearances of intermittents belonging to this class are very various. It is impossible to enumerate all that have been observed; those mentioned are sufficient to put the practitioner on his guard, and prevent embarrassment. It appears from the observations of a variety of authors, that when we succeed in removing the fever by the ordinary means, such anomalous symptoms yield along with it. This even happened in the two cases just alluded to, in which epilepsy and amaurosis were complicated with it.

And still farther to perplex intermittents, and increase

* Stork's *Anni. Medici*.

† Sir John Pringle's *Observations on the Diseases of the Army*.

‡ Rush's *Medical Obs. and Inq.*

|| There is a good account of this dreadful fever in a work entitled *The Transactions of a Society for the Improvement of Medical and Surgical Knowledge*, for 1793.



their irregularity, in one paroxysm certain symptoms shall predominate, and in another, symptoms of quite a different nature.

When such symptoms predominate, they often derange the fever, so that it is impossible to say of what type it is. But if they have supervened on the fever, when they abate, it generally assumes the same type which it had before their appearance.

The last class of anomalous cases comprehends those in which other diseases, or particular symptoms, assume the form of an intermittent.

Certain symptoms, such as pain in some part of the head, coma, delirium, even hiccup, recurring for several paroxysms, with intermitting fever, at length take place, at stated intervals, after every symptom of fever is removed. Cases of this kind are related by Senac and a variety of other authors. But it does not always happen that the symptoms which thus recur periodically have accompanied an intermittent. They sometimes appear from the first without fever, and continue to recur at the quotidian, tertian, or quartan interval.

Stork* relates a case of amaurosis which recurred in this way. Rheumatic pains have often been observed to do so. Dr. Rush† relates several cases of this kind. There is a very curious account of pulmonary complaints assuming the form of an intermittent, by Dr. Chapman, in the first volume of the Medical Commentaries. Dr. Strack‡ enumerates many of the anomalous symptoms belonging to this class. He relates one case which never appeared in any other form but that of coma. He also met with inflammation of the eyes appearing as an intermittent, and enumerates pleuritis, cholera, cholic, gout, hysteria, and convulsions, as apt to assume the same form.

It deserves particular attention, that such cases almost always yield to the same means which remove intermittents, however dissimilar to these fevers in all respects, except their periodical recurrence.

I shall only add, before I leave the anomalous symptoms

* See his *Anni Medici*.

† See his *Med. Obs. and Inq.*

‡ Strack de Feb. Intermit.

of intermittents, that these fevers have sometimes left behind them irregular shakings, which often prove very obstinate. There are cases of this kind related by Dr. Monro in the second volume of the *Edinb. Med. Ess. and Obs.* and in the fourth volume of the same work by Mr. Andrew Willison. The case related by the latter yielded to the cold bath.

SECT. III.

Of the Symptoms peculiar to the different Types.

We have now considered the symptoms essential to, or attendant upon intermitting fevers in general. It is proper, however, before we leave this part of the subject, to say something of the symptoms peculiar to each of the species, the varieties of which have been considered.

The quotidian is comparatively a rare fever; some have even denied its existence, for which they are deservedly censured by Eller. We often meet with intermittents whose paroxysms return every day; but most of these are double tertians, in which the fits do not return every day at the same hour, or if they do, are dissimilar, that is, not of the same duration or degree of violence, or not having the violence and duration of their different stages in the same proportion.

It is observed by Dr. Cullen, in his definition of the quotidian, which has been quoted, that its paroxysms occur in the morning. This is generally, but not always, the case.

In the quotidian the cold stage is shorter, less severe, and more frequently wanting than in the tertian or quartan. But the whole paroxysm is generally longer than in either of these fevers; and the quotidian is most apt to assume the continued form. Any of the others, about to become continued, in the first place so far assumes the appearance of the quotidian, as to have a paroxysm every day.

Galen says, every physician ought to know from the appearance of the first fit, of what type an intermittent will

be. He gives the following diagnosis for distinguishing the paroxysm of a quotidian. The heat is more moist than in other intermittents, and joined with a kind of acrimony, which is not immediately perceived on applying the hand; the thirst is less, and there is a discharge of phlegmatic humours, by vomiting and stool; the body abounds with crude humours; the patient's age or habit is too moist, and the season of the year, or state of the weather, is damp. In a quotidian, he adds, there is never so great heat as in the paroxysm of a tertian. We cannot, however, trust to this diagnosis in predicting the type of the fever, although it is not to be altogether overlooked. Whatever the extensive practice of Galen may have enabled him to do, it is now generally admitted that we can seldom determine the type of an intermittent from the symptoms of one paroxysm.

Upon the whole, however, a mild paroxysm coming on in the morning, particularly in the spring, often proves a fit of the quotidian.

In the simple tertian the cold stage is generally longer and more severe than that of the quotidian, but the whole fit is shorter, in most cases not exceeding ten or twelve hours, and often terminating in five or six.

The cold stage in the tertian is upon the whole less severe than in the quartan, and of shorter duration; but the whole paroxysm of the former is generally longer.

Galen observes, that at the commencement of the paroxysm of a tertian, there is often a painful sensation like prickling; the thirst (he remarks) is always urgent, the heat very great, and universally diffused over the body, strongly affecting the hand of the physician on first touching the patient, but soon after seeming to be less than that of his own hand. Such observations on the heat in fevers seem at first view whimsical; we shall find, however, when we come to consider certain kinds of continued fever, that they are not altogether unfounded*. It is not difficult to suppose that the diseased secretion from the skin may modify the sensation produced by the increased temperature.

Eller maintains that the cold is more considerable in the

* See the observations of Sir John Pringle, Huxham in his work on Fevers, Moore in his Medical Sketches, and others on this subject.

tertian, and confirms Galen's observation that the heat is greater (*calor magis urens*) than in other intermittents; Hoffman, Huxham, and others, have also endeavoured to characterise a paroxysm of the tertian, but there is no diagnosis which enables us with any certainty to distinguish it from that of other agues. Nor are we enabled to do so by the time of the day at which it appears. It frequently indeed makes its attack about mid-day, but this is by no means constant. In double tertians the fits are sometimes alternately before and after mid-day. It has been observed, that the paroxysms which occur towards evening, are generally most severe.

The tertian is sometimes, but rarely, protracted for several months; in autumn it now and then becomes a quartan, and is protracted for a much longer time. It is upon the whole less obstinate than other intermittents. But Frank* justly remarks that of all intermittents it is the most apt to become malignant, and appears most frequently as an epidemic. If any exception may be made to the former of these observations, it is with respect to the quotidian when it appears in autumn, which rarely happens.

The vernal intermittents are almost always either quotidiens or tertians. Sydenham† considered them as not only safe but salutary, and if protracted till the autumn, he observes, which season is unfavourable to these species of intermittents, they generally cease spontaneously. It may be observed on the other hand, that if autumnal tertians are protected to the following spring, it also generally puts a period to them.

The vernal intermittents, the type being the same, are less severe, less liable to become continued, to be accompanied by bilious symptoms, and followed by dangerous consequences, than the autumnal; they are also less disposed to return.

In the vernal intermittents, increased excitement generally prevails; in the autumnal, debility. We shall afterwards find the following observation fully illustrated; that we always have it in our power to diminish excitement as much

* Epitome de Cur. Hom. Morb.

† Sydenhami Opera Sect. de Feb. Intermit.

as we please, but often find it impossible permanently to increase it. Hence it chiefly arises that autumnal are more dangerous than vernal agues; and it will appear, as we proceed in considering febrile diseases, that this fact, more than any other, influences our practice in all idiopathic fevers.

Dr. Brocklesby* informs us, that he never saw an instance of a quartan which came on in the spring, and his experience was very extensive†.

It often makes its attack in the afternoon; the cold stage upon the whole is more severe, and of longer duration, than that of either the quotidian or tertian; it generally lasts for about two hours, and sometimes longer. Dr. Grant‡ says, he has seen the cold fit of the quartan last fifteen hours. Eller and others observe, that the sensation of cold is not in general so great as in the cold fit of the tertian.

The whole fit of the quartan is generally shorter than that of either the quotidian or tertian.

At the invasion of quartans, Galen observes, the pulse is as it were bound up and drawn inwards, nor is there that sense of painful pricking which we meet with in the cold fit of the tertian, but the patient feels as if all the soft parts were bruised. The following is perhaps the best diagnosis of a fit of the quartan; the cold is not so violent as in the tertian, but of longer duration; the heat is more gentle and dry, and the sweating scanty||.

The quartan is more apt to be followed by obstructions of the viscera than other intermittents, owing probably to its being more obstinate. It has, like the gout, been termed the *Opprobrium Medicorum*. Some authors assert that they have known a quartan last for twenty or thirty years. It is a remark of Sydenham, however, that if a person be attacked by it for the second time, it generally goes off after

* Dr. Brocklesby's Observations on the Diseases of the Army.

† We shall find, in speaking of the causes of intermittents, that in climates where the changes of the seasons are remarkable, spring and autumn are those in which they most frequently appear.

‡ Dr. Grant's observations on Fevers most frequent in London.

|| Eller de Cog. et Cur. Morb.

a few fits. When it has been obstinate, and attended with delirium, the patient has sometimes remained in a state of fatuity for a long time after it, as happens more frequently after certain species of continued fever.

The quartan is particularly severe on old people. Sydenham says, he has been surprised to see infants labour under a quartan for six months, and bear it well.

Although an autumnal ague, it is less apt than any other to become continued, or to be attended with symptoms of danger.

Upon the whole, the principal difference between the paroxysms of the different types consists in their duration, and the proportional duration of their different stages. In the quotidian the cold fit in general is shorter than in the other two species, but the whole paroxysm is longer. The cold fit of the tertian is longer than that of the quotidian, but shorter than that of the quartan, and the whole paroxysm is shorter than that of the quotidian, but longer than that of the quartan. The quartan in general has the longest cold fit, but the shortest paroxysm. The duration of the cold fit then in the different types is proportioned to that of the intermission. The contrary is true of the duration of the whole paroxysm.

We are now to consider the manner in which the different types assume more or less of the continued form. Some of the facts relating to this part of the subject indeed have already been mentioned; it may be useful to present them at one view.

SECT. IV.

Of the Manner in which the different Types assume more or less of the continued Form.

Physicians have long endeavoured to assign a cause for some fevers assuming the form of intermittents, while others appear continued, at least so much so that the slight remissions which take place in them can often hardly be perceived. But how fruitless their labours have been, appears

at the first view of their several opinions. Even Sydenham's speculations on this subject are but ill warranted by observation. It would be mispending time to enter on the merits of these hypotheses; let us take a short view of the facts which gave rise to them.

When the fits of the quotidian are lengthened, there is no time for any apyrexia; and thus the intermittent is changed into a remittent. As the paroxysms are protracted, the remissions appear less remarkable, and the fever at length becomes continued.

The tertian, we have seen, is liable to a reduplication of its paroxysms, and then it also may readily assume the continued form; for it is an observation generally applicable, that when a reduplication of the paroxysms takes place, the new are not only more protracted than the original paroxysms, but these also become more protracted than they were before the accession of the former. Although the paroxysm upon the whole is protracted, the duration of the cold fit is diminished as that of the hot is increased, so that when the fever has assumed the continued form, the cold fit for the most part is scarcely to be perceived. It is also to be observed, that when an intermittent assumes the continued form, the symptoms of the hot stage, in proportion as it is protracted, generally become more severe; and those of the cold stage, in proportion as it is shortened, milder.

The new paroxysms, added to a tertian or quartan, when they become double, for instance, always resemble the paroxysms of the first fever, in being of the same type.

The quartan seldom assumes the continued form. The quartana triplex is a rare disease. If it suffers a reduplication of its paroxysms it may readily become continued.

Van Swieten observes that, as far as he knows, quintans and other intermittents of more protracted types never become continued.

It will afterwards appear, that the chief if not the only circumstances which determine intermittents to assume more of the continued form, are the inflammatory diathesis, and debility. It is the former we most frequently have to combat in these fevers; the means of removing it with safety, therefore, (that is, without running the risk of inducing the opposite and more dangerous state of debility,) forms an essential part of their treatment.

Instead of becoming more continued, intermittents sometimes become less so, which is always favourable. If a reduplication of the paroxysms of a tertian or quartan has taken place, they again become simple, and in proportion as they do so, the remaining fits at the same time become shorter, while the cold stage again occupies a greater share of them.

Intermittents sometimes assume a more intermitting form by changing their type. It is not uncommon for an autumnal quotidian or tertian to be changed into a quartan, after the violence of the fever is broken.

Continued fevers also change to a more or less intermitting form. When this happens, they have formerly, for the most part, been intermittents, or appeared with inflammatory symptoms while intermittents were epidemic; but all kinds of continued fever may assume the intermitting form.

SECT. V.

Of the Diseases with which Intermittents are most frequently complicated.

With regard to a variety of symptoms which often appear in intermittents, arising from their being complicated with other diseases, little can be said here, as I am not to treat of the different diseases to which they belong. The diseases with which intermittents are most frequently complicated are, diarrhœa, cholera, dysentery, obstructions of the viscera, dropsy, jaundice, and different species of inflammation.

Inflammation of some of the viscera and remittent fever is one of the most common of these combinations. De Haen* and others relate many cases of remittents, in which the stomach and bowels were found on dissection inflamed and sphacelated. This combination has been observed to be remarkably frequent in certain epidemics. Bartholine† in particular gives an account of an irregular remittent that raged at Copenhagen, which was always accompanied with inflammation of the stomach and duodenum; and we have

* See his Ratio Medendi.

† Barthol. Hist. Anatom. Rar. hist. 56.

an account of a similar fever at Leyden, by Professor Silvius de la Boe*. The brain is also sometimes the seat of inflammation in remittents, as appears from the account of dissections by Sir John Pringle† and others. Rheumatism frequently accompanies the intermittents of cold climates‡.

The vernal intermittents are most frequently complicated with inflammatory diseases. Those of autumn with diseases of debility, particularly dysentery.

The concurrence of some of the foregoing diseases and intermitting fever is to be ascribed to the nature of the epidemic, the climate, or the constitution of the patient; but some of them are the effects of the fever itself; schirrous indurations of the viscera, for instance, and their consequences, atrophy, jaundice and dropsy. The liver and spleen are the viscera most frequently affected§.

Agues also sometimes check habitual discharges, the menstrual and hemorrhoidal flux, and sometimes interrupt the secretion of milk in nurses. They also now and then occasion excessive discharges by sweat or stool, of the menses, lochia, &c||.

It has long been the opinion of physicians, that intermitting fevers, if not unusually severe, pre-dispose to good health and long life. Unless these fevers, says Boerhaave¶,

* Prax. Med. Append. tract x.

† See his Observations on the Diseases of the Army.

‡ See the epidemics described by Sir John Pringle, in his Observ. on the Dis. of the Army.

§ When we reflect on the nature of the circulation in the liver, and whence the greater part of its blood is supplied, we are at no loss to account for the ascites that sometimes attends its induration. Nor is it difficult to conceive in what manner an induration and enlargement either of this viscus or the spleen frequently produces an anasarca of the lower extremities, gradually extending over the whole body, as the cava ascendens may be exposed to the pressure of the enlarged viscera. That jaundice must frequently be the consequence of an induration of the liver or pancreas, is evident from considering the situation of the biliary ducts, which may be pressed upon by enlarged portions of either of these organs.

Long protracted agues produce cachexy and atrophy, by occasioning obstruction of the mesenteric and other glands of the abdomen.

|| See observations on these effects of intermittents, in Strack de Febribus Intermittentibus, Brocklesby on the Diseases of the Army, Jackson on the Fevers of Jamaica, &c.

¶ Aph. Boerhaavii.

are malignant, they dispose the body to longevity, and purge it from inveterate disorders. Nor do I believe, his commentator observes, that any physician who has considered this disorder will deny that after quartan fevers, disturbed by no powerful remedy, but gradually resolved by a good diet, in the spring time, the body has been found more firm, and much less subject to diseases than before*. This opinion, however, seems far from being generally well founded, and has often done harm by preventing the endeavours of the practitioner to stop the fever at an early period.

It is not to be denied that an ague supervening on other diseases has sometimes relieved them; and when these are more to be feared than the ague, it must be removed with caution. Habitual rheumatisms, inflammations, cutaneous eruptions, indigestions, epilepsy, histeria, &c. Dr. Fordyce† observes, are relieved by a regular tertian. The quartan, says Vogel‡, has often prevented gout, asthma, convulsions, and hypochondriacal affections; and even Hippocrates says that the quartan is a safe fever and prevents others. Those affected with convulsions, he adds, are relieved from them by a quartan. Intermittents are also said to relieve or remove palsies, &c. Some are inclined to doubt of many effects of this kind which have been ascribed to them§.

SECT. VI.

Of the Prognosis in Intermittents.

As the prognosis in intermitting fever is collected from the symptoms of the paroxysm, and the state of the patient between the paroxysms, it may be divided into two parts. I shall, in the first place, take a short view of the state of

* Comment. in Aph. Boerhaav.

† First Dissert. on Simple Fever.

‡ Prælect. Acad. de Cog. et Cur. Morb.

§ See some observations on this part of the subject, in a Treatise on Malignant Intermittents by Aurivillius, in Baldinger's Sylloge Opusculorum.

the different functions, which during the paroxysm chiefly indicates danger.

The weakness and irregularity of the voluntary motions become more remarkable, as the danger increases. Involuntary twitchings of the muscles, (*subsultus tendinum*) and startings, often terminate in general convulsions, in which the patient expires. Coma frequently comes on, and as death approaches it is often impossible to rouse the patient. Delirium is still more unfavourable. The danger is very great when it is among the first symptoms, as happened in several epidemics above alluded to, and that of Bengal, described by Dr. Lind, in which the patient generally died in the third paroxysm.

To this head belongs the depravation of particular senses, especially false vision, which in all fevers is among the worst symptoms. Deafness is generally favourable.

With regard to the vital functions, palpitation of the heart and much anxiety are unfavourable symptoms. The pulse before death generally becomes very frequent, weak, and irregular, except when a considerable degree of coma is present; it is then often slow and regular: but, while the coma continues, this state of the pulse by no means assures us of the patient's safety; it frequently precedes a fatal apoplexy. In this, as in most other diseases, death often approaches with a paleness, shrinking, and coldness of the extremities; the pulse is then hardly or not at all perceptible.

There is also danger in the opposite state of the circulation, in which the pulse is remarkably strong and full; this however we have it more in our power to correct.

The respiration is much affected as the fatal termination approaches; it becomes anxious and quick, though often at the same time less frequent than natural, interrupted with sighs and groans; and, a little before death, sometimes suffers considerable intermissions.

This intermission of the respiration is seldom very remarkable, except when the patient dies much exhausted, and affected with coma. It is frequently more considerable in other cases where the brain is more particularly the seat of the disease. Dr. Whytt takes notice of its being a common symptom in the *hydrocephalus internus*.*

* I met with a case in which it was more remarkable than in any

Under the head of respiration, it may be observed, that hiccup is a dangerous symptom, if it occurs while the others are alarming; especially if accompanied with vomiting.

Every change in the voice from its natural tone indicates danger, and the loss of speech is often the forerunner of death.

With respect to the natural functions, much nausea, the abdomen swelled, hard and painful to the touch, with obstinate costiveness, are dangerous symptoms; a hard belly, and a swelling of the tonsils, are regarded by Sydenham as fatal symptoms in autumnal agues. It often happens that for some time before death the patient is unable to swallow, the tongue, mouth, and fauces becoming very foul. "The danger is very great when the tongue is immoderately dry or black, or covered with a white slimy gelatinous substance. To the above we may add, a sodden or parboiled appearance of the tongue, which indicates much danger*."

A spontaneous, or what has been termed colliquative, diarrhoea frequently precedes death, and the stools are often black and fetid from the vitiated state of the bile. A black matter like coffee-grounds, discharged either upwards or downwards, denotes danger; this symptom is generally the consequence of hemorrhagy from the stomach or bowels. In the remittents of warm climates the bile sometimes assumes this appearance, more frequently that of tar or molasses. Whatever be the matter evacuated, vomiting is dangerous if it does not abate towards the end of the paroxysm, especially if the anxiety is great, and the discharge does not bring relief.

The urine or sweat being peculiarly offensive, the former of a dark colour, and depositing a brown or blackish sediment, the latter tinging the patient's linen with a brown colour, both of which appearances proceed from an admixture of blood, and the eyes being suffused with blood, are among the

I have read of; the patient (a boy suspected to labour under an affection of the head) had been long ill, and was much reduced. Before his death a considerable degree of coma came on, and his breathing for about the last half hour was so much interrupted that there were not less than six or eight minutes between each inspiration, so that his friends, thinking him dead, repeatedly closed his eyes, and were astonished a short time after to hear him make a very sonorous inspiration.

* Dr. Jackson's Treatise on the Fevers of Jamaica.

most alarming symptoms*. The sphincters are frequently relaxed for some time before death, so that the urine and fæces are passed involuntarily.

It may be observed upon the whole, that much danger is indicated by the various symptoms denoting great debility in the natural functions. These will be enumerated more at length when we consider the symptoms of typhus, to which fever they properly belong.

In the last stage of the paroxysm, a free and thin sweat universally diffused, and not occasioning much loss of strength, affords a favourable, the opposite of these an unfavourable, prognosis†.

With respect to the prognosis during the remission, or apyrexia, in proportion as these are shorter, and less complete, the danger is greater. A simple quartan is a safer fever than a tertian; a simple tertian than a quotidian; and this becomes the more dangerous, the more its paroxysms run into each other. These observations, however, by no means apply universally‡.

If the patient, during the apyrexia, even although this be complete, feels himself weak and oppressed, especially if there be a tendency to œdema in his feet and legs, he is not free from danger. We should inquire, Burserius observes, if on the days of intermission the tongue be dry and rough; if the patient be unquiet, listless, and apt to sigh; if he be subject to vomiting or purging; if he be drowsy; or, in short, disordered in any other way; for then we may suspect some lurking mischief. If these symptoms proceed from no evident cause, he adds, we dread in the ensuing paroxysm cardialgia, cholic, lethargy, or some such alarming symptom.

* These are the most fatal of the hemorrhagies above alluded to, which almost always afford a bad prognosis.

† “When flies become numerous about the patient’s bed in any period of the disease (he adds) and adhere to his lips and eyes without his being sensible of their attachment, it is a certain mark of danger. “Indeed these insects never made their appearance in any number, “until danger, by other signs, was too apparent.” Dr. Rollo’s account of the diseases of St. Lucia.

‡ Burserius and Frank give a good account of the symptoms which afford an unfavourable prognosis during the apyrexia. See the *Epit. de Cur. Hominum Morb.* by Frank, vol. 1, p. 59, and the *Institut. Med. Pract.* of Burserius.

All combinations of other diseases with intermittents are unfavourable.

The favourable prognosis may be readily collected from what has been said of the symptoms affording an unfavourable one. The paroxysm being moderate, the patient bearing it without much loss of strength, and enjoying good health during a long apyrexia, are the best signs.

There is a set of symptoms which occur now and then in all kinds of fever, and have generally been observed to attend, and generally supposed to occasion, a favourable change in the state of the disease. On this account they are termed critical. Sweating, by which the paroxysm terminates, is a symptom of this kind. We shall have occasion to consider this subject more at length in treating of continued fever*.

The most obstinate intermittents are not always the most dangerous. Tertians, upon the whole, are removed with most ease, and quartans with most difficulty. Hippocrates has pronounced a quartan to be the longest and safest of fevers. This observation applies only to the simple quartan ; when it has suffered a reduplication of its paroxysms, the prognosis is no better in it than in other intermittents. Celsus observes that the quartan is a safe fever, unless it become a quotidian.

Upon the whole, intermitting fever, though often a very obstinate, is not generally a very dangerous, disease. The symptoms enumerated as affording an unfavourable prognosis, seldom make their appearance, unless it has suffered a reduplication and protraction of its paroxysms, or is complicated with other diseases. In the latter case, the danger cannot be ascertained without being acquainted with the prognosis in these diseases. Epidemics indeed occur, which form an exception to this observation, particularly in sultry climates.

* "An eruption about the mouth and ears, (says Dr. Rollo in his "Obs. on the Dis. of St. Lucia) with a swelling of the upper lip, "either in this fever, or in the intermittent, happening when the "paroxysm was going off, was a certain sign of recovery, except "when the other symptoms were dangerous; these then assisted the "unfavourable prognosis." Intermittents, Vogel observes, are often removed by cutaneous eruptions, particularly the miliary eruption, and small pox, by the hæmorrhoids, by a salivation, or by an ulcer of the lips.

Death may happen at any period of intermittents. It most frequently happens in the hot stage, except in the quartan, in which, Sydenham, observes, death generally happens in the cold stage. The patient rarely dies in the sweating stage; if he is much reduced, however, and the sweating is profuse, death may happen at this period also. It also sometimes happens during the remission, in consequence of the violence of the preceding paroxysm.

If the first paroxysms of an intermittent are mild, the prognosis is good; if from being severe they become mild, it is better. But we must not form a decided opinion from the mildness of one or two paroxysms, and the health of the patient during their intermissions.

It may upon the whole be remarked, that the degree of safety is rather to be estimated from the mildness of the paroxysms, than from the length and completeness of the apyrexia*. It has been observed of complicated intermittents, that those are most to be dreaded whose paroxysms are most severe on the even days.

Some attempt to foretel the period at which the fever will terminate favourably, by attending to that at which it comes to its height; that is, the time at which the paroxysms from becoming more violent, begin to become less so; for it is common in these fevers for each paroxysm, during the first intervals to be more violent than that which preceded it†.

A paroxysm which, without any evident cause, is considerably more severe than those which preceded it, is often the last, the patient remaining well after it.

To the head of prognosis belongs the doctrine of critical days.

This doctrine the reader will find noticed in the writings of physicians ever since the days of Hippocrates, who paid particular attention to it.

• There are some good observations on this part of the subject, in the first chapter of the third book of Torti's Therapeutice Specialis.

† "The tertian intermittents, or remittents, which come to their height in the fourth period, (Cleghorn observes) terminate in the fifth or sixth; those which come to their height in the fifth, terminate about the sixth or seventh." No general rule of this kind can be laid down. Every one must make such observations for himself in the climate, and even epidemic, in which he practises. It is sufficient to be warned, that by making such observations he will be enabled, with more accuracy, to foresee the event of the disease.

Some regard it as wholly unfounded. This opinion, however, appears to be the result of a confined view of the subject. The observations on which the doctrine of critical days is founded, have been too frequently repeated to permit us to doubt that there is a tendency to periodic changes in the fevers of certain latitudes. But were it wholly unfounded, it is necessary to be acquainted with a doctrine so generally blended with medical writings.

Physicians were soon led to observe what has been termed the crisis of fevers, viz. changes, often sudden, either for the better or the worse, which take place in them, and to mark the days on which these, particularly the favourable, changes happen. Having observed a crisis take place in more than one patient on the same day of the fever, they were led to pay attention to this day in other cases, and when they found a day, as the 4th, 7th, &c. of the disease on which a crisis happened more frequently than on most other days, this they termed a critical or judicial day. Thus the days, during which a fever lasts, came to be divided into those which are, and those which are not, critical. Those numbers which are made up by adding alternately four and three (with an exception I shall presently point out) denote the chief critical days, the 4th, 7th, 11th, 14th, &c.*.

The other days on which crises frequently happen are termed, by Galen, coincidental; and are esteemed an inferior class of critical days, because on them crises do not happen so often as on the true critical days. When crises happen on the coincidental critical days, Galen taught that the natural course of the disease is disturbed by some irritation of the system, or by a new attack; thus he calls the 7th a good critical day, but the 5th a bad one; for he supposed that a favourable crisis happening on a coincidental, was less to

* Dr. Cullen considers all the uneven days, the 3d, 5th, &c. to the 11th, as critical days. After the 11th he regards every third day as critical, the 14th, 17th, and 20th. He marks no critical day beyond the 20th. "Because (he observes) though fevers are sometimes protracted beyond this period, it is however more rarely, so that there are not a sufficient number of observations to ascertain the course of them; and further, because it is probable that in fevers long protracted, the movements become less exact and regular, and therefore less easily observed." See Dr. Cullen's First Lines, vol. i.

be depended upon, than that happening on a true critical, day*.

In the first week, or, as it is called, septenary, there are many coincidental critical days, because, according to the ancients, the violence of fevers which run their course in so short a time, often disturbs the crisis, which ought only to happen on the 4th or 7th day. In the second septenary, the ninth is esteemed almost the only coincidental critical day; thus it is, that after the 14th day, the coincidental critical days are of little consequence, the crises generally happening on or about the true critical days.

Hippocrates observed, that the crises happened very often on the fourth day of the first and second week, that is, on the 4th and 11th days of the disease. These days he therefore esteemed of much importance in fevers. But as he observed the crisis to happen very frequently on the 17th day, he considers this the 4th day of the third week, so that he makes the third week begin on the same day on which the second ends. Then the 20th day, not the 21st, is the last day of the third week, and this also he thought a chief critical day; of all these days crises are said to happen most frequently on the 17th.

The critical days which follow the 20th are the 24th, 27th, 34th, 40th, not the 41st, which is the seventh day from the 34th, for as the third week begins on the same day on which the 2d ends, so the 6th begins on the same day on which the 5th ends; thus we count but six days for each of these weeks. The same happens in the 9th, 12th, and every succeeding 3d week, therefore the 60th, 80th, &c. days, are critical days.

Notwithstanding what is here said, Hippocrates remarks, that fevers, unless they leave the patient on uneven days, usually return. In some places he calls the 21st a critical day; these passages are by many believed to be spurious. This, says Van Swieten, is very probable, since there is no

* The opinion that the course of the fever is disturbed when the termination happens on any other but a critical day, seemed farther confirmed by the observations of Hippocrates; from which it appears, that although the fatal, like the favourable terminations, generally happen on critical days, yet a much larger proportion of the former, than of the latter, happen on the non-critical days. Thus, Dr. Cullen remarks, all the terminations of fevers, mentioned in the writings of Hippocrates, which happened on the 6th day, were either fatal, or not finally salutary.

mention of the 21st day in the histories of the cases given in his book of epidemics.

In the doctrine of critical days, as delivered by Hippocrates, however, there are certainly contradictions; this Dr. Jackson attributes to his having related some cases from memory, and others only in part, given him by different persons; he observes also, that when the fever began in the evening, or during the night, Hippocrates generally reckoned the following the first day of the disease. Dr. Jackson adds, that the 21st is too frequently mentioned in the writings of Hippocrates as a critical day, to be considered, as Van Swieten and Dr. Cullen suppose it to be, an error in the original manuscript. Dr. Cullen ascribes many of the contradictions in the doctrine of critical days to the opinion of Hippocrates respecting the supposed power of numbers.

Certain terminations, according to the ancients, most frequently take place on certain critical days; thus Galen says a fever seldom terminates by sweat on the 4th day, and Hippocrates omits this day in enumerating the days on which fevers generally terminate by sweat. It was supposed indeed that fevers seldom terminate by sweat on an even day; and in the aphorism just alluded to, Hippocrates calls the 21st, not the 20th, a critical day. Sweats, he observes, in febrile patients are good, if they begin on the 3d, 5th, 7th, 9th, 11th, 14th, 17th, 21st*, 27th, 31st, or 34th days, for the sweats which happen not on these days denote length of the disease, difficulty, and return of it.

It was also taught by the ancients, that each critical day serves for indicating what may be expected on the next; in this way the doctrine assists the prognosis, and critical days have received the name of judicial or indicating.

If on a critical day the patient finds himself better, although on the next day he relapses into his former state, the physician may expect a more considerable remission on the

* It has already been observed that Dr. Cullen supposes the 21st day by mistake put for the 20th. He alleges that in continued fevers the tertian type prevails to the 11th day, and from this day to the 20th the quartan type. But, admitting what he says of the 21st day to be just, he cannot reconcile his view of the doctrine of critical days with what is said of the 4th day in the writings of Hippocrates; unless we admit what he alleges, which is probable, that the writings attributed to Hippocrates are in fact the works of different people, and that the most genuine of them have suffered corruptions.

following critical day. On the contrary, if the patient finds himself worse on a critical day, a still more unfavourable change is to be looked for on that which follows, although during the intermediate days the symptoms are milder. Thus every critical day is an indicating day to that which succeeds it.

If this be admitted, it follows, that by carefully attending to the state of the symptoms on these days, we may not only form a conjecture respecting the termination of the fever, but also respecting its distance. If on the critical days the violence of the symptoms be much increased, we dread a fatal termination, and we judge this nearer or more distant according to the degree of exacerbation which takes place; on the other hand, if a remission of the symptoms happens on the critical days, we expect a favourable termination, and judge of its distance from the degree of the remission.

In proportion as the disease is slower in its progress, the critical days are more distant from each other: thus in fevers which do not exceed three weeks, the 4th, 7th, 11th, &c. are critical days; but if the disease extend itself beyond three weeks, then only one critical day in the week is to be looked for; lastly, when the disease continues above forty days, Hippocrates esteems only every 20th day critical, to wit, the 60th, 80th, and 100th, &c. In lingering fevers the crisis does not happen precisely on the day called critical, but about that day.

Such is the doctrine of critical days delivered by the ancients, and we do not find in modern authors any addition of consequence, if we except what is said of the application of this doctrine to intermittents of complicated types by Dr. Jackson, in his account of the diseases of Jamaica.

The reduplication of paroxysms, which often takes place in intermittents, occasions some difficulty in applying the doctrine of critical days to them. Dr. Jackson, in making this application, considers a double intermittent as two fevers, the one consisting of the original, the other of the new, paroxysm.

“Thus if the fever (he observes of tertians) which began
“on the odd day was critical, that is, if the paroxysm of
“the odd day terminated the disease, the crisis was neces-

“sarily on an odd day ; but if that fever, (namely that consisting of the paroxysms which supervened upon the original ones) the first attack of which was upon the even day, consisted of an equal number of paroxysms with the other, or continued after that had ceased, the crisis was then on an even day, reckoning from the beginning of the illness, though still on an odd day, dating from the commencement of the second fever. It was the observation of this fact which first gave me the idea of calculating the critical days by the periods of the disease.”

Dr. Jackson always reckoned the period of the tertian 48 hours, allowing that time for every revolution, although it was sometimes completed in less. As for quotidians, he observes, their crises were generally on an odd day. It is not to be overlooked that in double tertians, on whatever day the crisis happens, Dr. Jackson's mode of reckoning makes it an odd day.

By simplifying intermittents in this way, he observes, their crises will be found to happen as regularly on the critical days as those of continued fever. Of sixty cases, which under his care terminated favourably, ten terminated on the 3d day, ten on the 5th, twenty on the 7th, ten on the 9th, five on the 11th, three on the 13th, and two on the 17th. This nearly coincides with what Hippocrates says of the days on which fevers terminate by sweats, which has just been quoted.

“Of nine cases which terminated fatally, (Dr. Jackson continues) one terminated on the 6th, one on the 7th, six on the 8th, and one on the 10th.” The even days, he observes, were fatal in the proportion of three to one, which he accounts for in the following manner. The paroxysm which destroyed life, like most other changes, took place on the odd day ; this paroxysm seemed to decline after the usual duration. It left the body in some measure free from disease, but so completely deranged the vital functions, that life, although it went on for a little, could not be long sustained, so that death generally happened on the next, that is, the even day ; although it was the consequence of a violent paroxysm which had taken place on the odd day. It also sometimes happened that the patient was tolerably well after this severe paroxysm, but a new one recurring after a short interval, speedily proved fatal on the even day. “Hence we may see (he observes) why the

“patient sometimes died on the odd day when the fever was very violent, for then he died in the height of a severe paroxysm, often carried off by convulsions, apoplexy, or some other accident.”

Dr. Cleghorn has observed of complicated intermittents, that the great changes of the fever are always most apt to happen on that day on which the most severe paroxysm takes place, whether this be the odd or the even day. This observation is easily reconciled with Dr. Jackson's, as Dr. Cleghorn reckons in the usual way without simplifying the complicated types.

It is remarkable, that we still find something in the severity of the paroxysm which disposes to health. It was formerly observed that in double tertians, the most severe paroxysm is generally followed by the most complete apyrexia, and that in intermittents in general an unusually severe paroxysm often proves the last, the patient remaining well after it.

Many of the first physicians of antiquity endeavoured to assign the cause of these periodic movements in fevers. Their opinions, however, are now justly regarded as groundless, and many of them indeed are quite whimsical. The most ancient opinion was founded on the Pythagorean doctrine of the power of numbers. Hippocrates seems to have been of this opinion; Galen disclaims so absurd a doctrine, and conceives that the crises of fevers are caused by the changes of the moon. This opinion long met with the general assent of medical writers, and we shall find that an opinion similar to it, and claiming the authority of extensive observation, has lately been maintained.

CHAPTER III.

Of the morbid Appearances discovered by Dissection in those who die of Intermitting Fevers.

MANY diseases prove fatal, without leaving any trace to be discovered by dissection. This, strictly speaking, is true of intermitting as well as of continued fever. Various morbid

appearances indeed are observed in those who die of agues; none of them however can be regarded as essentially connected with the fever; none of them seem at all connected with its cause, nor are there any which can be regarded as its immediate consequence. Intermittents are often the cause of other diseases, indurations of the different viscera, &c. and in this view may be regarded as the cause of the morbid appearances belonging to them. But we must be careful not to confound these fevers with their consequences, which has given rise to the opinion of intermittents depending on certain states of the bile, and other ill-founded hypotheses. I have had occasion to enumerate the diseases most frequently complicated with agues; their effects in the different cavities of the body, we find mentioned by writers as the consequences of intermittents.

The stomach, intestines, omentum, and mesentery, are frequently found inflamed, or of a dark colour, and sometimes sphacelated. The omentum and mesentery sometimes appear wasted; in other cases have tumours formed on them. The stomach and intestines are often enlarged, the consequence of having been distended with air; and in various parts of the latter, preternatural constrictions are frequently observed. The gall bladder is often turgid, and an unusual quantity of bile is found in the stomach and intestines. The liver is frequently indurated and enlarged, sometimes diminished and of a whitish colour, and it has now and then been found, only six or eight hours after death, soft, and it is said, putrid. In some cases it seems gorged with blood, the *venæ portarum* being much enlarged; in others, it is tinged with bile. The pancreas is also found enlarged, and sometimes ulcerated, more frequently indurated. The spleen is particularly liable to be affected in intermittents. It is often enlarged, frequently weighing many pounds. Its structure has sometimes been so completely destroyed, that it presented the appearance of congealed blood wrapt in a membrane. More frequently it is indurated; in this state it has got the name of *ague cake*, being felt by the patient himself through the integuments of the abdomen. This affection of the spleen is particularly apt to occur in the bilious remittents of tropical climates. Strack thinks that children are more liable to it than adults. The mesenteric and other smaller glands of the abdomen are also frequently enlarged and indurated.

Traces of inflammation in the lungs and pleura frequently appear, and the former are sometimes found soft and gangrenous. The heart too is often flaccid and enlarged, and the vessels of the lungs turgid, with dark coloured blood. This state of the heart and blood-vessels is the consequence of the circulation in the lungs having been impeded for some time before death, so that it is most remarkable in those cases where the dyspnœa has been greatest. When the skin is tinged with yellow, the serum in the thorax and other cavities is of course of the same colour.

Morbid appearances of the head in intermittents are less frequently observed. Polypi are sometimes found in the sinuses. But these are frequently met with, of whatever disease the patient dies. Traces of inflammation, and even abscesses, are now and then met with in the brain.

If the patient die in the cold fit, an unusual accumulation of blood, it is said, is observed in internal parts. This is the only morbid appearance, if we except a general state of flaccidity when the strength has been greatly exhausted, that can be regarded as essentially connected with the fever, and it has probably been magnified for the purpose of serving certain hypotheses.

CHAPTER IV.

Of the Causes of Intermitting Fevers.

IN speaking of the remote causes I shall not always treat separately of what have been termed the predisposing and exciting causes, the circumstances which render the body liable to the disease, and those which excite it, since in many instances it is impossible to say to which of these classes any particular cause belongs. In many diseases the same circumstances act sometimes as predisposing, at other times as exciting, causes.

In intermitting fevers this division of the remote causes is less objectionable than in most other diseases; for various

observations seem to prove that these fevers arise chiefly, if not solely, from one exciting cause, effluvia from marshy grounds, called by medical writers the marsh miasma.

SECT. I.

Of the predisposing Causes of Intermitting Fevers.

Of the various circumstances favourable to the action of the exciting cause of intermittents, there are some which operate by rendering the body more susceptible of its action; others which seem to act by increasing the power of the cause itself; and some which act in both ways. It will be the most distinct plan, and save repetition, to consider the whole, under the head of marsh miasma, as circumstances favourable to its action in producing intermitting fever.

SECT. II.

Of the exciting Cause of Intermitting Fevers.

We have many instances of the striking effects of an atmosphere loaded with noxious vapours. White females born and constantly residing in the lower districts of the province of Georgia, it is said, have seldom lived beyond the age of 40; males sometimes approach to 50. Similar observations have been made respecting some parts of Egypt near the banks of the Nile*. There are swampy situations in the Carolinas and Virginia which are destructive of life in a still greater degree: "I am credibly informed (says Dr. Jackson†) that there is not on record an instance of a person born in Peterborough in Virginia, and constantly residing in the same place, who has lived to the age of 21."

The influence of marsh miasma in producing agues was first observed by Lancisi, about the middle of the seventeenth century, and is now so generally admitted, that it is unnecessary to adduce many facts in support of it.

* Bruce's Travels to Abyssinia, &c.

† Dr. Jackson's Account of the Diseases of Jamaica.

It is almost an universal observation, indeed, that intermittents prevail in low marshy countries. Our climate, on the whole, cannot be regarded as favourable to the production of these fevers. In Lincolnshire, however, and the other fenny counties, there are few diseases more frequent. Near stagnant pools, especially when the weather is hot, they are often epidemic.

In other countries we have more remarkable proofs of the effects of marsh miasma. In Egypt, after the Nile retires, leaving the wet ground covered with a variety of putrefying animal and vegetable substances, these fevers begin to prevail. We are informed that the Arabs, when they wish to be revenged on the Turks of Bussarah, break down part of the banks of the Euphrates, by which the deserts in the neighbourhood of that city are laid under water. The stagnating water and dead fish soon become putrid, and dreadful fevers, generally of the remitting form, are the consequence. The fevers induced by a single inundation of these deserts have been known to destroy between twelve and fourteen thousand of the inhabitants of Bussarah*. When so powerful a cause is applied, we seldom meet with intermittents. Intermittents and remittents arise from different degrees of the same cause†.

It is generally observed that during the more temperate seasons the regular intermittents prevail, and for the most part yield readily to the ordinary means. In proportion as the season becomes hotter and more moist, a reduplication and protraction of the paroxysms take place, till the disease comes at length to differ but little from a continued fever. The dreadful remittent of Bussarah is always most feared in the hottest seasons. And in the higher latitudes, even when the autumnal fevers are of the most continued kind, if they arise from marsh miasma, they begin to intermit when the cold weather sets in, and before the winter is far advanced, often terminate in simple tertians or quartans.

* See the Observations on the Fever of Bussarah, above alluded to, in the Transactions of a Society for the Improvement, &c. for 1793.

† In Jamaica the fevers in the most healthy seasons are generally intermittents; in the rainy and other unhealthy seasons, remittents. See Dr. J. Hunter on the diseases of the West Indies; also the observations of Sir J. Pringle on the diseases of Flanders, and other works on this subject.

The true intermitting fever, therefore, is a disease neither of very warm nor very cold climates. Bontius*, Lysons†, Clark‡, and others, remark that it is seldom met with near the equator. The remittent may be regarded as the endemic of sultry climates. Upon the whole, however, of the climates which may be called temperate, the warmest are the most favourable to the production of intermittents. In such climates as our own they generally prevail most when the weather has been for some time unusually warm, particularly when rains suddenly set in after a warm summer.

Sudden changes of weather, whether from hot to cold, or the contrary, are favourable to the production of intermittents. It is constantly found, says Raymond|| of the intermittents of Mettleburgh, that if the cold and wet weather of autumn suddenly succeed an unusual dry and warm summer, these fevers rage more generally, and show a greater tendency to become malignant.

It is particularly observed also by army physicians, that agues are frequent if the warm day is succeeded by a cold damp night. This often happens in marshy countries: for the exhalations which rise during the day being condensed when the influence of the sun is withdrawn, the ground is covered for some hours with a thick mist.

Damp is particularly favourable to the operation of the marsh miasma. It is observed that those who live on small eminences, though equally exposed to the marsh miasma, are less liable to agues; and that people inhabiting ground floors are more liable to them than those in higher parts of the same houses. Sir John Pringle even observes, that of two battalions, quartered near each other, and on ground of the same height, the one in a town, the other in the peasants' houses in the country, the latter was more subject to agues, from the greater dampness of the cottages. In the works of Dr. Donald Monro, Dr. Brocklesby, and other army physicians, we find similar observations.

It has been urged, that we cannot suppose moisture favourable to the production of agues, as they are more

* De Medicina Indorum.

† Essays on Fevers, &c.

‡ On the Diseases in long Voyages to hot Climates.

|| Raymond on the Intermittents of Mettleburgh, in Baldinger's Sylloge Opusculorum.

frequent when there is but little water remaining on the surface, than when the whole country is covered with it. The inhabitants of Egypt, for example, are but little troubled with intermittents while their country lies under water; it is after the Nile retires within its banks that they chiefly prevail. And in the West Indies, it is observed, that while the pools are deep the fevers are either few, or of a milder nature. It is generally after their bottoms appear, that the worst fevers begin to rage.

But when the country is under water, there is, of course, less marsh miasma than when the moist ground is exposed to the action of the sun. Besides, the rapidity of evaporation, we know, is proportioned to the temperature and extent of surface: When the ground is wholly overflowed it presents a smooth and consequently the least possible surface, while, from the water being nearly pellucid, the rays of the sun have but little effect in raising its temperature*. When the water is drained off, the surface is increased by its being rendered unequal, and the sun acting now, not on the pellucid water, but the moist ground, greatly increases its temperature, which is farther increased by the putrefaction that in such circumstances proceeds rapidly. We frequently observe a thick mist over damp ground, but seldom on the surface of water.

Moisture seems to have so great a share in the production of agues, that at first view we are inclined to attribute the whole tendency of marsh miasma to the damp that accompanies it. Dr. Moseley† remarks, that agues are frequent during the rainy season in warm climates where there are no marshes. And Dr. Lind‡ observes, that a person may be seized with an ague in the most wholesome spot of ground in England. It is not a fair objection to this opinion, that an atmosphere loaded with moisture is not found to produce agues at sea, since on ship-board every thing is much freer from damp than in damp situations on land.

There are many observations, however, which seem to prove, that whatever effect damp may have in producing

* It appears, from the experiments of Mr. Melvil, in the *Edinburgh Literary Essays*, that light only increases temperature in proportion as it is obstructed, reflected, or refracted.

† See Dr. Moseley on Tropical Diseases.

‡ See the Appendix to his *Essays*.

agues, it is not the only, and probably not the chief, circumstance to which marsh miasma owes its effects. Dr. Lind remarks, that ships lying at a considerable distance from a swampy shore, escape intermittents; while others lying nearer, about the distance of a mile, perhaps, are subject to them. We cannot in this case attribute them to the moisture of the land breeze, since the thickest fogs on ship-board do not produce them. Many have doubted whether damp ever produces agues independently of marsh miasma. That it renews them there can be no doubt.

It seems to be by the damp they occasion that extensive woods favour the action of marsh miasma. They shed a constant moisture on the ground, and prevent both the rays of the sun from falling upon it, and the wind from passing over it. Besides, they confine the moist air, so that those who inhabit woody places are constantly exposed to an atmosphere loaded with moisture.

Soldiers encamped in woods seldom escape agues. There is ample proof of this observation in the works of Sir John Pringle, Dr. Cleghorn, and others. It appears from other observations, however, particularly those of Dr. Jackson and Dr. Rush, that scattered woods are of service, and in particular tend to prevent agues among those who live in the open country. One very evident way in which they may have this effect, is by preventing the diffusion of marsh miasma. Army physicians, therefore, recommend having a wood, if possible, between marshy grounds and an encampment.

If Dr. Rush's observations be just, this is not the only way in which they tend to prevent these fevers. It would lead into too tedious a discussion to consider this subject at length; the reader may consult his *Observations on the Causes of the Increase of Intermitting Fevers in Pennsylvania**.

The banks of rivers, if not swampy, have been recommended for the encampment of troops, with a view to prevent agues; the motion of the water occasioning a constant circulation of air, and thus tending to carry off the noxious vapours.

There are few causes which in a greater degree promote the action of marsh miasma than exposure to the night air.

* See the 2d vol. of Rush's Med. Inq. and Obs.

It appears from the observations of Mr. Badinock*, that this is a principal cause of the bilious remitting fever of sultry latitudes; and to the same cause Bontius wholly attributes the worst fevers of Batavia†. It is well known, indeed, both in the East and West Indies, that people are often attacked with agues from passing a single night abroad, especially in the woods.

Dr. Hales, in the 1st vol. of the Medical Museum, proposes wetting the body with salt water, with a view to prevent the bad effects of exposure to the night dews of warm countries, and adduces some facts in support of the benefit derived from this practice.

Respecting the predisposing causes of intermittents in general, it may be observed, that whatever tends to weaken the body, predisposes to them, whether it be excessive heat, or a cold and damp atmosphere, a poor and scanty diet, or gluttony and an abuse of fermented liquors, too much exercise or habitual indolence, bad clothing, strong passions, long watching, the habitual use of irritating medicines, particularly strong cathartics, and whatever else tends to disorder the primæ viæ, an improper use of the warm or cold bath, suppressed sweats or eruptions, or the ceasing or increase of any habitual discharge. In short, those who live well and at ease, who are not given to excess in eating or drinking, nor disturbed by strong passions, and who use moderate and regular exercise, are least subject to intermittents.

Some have thought that particular kinds of food predispose to these fevers. Aurivillius maintains that those who live on pork and fish are more subject to them than others; those at least are so, who live on food of a bad quality and difficult digestion.

Almost all the circumstances which have been mentioned as favourable to the action of marsh miasma are capable of renewing intermittents, independently of the cause which first produced them.

A curious circumstance seems to deserve a place among

* See the 4th vol. of the Medical Observations and Inquiries.

† Of the baneful effects of the night air at Batavia, Dr. Lind relates a striking proof. "During the sickly season, a boat, belonging to the Medway, man of war, which attended on shore every night to bring fresh provisions, was three times successively manned, not one of her crew having survived that service."

their predisposing causes, which, like the doctrine of critical days, has not gained general credit; although, like that also, it seems to rest on extensive observation. Dr. Lind, Dr. Jackson, and others, have made some observations relating to the influence which the changes of the moon are supposed to have in determining the accession or renewal of fevers, particularly those of warm climates.

After stating briefly what has been done by others on this subject, the latter observes, "In order to ascertain the truth of this conjecture, which I considered a matter of some importance, I provided myself with the almanack of the year 1776, and marked in the blank leaf of it the precise date of attack of all those fevers which came under my care." On looking over those memoranda at the end of the year, he found he had set down thirty cases of proper remitting fever, twenty-eight of which made their attack on one or other of the seven days immediately preceding new or full moon.

He continued the same plan through the following year, the result of which was similar. Besides the cases of proper remitting fevers, there were also marked in the almanack many slight feverish disorders, the accession of which in like manner was for the most part in the second and last quarters of the moon. The greatest number of these accessions were within three or four days of the new or full moon, for the nearer these periods the more frequent were the attacks. Dr. Jackson supports these observations by others, and from the manner in which they were made, there was little room for fallacy.

Dr. Lind accounts for the frequency of fevers at the new and full moon by the greater height of the tides at these periods. This, however, Dr. Jackson thinks, cannot be admitted, since the influence of the moon in fevers is as observable in inland situations as on the coast*. Concerning the whole of this subject, future and very extensive experience must decide. We know from the laws of gravitation, that at new and full moon every body in those parts of the earth where the sun at twelve o'clock of the day is a certain number of degrees above the horizon, has its weight twice

* For farther information on this subject, the reader may consult the work from which the above quotation is extracted. Dr. Jackson's Treatise on the Fevers of Jamaica; he may also consult Dr. Lind's Thesis, and Dr. Balfour on Putrid Fevers.

in the course of the twenty-four hours more diminished and more increased than when the moon is in its quarters, and the nearer the sun is to the zenith at twelve o'clock, the greater it is evident this difference must be. What effect this may have on the human body, we cannot determine. It is in vain to say that the difference is too inconsiderable to produce any effect, when we speak of a structure so complicated, in many of its parts so sensible, and of which, it must be confessed, we know so little. It is worthy of remark, that it is in those parts of the world, where the difference of weight just alluded to is most considerable, namely, within the tropics, that the changes of the moon have been observed to influence the accession of fevers. It is a curious fact, mentioned by Dr. Lind, that several sailors and others were attacked with fevers during an eclipse of the moon; that is, at the very time of full moon.

It is a common opinion, that salt water, mixed with the fresh water of marshes, produces a more noxious exhalation than fresh water alone. Sir John Pringle considers this fact as undoubted. The opinion has gained ground by its having been found that a small quantity of salt promotes fermentation. The author just mentioned, who made experiments in order to determine this point, observes, "Nothing could be more unexpected than to find sea salt a hastener of putrefaction; but the fact is thus.—" One dram of salt preserves two drams of fresh beef in "two ounces of water about thirty hours uncorrupted, "in a heat equal to that of the human body; or what "amounts to the same, this quantity of salt keeps flesh "sweet twenty hours longer than pure water; but half a "dram of salt does not preserve it above two hours longer "than pure water. Now I have since found (he adds) that "twenty-five grains have little or no antiseptic virtue, "and that ten grains both hasten and heighten the putrefaction*."

By others, however, it is asserted, that whatever be the septic power of a small quantity of salt, the admixture of salt water with the water of marshes is not found to increase their tendency to produce intermitting fevers. And Dr. Jackson remarks, that, as far as he has observed, the usual epidemic was less frequent and less formidable on the

* Appendix to Sir John Pringle's Observations, &c.

banks of rivers after their waters became mixed with those of the sea, than before this happened, unless the circumstances were in other respects more favourable to the production of the disease.

He also affirms, that although sea and river water are mixed together in various proportions in Savanna la Mar, in Jamaica, and in the numerous islands on the coast of the Carolinas, yet these places are seldom more unhealthy than where the lakes and rivers are unmixed.

Concerning the manner in which marsh miasma acts in producing agues we can say nothing with certainty. Nor has it even been ascertained, indeed, what marsh miasma is. We know that it is the effluvia, together with the moisture, perhaps, of marshy grounds; and this is all that we know of it. Is it the gas disengaged in the process of putrefaction?

Intermitting fever seems in general to arise from repeated exposure to marsh miasma. In most cases we cannot observe that the patient, at the time the fever makes its attack, is particularly exposed to its action*.

I have already had occasion to observe, that the marsh miasma is generally regarded as the only exciting cause of intermitting and remitting fevers. Contagion, however, seems to have a claim to be ranked as such. It may be doubted if intermittents ever arise from this cause. Trnka, in his elaborate treatise, entitled, *Historia Februm Inter-mittentium*, quotes a variety of authors, with a view to prove that even they are sometimes contagious. As to remittents, they are frequently so, and in general the more so the more they assume the continued form.

* Sometimes its effects are more sudden. "In the month of August, 1765," Dr. Lind observes, "the thermometer often rose to 82° in the middle of the day, and the marines, who were exercised early in the morning on the south sea beach, from the effects of the stagnant waters of an adjoining morass, suffered much; half a dozen at a time were often taken ill in their ranks when under arms."

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CHAPTER V.

Of the Treatment of INTERMITTING FEVER.

THE treatment of intermitting and remitting fever may be divided into two parts, that during the paroxysm, and that during the remission or apyrexia. The former is to be regarded as palliative only; it is on the treatment during the apyrexia or remission that we depend for the cure.

SECT. I.

Of the Treatment during the Paroxysm.

Our view in the treatment of the paroxysm is constantly to put a period to the stage which is present, by inducing that which naturally succeeds it, till a general sweat comes on.

There are two indications, therefore, in the paroxysm of an intermittent; to endeavour during the cold stage to induce the hot; and while the patient labours under the hot stage, to promote a free secretion by the skin. The following observations, however, must not be lost sight of; that although it is our view during the cold fit to induce the hot, we are not indiscriminately to employ all the means which tend to this effect. Many are otherwise so hurtful, that their bad effects more than compensate for any advantage to be procured by shortening the cold fit. A similar remark applies to the hot stage; all the means we employ at this period tend to promote sweat, but every thing which has this tendency is not proper.

1. Of the Means to be employed during the Cold Fit.

The patient's feelings generally point out the greater part of the treatment necessary in the cold fit. He should be put to bed and kept warm, and some have recommended

the warm bath. In warm climates it is both beneficial and grateful to the patient to stretch himself out in the sunshine.

The moderate use of warm diluting, but not stimulating, fluids, is proper. The latter increase the symptoms of the hot fit. All kinds of aromatics, therefore, distilled liquors and wines, should be used with caution, and altogether forbidden when there is any tendency to the inflammatory diathesis. Many do not allow drink of any kind in the cold fit, except to promote vomiting, as much fluid in the stomach and bowels generally increases the oppression*. This should be kept in view, but not to the total exclusion of the means of quenching thirst, which is injurious at all periods of fever.

It is common in fever to acidulate the patient's drink. For this purpose cream of tartar, or the vegetable, vitriolic or muriatic acids, are employed, and they are particularly useful when the stomach and bowels are loaded with bile. These, however, and the other medicines, which have been termed refrigerant, are improper in the cold stage.

The most effectual means of bringing on the hot fit is the operation of an emetic. This, if the disease be severe, should be exhibited as soon as the cold stage is formed, if it has not been given before that period; for we shall find that the cold fit is sometimes prevented by it†. The antimonium tartarisatum is here the best emetic, and should be given in pretty large doses. Nauseating doses are more properly indicated in the hot stage. When spontaneous vomiting from bile or other irritating matter comes on, diluents only are necessary.

Purging in the cold stage is improper, and blood-letting altogether inadmissible. A blister applied to the nape of the neck is proper if coma or delirium attend‡.

* See the observations of Dr. Cleghorn and others.

† For the use of emetics in the cold fit, the reader may consult many of the authors who have been mentioned. See also a paper in the 4th volume of the Edinburgh Medical Essays and Observations, by Dr. Thompson.

‡ There is a curious paper by Mr. Kellie, in the 19th vol. of Dr. Duncan's Medical Commentaries, concerning the application of tourniquets to the limbs, with a view to prevent or remove the cold fit of

Such are the few directions to be observed in treating the cold fit of an intermittent. The practice in the hot stage is more complicated.

2. Of the Means to be employed during the Hot Fit.

The indication of cure in the hot stage of intermittents, I have already had occasion to observe, is to promote sweat. This is done,

1. By removing every cause of irritation,
2. By dilution,
3. By the use of sudorifics,
4. By moderating excitement when it runs too high,
5. By supporting the strength when debility prevails.

1. Every cause of irritation tends to protract the hot fit. Cathartics, it has just been observed, are improper in the cold fit; they are necessary in the hot, unless the bowels are moved spontaneously; but much purging, as counteracting the tendency to sweat, is improper.

Of cathartics, calomel has lately been much recommended in fevers of all kinds, especially by the practitioners of warm climates; when the primæ viæ are oppressed with bile it should always at least form a part of the cathartic. It will presently appear that small doses of antimonium tartarisatum are, for another purpose, exhibited in the hot stage of intermittents. These often sufficiently excite the bowels.

The exhibition of emetics in this disease sometimes renders that of other medicines troublesome. But as emetics

agues. From the observations which he made, he drew the following conclusions:—1. That at any time during the cold fit of an intermittent, if tourniquets be so applied as to obstruct the circulation in two of the extremities, in three minutes thereafter the hot stage will be induced.—2. That if the tourniquets be applied previous to the accession of the paroxysm, the cold stage will be entirely prevented.—3. That where the cold stage of an ague is either thus shortened or prevented, the following hot stage is rendered both milder and shorter. Mr. Kellie's observations deserve attention; they are too confined, however, fully to ascertain either the success or safety of his proposal. I am informed that his experiments have been repeated at the infirmary of Edinburgh without success. Mr. Kellie has since published a work on the use of tourniquets in various diseases.

are not so well suited to the second as the first stage of intermittents, the only difficulty arises from the operation of the emetic given in the cold fit still continuing. When this happens, if the bowels are languid, we must have recourse to clysters. They are not, however, to be depended on, as their action is chiefly confined to the larger intestines. If the sweating is not immediately expected, a cathartic should be exhibited as soon as it can be made to lie on the stomach.

Various causes of irritation will be pointed out when we speak of continued fever, as it is more particularly in this fever that their effects are felt. As far as these operate in the paroxysm of an ague, the observations which will then be made are applicable to it.

2. During the hot fit the patient should not be refused the free use of diluting fluids. Many indeed do not permit him to drink till the sweating stage commences. Unless the quantity be very large, however, such fluids in the hot fit will not be found to increase the oppression, and they tend to promote sweat.

In the cold stage, and while the hot is forming, whatever drink the patient uses should be tepid; when the hot stage is perfectly formed, cold drink is both more grateful, and more beneficial. When a moisture appears on the skin, the drink should again be tepid.

In the treatment of all fevers we should have in view that the evacuant and diluent plan is debilitating. It is also to be remembered, in attempting to discharge the bile from the stomach and intestines, that purging, and still more vomiting, tend to emulge the biliary ducts, and seem often to excite the liver to a more copious secretion. We might therefore do much harm, were we to persevere in attempting entirely to free the stomach and intestines of a matter which, in consequence of the means we employ, is poured into them in greater quantity.

When a vomiting and purging of bile occurs spontaneously, diluents only are necessary; and if these motions prove obstinate, they must be allayed (when there is reason to suppose that the greater part of the bile is discharged) by opiates; which we shall presently see are otherwise useful at this period.

3. I have already had occasion to observe that vomiting is not so well suited to the hot as the cold fit. Nauseating doses, particularly of antimonial emetics, are more serviceable in the former, especially when combined with opium.

As our view here is to promote perspiration, James's Powder, which is supposed by many to be better calculated to excite the skin than the other preparations of antimony, is generally preferred to the *antimonium tartarisatum**. The *Pulv. Ipecacuanhæ compositus* is used with the same view, but seems inferior. Opium alone, when nothing counterindicates its use, has been found a powerful means of shortening the hot fit†. It seems to act chiefly by promoting perspiration. Various saline medicines have the same tendency, and whatever other means we employ, if the excitement be considerable, these always make a useful addition to them. The saline effervescing draught, nitrat of potash, and the liquor ammonia acetat, are the best. The vegetable acids also belong to this class of medicines. The mineral acids are not diaphoretic.

The cold affusion has been employed in intermitting fever; and from what is said in the 31st and following pages of Dr. Currie's Treatise‡, it is probable that it will be found a very useful remedy in the hot fit. It is to be employed when the excitement is considerable without damp on the skin. On the effects of the cold affusion in

* The preparation of James's Powder was long a secret, and procured its inventor much reputation and gain. It is now known to be a preparation of antimony, and perhaps in few respects superior to the *antimonium tartarisatum*. Till lately James's Powder was supposed to be the *calx antimonii nitrata*. Dr. Pearson's experiments, which have generally been supposed to place the nature of those powders beyond a doubt, make it the *pulvis antimonialis* of the London Pharmacopœia.—See Doctor Pearson's paper in the *Philos. Trans.* for 1791. Dr. Higgins used to observe in his lectures, that James's powder is prepared from a mixture of crude antimony pulverized and charred bones, calcined in a reverberatory furnace.

It is said Dr. James generally gave his powder conjoined with calomel, to which many attribute the success of this medicine in the hands of its inventor.

† See the observations of several of the authors who have been mentioned, particularly Dr. Lind, on the use of opium in intermitting fever.

‡ Dr. Currie's Medical Reports on the effects of water, cold and warm, as a remedy in fever, and other diseases.

intermittents, however, observations are still wanting. Dr. Currie also used it with success as a means of preventing the accession of the paroxysm, when the strength was sufficient to bear it in the absence of fever.

4. Wherever the inflammatory diathesis is considerable, not only the duration of the paroxysm, but that of the fever, will be protracted; and as this is the most frequent cause of obstinacy in intermittents, the means of relieving it may be regarded as the most important part of the treatment during the paroxysm; and, indeed, when these are not indicated, and the symptoms are moderate, little in general is necessary at this period, except what the feelings of the patient point out; for although the foregoing means always tend to shorten the hot fit, it is chiefly when they counteract the inflammatory diathesis, that they are to be regarded as essential to the cure of the disease*.

The means of relieving this diathesis are different according to its degree. I have already had occasion to speak of diaphoretics. The saline diaphoretics, above-mentioned, are proper in all degrees of increased excitement, and antimonial diaphoretics wherever it is considerable. I have also had occasion to make some observations on cathartics, the use of which in the latter case is doubly indicated. Few means are more generally applicable in states of increased excitement than dilution. Mild fluids copiously drank and thrown into the bowels are powerful in allaying excitement.

The foregoing means are in the majority of cases sufficient for this purpose; but no other remedy so effectually diminishes excitement as blood-letting. It is not, however, to be ranked among the directly curative means in the treatment of intermitting fever, but regarded as the remedy on which we chiefly depend for counteracting a certain diathesis that tends to protract the disease. This observation must be kept in view, since it has been asserted by some that the cure of intermittents may be attempted by blood-letting alone; which has often led to improper modes of practice. Mild vernal intermittents, indeed, which are

* This observation will be sufficiently illustrated in considering the use of the bark in intermittents.

generally more or less of an inflammatory nature, now and then yield to this remedy; but the only inference from this is, that such fevers require no remedy after the inflammatory tendency is removed. So far indeed is blood-letting from being the remedy on which we depend for the cure of agues, the truth seems to be, that except where the inflammatory diathesis is present, it is hurtful in these fevers. Even Sydenham, who recommends venesection with so much freedom, observes, that in young people a quartan, which would have terminated in six months, is by blood-letting protracted to twice that period: and in old people the disease is not only protracted, but life endangered, by the rash use of the lancet.

It is impossible to lay down any rule respecting blood-letting, in the different species of intermittents, which will be found generally applicable. The attempt to do this has involved the subject in much perplexity. We must consider what the symptoms are which render blood-letting necessary; at what period of the disease it is proper to employ it; what the consequences to be dreaded from it are; and in what circumstances these consequences are most apt to take place. I shall make a few observations on each of these heads.

Wherever the countenance is flushed, the head-ache considerable, the delirium or coma obstinate, or dyspnoea comes on with a full and hard pulse, blood-letting is necessary. When along with this state of the pulse, although unaccompanied by the foregoing symptoms, the fever assumes more of the continued form, we must have recourse to it*.

It is difficult to point out the degree of excitement which, independently of local affections or the fever assuming a more continued form, warrants the employment of blood-letting. It may, however, on the whole be observed, that when the temperature is much increased and the pulse strong, and there is nothing in the state of the patient which counterindicates blood-letting, some loss of blood will generally be serviceable.

* When the delirium, coma, or difficulty of breathing, is urgent, as sometimes happens, with a low pulse, and in cases where the strength of the patient has been much reduced, either by the continuance of the disease, or previous evacuations, local is preferable to general blood-letting.

Where there is no increase of excitement, and still more where the pulse is small, frequent, and intermitting, it is never to be employed. I do not speak of cases complicated with visceral inflammation.

With regard to the period of the disease at which we should employ blood-letting, as the continuance of every disease tends to debilitate, the symptoms which indicate this remedy are seldom present after it has lasted for a considerable time. Except, therefore, a new disease requiring blood-letting supervene, it is seldom proper in protracted cases. At the first attack, on the contrary, it is often necessary, particularly in the spring, or at other times when the epidemic has an inflammatory tendency*.

Blood-letting in the hot fit of agues was regarded by the ancients as a dangerous practice; succeeding experience, however, has contradicted this maxim. It should be avoided during the cold and sweating stages, and at the time the paroxysm is expected.

If we reflect on the intention of blood-letting in intermitting fever, indeed, so far from following the ancients, we shall find reason for confining this remedy to the hot fit. It has already been observed, that blood-letting is not to be regarded as one of the direct means of cure. It has been a favourite opinion in medicine, and still is with many, that fevers depend upon a noxious matter existing in the fluids, which may be evacuated by blood-letting. We have every reason to believe, however, that the effect of blood-letting in all kinds of simple fever, that is, of fever which is neither in any degree produced by, nor has itself caused, any local affection, is merely that of diminishing excitement, which, although not so violent as to threaten immediate danger, if much increased, always induces a degree of corresponding debility, and even when but little above the healthy standard, tends to protract intermittents.

During the remission or apyrexia, the excitement is never considerable, and blood-letting at this period will not prevent increased excitement during the ensuing paroxysm with the same certainty, that it will relieve it when

* See Dr. Curtin's letter to Dr. Duncan, in the 9th vol. of the *Medical Commentaries*, and the observations indeed of most authors who treat of the fevers of warm countries.

present. Besides, in proportion as the excitement is increased, the patient bears the loss of blood better*.

In intermitting fever, therefore, the most proper time for letting blood is during the hot fit of the first paroxysms.

The certain consequence of repeated blood-letting, especially when not employed with judgment, is debility, which is now and then so sudden, that patients have sometimes expired almost immediately after venesection. This is a rare occurrence, but the powers of life are frequently so impaired as to render the fever more obstinate and dangerous; or to undermine the constitution, and induce dropsy or other diseases of debility.

A consequence of blood-letting, not to be overlooked in diseases of long continuance, is plethora. It is well known that the quantity of blood formed by the system is generally proportioned to the demand for it, and, consequently, that habitual blood-letting seldom fails to produce habitual plethora.

There are few remedies whose good and bad effects more frequently seem to balance each other; so that cases occur in which the most experienced and acute physicians can hardly determine whether it ought to be employed or not. The general rule is, that wherever debility is present, or with certainty expected, blood-letting is dangerous; and yet in both these cases we must sometimes employ it. In idiopathic fevers, unaccompanied by any local affection, however, it is only the latter of the difficulties with which we have to struggle. For wherever debility is actually present in such fevers, blood-letting we shall find is decidedly improper.

In sultry climates fevers run their course rapidly, so that a strong full pulse, and the other symptoms of synocha, shall, in two or three days, be succeeded by those of extreme debility. This debility we know to be in a great degree the consequence of the previous excitement; yet the only means we have of effectually relieving the latter are of all remedies the most debilitating†.

* Dr. Lind regretted that he had bled a patient during the apyrexia; the event was unfortunate, and he owns that an experienced physician thought it probably would have been otherwise had the blood been taken during the paroxysm.

† Mr. Clark, after relating the fatal terminations of three cases in which blood-letting was employed to moderate the violence of excite-

In all countries, if the epidemic tends to debility, we must be cautious in the employment of blood-letting, whatever be the degree of excitement at the beginning; particularly if the patient is, or has lately been, subjected to the action of other debilitating causes. It must be sparingly used in hospitals, where patients are often exposed to a noxious atmosphere, and their strength has frequently been reduced by a scanty diet. For similar reasons, it is more to be feared in large and populous cities, than in the country; and in summer and autumn than in winter and spring; fevers in the former seasons tending more to debility. "*Æstate et autumnno,*" Burserius observes, "*sanguinis missio in intermittentibus minus convenit.*"

In all cases it is to be remembered, that blood-letting is more or less pernicious according to the constitution and habits of the patient. Those accustomed to it bear it better than others, and require it more. The same may be said of people of a robust habit, and in the vigour of youth.

A moderate blood-letting for an adult is ten or twelve ounces, but its extent of course must vary according to circumstances.

It appears, then, from what has been said,

i. That the symptoms indicating blood-letting in agues are those of increased excitement, and such as denote a disposition to local inflammation; especially if they appear when the fever shews a tendency to assume more of the continued form.

ii. That the period most proper for this remedy, is the hot fit, especially during the first paroxysms of the disease.

iii. That the consequences most to be dreaded from it are debility and its attendants; and

iv. That, on this account, it is most to be feared where the body is at the same time exposed to other debilitating causes.

5. Wherever there is much debility, especially where those symptoms appear which denote a great degree of debility in the natural functions, the paroxysm is protracted and the

ment at the commencement of the remittent of sultry climates, observes, that he has since found it necessary to lay aside blood-letting in such climates, both at sea and on shore, except in inflammations.

patient in danger of falling into typhus. I have already observed that these symptoms are seldom present to a considerable degree till the disease assumes, more or less, the nature of this fever. The treatment is then the same as in typhus, which we shall soon have occasion to consider at length.

All that we have to attend to in the sweating stage is to avoid whatever might tend to check the sweat; and to support the strength, if it is much reduced, by gentle cordials.

SECT. II.

Of the Treatment of an Intermittent during the Apyrexia.

The treatment during the apyrexia, I have already had occasion to observe, is the most important, and that which, strictly speaking, can alone be regarded as curative.

The indications are, to restore the patient's strength, and to prevent the return of the paroxysm.

1. Of the Diet and Exercise during the Remission or Apyrexia.

When the inflammatory diathesis prevails, the diet must be such as tends to counteract it. It should consist of milk and the farinaceous vegetables; and, unless the strength is much reduced, fermented liquors should be avoided.

When debility prevails, the diet should be as full as the stomach will easily bear. It often happens in debilitated states, that the stronger kinds of animal food occasion temporary fever. Beef, mutton, &c. ought therefore to be avoided; veal, lamb, and chicken, when the powers of digestion are not much weakened, will be found equally nourishing, and irritate less. The object is to choose that kind of food which affords most nourishment with least irritation. The same rule applies to liquids: when the strength is much reduced, the patient's drink should never be pure water, and in no case any mixture containing distilled spirits, except where fermented liquors, which have not been distilled, cannot be procured. Wine, particularly port wine, properly diluted, is the best; the quantity is

easily regulated by attending to the constitution and habits of the patient, and the effects which the wine produces. Of the fermented liquors of this country, cider and porter are generally found the best. He should eat frequently and slowly, and take care not to oppress the stomach by eating too much at one time.

While the digestive powers remain but little impaired, these are the only regulations necessary respecting the diet during the apyrexia. But it is not uncommon for a considerable degree of dyspepsia to attend, and then a more particular attention to it is requisite.

Acescent and oily articles of food, with a large proportion of liquid, compose the diet most difficult of digestion. The opposite to this, therefore, is that which agrees best with dyspeptics. I have just had occasion to observe, that the flesh of old animals irritates more during digestion than that of young. By this, however, it is not meant that the latter is of more easy digestion. Just the contrary of this is found to be the case. The flesh of old animals in general is most easy of digestion*. Nearly the same may be said of the food derived from the animal kingdom, compared with that composed of vegetables. The former is constantly found more irritating, more apt to induce fever; the latter more difficult to digest.

We must observe, therefore, the tendency to fever or dyspepsia, and regulate the diet accordingly.

Where it is our view to obviate the symptoms of dyspepsia, a diet composed pretty much of animal food and stale bread is the best. All kinds of soups, gravies, and fresh vegetables, should be avoided, and every thing into the composition of which butter, or any other oily substance, enters. The same may be said of all hard animal substances, salted and smoked meat, cheese, &c. The harder animal food is, it is the more difficult of digestion. This is not true of vegetable substances. Few things are more easy of digestion than a hard sea-biscuit, provided it be properly masticated. The tough, thready, and membranous parts of vegetables are of most difficult digestion; next to these, the cold vegetables eaten raw, melons, cucumbers, &c. Every thing, which by mastication forms a tenacious pulp, is of difficult digestion.

* There is an exception with respect to beef, which is more difficult of digestion than veal.

Wine properly diluted, particularly port wine, if its constipating tendency is obviated, is still the best drink. Many have recommended distilled spirits and water as less acedcent, but these in every form seem to apply a hurtful stimulus to the digestive organs. The same may be said of taking the drink very warm; the temporary assistance it gives to the digestion is more than compensated by its debilitating tendency. Cold drink acts as a tonic to the digestive organs; but I know many dyspeptics who cannot take it without injury below a certain temperature, and have seen a fit of dyspepsia induced by taking ice.

The rule of eating little, often, and slowly, is the more necessary, the more the stomach is weakened. The dyspeptic should not, on the other hand, eat too often; there should be an interval of four or five hours between meals. Eating slowly gives due time for mastication and for the food to mix with the juices of the stomach, and thus allay the appetite before the organ is overcharged. However well chosen the food may be, the dyspeptic must be restricted with respect to quantity. This caution is the more necessary, because the appetite in dyspepsia is often morbidly increased.

The exercise both of mind and body, at this period, also demands particular attention.

The different kinds of bodily exercise may be arranged under three heads. That in which the body is moved by its own exertions, as in walking; that in which it is moved by other powers, as in the various modes of gestation; and that in which the circulation is promoted without moving the body, by friction, for example, or merely by pressure.

Intermitting fever may induce such a degree of weakness, that friction may be the only kind of exercise which the patient can endure without fatigue. This, however, is seldom the case when the intermissions are considerable; but wherever the strength is much reduced, although a little of some rougher exercise may be borne, friction is always useful. It is the principal exercise among the higher ranks of some Asiatic nations, and it was used both by the Greeks and Romans after they became luxurious.

As the total want of exercise is not more pernicious than that which occasions fatigue, the different kinds of

gestion, even after the patient has recovered a considerable degree of strength, are often found preferable to those exercises, in which the body is moved by its own exertions.

The gentlest kind of gestation is sailing, which is serviceable in almost all cases of debility, and particularly in debility of the stomach and bowels*.

Next to sailing, the gentlest exercise in common use is the motion of a carriage. But for the most part in such climates as our own the patient must either be confined in a close carriage, or run the risk of taking cold. As a substitute for a carriage, but inferior to it, swings and spring chairs are used. None of these modes of exercise are equal to that on horseback, when the patient is strong enough not to be soon fatigued by it. It is particularly suited to those cases in which dyspepsia prevails†.

It is to be remembered, however, that any rough exercise, and particularly riding on horseback, soon after meals, disturbs digestion.

When walking can be borne for an hour or two without fatigue, it is the best exercise. It is that which nature intended. It is accompanied with a uniform and general exertion of the muscles, and from the valvular structure of the veins is better fitted than any other to promote circulation. It is generally of service to combine the different modes of exercise.

When the body is debilitated, the mind is often languid and listless. This state of mind is more or less counteracted by a due degree of bodily exercise, but the occupation of the mind itself is the best means of cure for it.

The maxims by which the exercise of the body is regulated are also applicable to that of the mind. The great rule is to exercise without fatiguing it. Any study which

* See Dr. Gilchrist's Treatise on the Use of Sea Voyages in Medicine.

† Of all kinds of exercise, Dr. Whytt (See his Treatise on Nervous Complaints) observes, riding on horseback has been justly esteemed the best. Sydenham is extravagant in his praise of this mode of exercise, and particularly recommends it in hypochondriacal and hysterical disorders. Riding, he observes, is preferable to walking, as it shakes the body more and fatigues it less.

fatigues is injurious, and a mind wholly unoccupied is no less so. When the debility is considerable, the mind should be occupied by amusement alone; and even those amusements which greatly interest the feelings, or occasion any considerable exertion of mind, may be hurtful. When, on the other hand, the patient has recovered a considerable degree of strength, a moderate attention even to business is serviceable. However varied our occupations, if they tend only to present gratification, they soon become insipid. The mind must have something in view, some plan of improving its condition, in order to arrest the attention for any length of time. There is nothing of greater advantage than the conversation of friends, who constantly present to the patient the fairest side of his future prospects.

The time of day, at which either the mind or body is exercised, is also a matter of some importance. Towards the evening every kind of exertion becomes irksome, and consequently hurtful. In the debilitated, a degree of fever (probably the consequence, of the unavoidable irritations of the day) comes on at this time, which is only to be relieved by repose; going early to bed, therefore, is of much consequence to them.

Exposure to the night air often appears to be more pernicious than we can easily account for.

But although it is of consequence for the debilitated to go early to bed, there are few things more hurtful than remaining in it too long. After the degree of strength, of which the present state of the system is capable, is restored by sleep, any longer continuance in bed tends only to relax. Getting up an hour or two earlier in the morning often gives a degree of vigour which nothing else can procure. I know people whose feet constantly become cold and damp if they remain in bed a few hours longer than usual. For those who are not much debilitated and sleep pretty well, the best rule is to get out of bed as soon as they awake in the morning. This at first perhaps may be too early, for debilitated habits require more sleep than those in health; but rising early will gradually prolong the sleep on the succeeding night, till the quantity which the patient enjoys is equal to his demand for it.

Lying late is not only hurtful by the relaxation it occasions, but also by occupying that time of the day, at which exercise is most beneficial.

In every circumstance respecting diet and exercise, much attention must constantly be paid to the patient's age, habits, and inclinations.

In old age repose is more necessary, and exertions of every kind are less beneficial and more apt to be hurtful.

Old people are less subject to that diathesis which disposes to inflammation, than the young; in them debility is most to be feared, and is removed with most difficulty. We seldom find occasion, therefore, to recommend a low diet to them.

No general rule, however, can be laid down; in old people we sometimes meet with the inflammatory diathesis, which must be treated in the manner above pointed out, but with the more caution the older the patient is.

In both old and young the inflammatory diathesis is most frequent in an early stage of the disease; the repetition of the paroxysm tends to overcome it and to produce debility; a poor diet, therefore, is seldom proper in protracted cases.

When the remissions are but imperfect, the patient has little or no desire for food or exercise, and nothing can be more hurtful than to force him to take either. An inclination to sleep, during the intermission, especially if it is short, should be encouraged. On the other hand, when he has an inclination to eat or walk about, we are not to insist on his keeping his bed, or abstaining from food. The necessity for sleep or food is best determined by his own feelings. Longings for particular articles of food, if not very improper, should be moderately indulged; the irritation they occasion, when not gratified, does harm.

In regulating the diet, during the intermission, some attention should be paid to the season of the year. In spring, I have already had occasion to observe, the inflammatory tendency prevails more frequently than in autumn. In the latter season, especially at its commencement, we dread debility; fevers are then most apt to become malignant. The warmer and moister the season is, this is the more to be feared. The inflammatory tendency prevails most when the weather is cold and changeable.

We must attend also to the nature of the prevailing epidemic. When it is accompanied with inflammatory symptoms, we must be cautious in the use of animal food and fermented liquors; when accompanied with symptoms of debility, every thing that weakens is to be avoided, and as full a diet advised as the state of the patient admits of.

2. *Of the Medicines employed during the Remission or Apyrexia.*

These may be divided into two classes: those exhibited during the whole, or a great part of the apyrexia; and those which are only employed about the time the paroxysm is expected.

Of all the medicines, recommended in intermittents, none has been so generally employed as the Peruvian bark*. On it indeed most physicians almost wholly depend in these fevers.

A remarkable cure performed by it on the countess del Cinchon, the Spanish viceroy's lady, in the year 1640, first drew the attention of Europeans to it. It is said, that the Indians were not ignorant of its virtues as early as the year 1500. In 1649, a jesuit brought a considerable quantity of it into Italy, which was distributed by the fathers of that order at a high price over a great part of Europe, from which circumstance it got the name of jesuit's bark; and, about the same time, the Cardinal de Lugo imported a quantity of it for the use of the poor at Rome.

The bark is an astringent bitter, with some degree of aromatic flavour; to none of these qualities, however, can its peculiar powers be attributed, since no combination of astringents, bitters, and aromatics, is found equally effectual.

A variety of prejudices respecting it prevailed for a long time after its introduction into Europe, and prevented its general employment. The more ancient of these do not even deserve to be mentioned, that those who use this medicine die within a year, or according to others within seven years, that it is particularly pernicious to fat people, &c. The more rational prejudices against it arose chiefly from the nature of the fevers in which it is recommended†.

Although most practitioners at present employ the bark in agues, at least when they are protracted beyond a few

* This medicine is mentioned by authors under a variety of appellations, chincona, chinachina, chinchina, kina kina, kinkina, quina quina, quinquina, pulvis commitissæ, gentiana indica, antiquarium Peruvianum, jesuiticus pulvis, Cardinal de Lugo's powder, &c.

† Dr. Millar (Account of the Diseases most prevalent in Britain) declares it his opinion, contrary to what he once thought, that the fever, and not the bark, is the cause of the obstructions and dropsies which frequently supervene on agues, and that the bark is the best means

paroxysms, there is some difference of opinion concerning the period of the disease at which it ought to be exhibited, the preparation of the patient, &c.

We determine when and how the bark is to be given by attending to the following circumstances :

1. The period of the disease.
2. The nature of the symptoms, particularly the presence of the inflammatory diathesis, or debility.
3. The climate, and season of the year.
4. The age and habit of the patient; and
5. The nature of the epidemic.

1. There has been some dispute respecting the best time of the apyrexia * for the exhibition of the bark. Many give

of preventing these affections. Dr. Jackson (*Account of the Diseases of Jamaica*) remarks, that he always found dysentery, dropsy, and visceral obstructions, most common where the bark was most sparingly employed. When the ague, Dr. Lind observes, was stopped by the bark immediately after the first or second fit, as in my own case and that of 200 of my patients, neither a jaundice nor dropsy ensued; whereas when the bark could not be administered on account of the imperfect remissions of the fever, or when the patient had neglected to take it, either a dropsy, jaundice, or a constant head-ache, were the certain consequences, and the degree of violence was proportioned to the number of the preceding fits, or to the continuance of the fever.

The bark, indeed, is by some ranked among the best means of removing such affections, when they are the consequences of agues. Dr. Brocklesby (*On the Diseases of the Army*) recommends it in cases of visceral obstruction after the use of mild and repeated emetics and cathartics; and Dr. Strack (*De Febribus Intermittentibus*) remarks, that he has found the bark more powerful than any other medicine in removing indurations of the spleen, and has observed it successful in the dropsical affections which supervene on intermittents.

It was a prevalent opinion in many places, that agues cured by the bark more frequently return than those which leave the patient after running their full course. This also is now regarded as a groundless prejudice (*Torti's Therapeuticæ specialis*). In short, amidst all the prejudices entertained against it, wherever it has been fairly tried in agues it has proved both safe and successful.

* While the intermitting form remains distinctly marked, it is universally admitted that the exhibition of the bark during the cold or hot fits is improper. Dr. Fordyce made a trial of the bark during the hot fit, and found that it both increased the length of the paroxysm, and rendered the crisis less perfect. Dr. Cleghorn also remarks, that when the bark was given during the paroxysm, the patient died; but he recovered often after his case seemed desperate, if the remissions were seized for the exhibition of this medicine.

it immediately after the paroxysm, and at intervals till the fever returns; others only during a few hours before the paroxysm. The question may be determined by attending to the duration of the apyrexia, the quantity of bark required, and the quantity which the stomach is capable of receiving in one dose*.

When the apyrexia is short, and the quantity of bark required considerable, it must be given immediately after the paroxysm, and continued till the return of the next, at longer or shorter intervals, according as the case is more or less urgent, and the stomach able to bear it. On the other hand, when the apyrexia is long, and especially when a great quantity of the bark is not necessary, its exhibition should be delayed till within six or eight hours of the time at which the paroxysm is expected. For a considerable quantity given at this period is more likely to succeed, than the same quantity given in smaller doses, throughout a long apyrexia.

It appears probable from many observations that in the cure of intermittents this medicine acts chiefly by its effects on the nerves of the stomach and intestines, and consequently that our endeavours should be directed to have a considerable quantity of it in the primæ viæ, at the time the paroxysm is expected.

Many have attempted to determine the quantity of bark which will with certainty remove an intermittent†; this, however, depends on various circumstances which will be pointed out as we proceed. It may be remarked upon the whole that tertians require more bark than quotidians; and quartans, than tertians.

• While the prejudices against the bark were prevalent, it was generally exhibited in the former of these ways, in all cases. The doses were small, and the intervals at which they were given long. Sydenham disapproved of giving the bark in large doses, and generally endeavoured to seize long intervals for its exhibition. He recommends mixing an ounce of bark with syrup of roses, and giving the patient the size of a nutmeg morning and evening, on the days of intermission, until the whole quantity is finished. The same quantity was repeated in fourteen days, which was given a third time in the same manner. While such was the mode of prescribing the bark, we cannot be surprised that it was not found very successful.

† Dr. Millar observes, that he cannot recollect a case of remitting fever, in several years extensive practice, in which the patient died after taking two ounces of bark. And Mr. Reid, in his Account of the Diseases of the West Indies, makes the same observation.

2. When the pulse during the paroxysm is strong and full, and still more when it is hard, when the face is flushed, and the heat considerable, especially when these symptoms are accompanied with rheumatic or pleuritic pains, or difficulty of breathing, even although the apyrexia be complete and long, the bark must not be exhibited, till the recurrence of such symptoms is prevented by the means already pointed out in the treatment of the paroxysm*.

It is chiefly at the commencement of the disease that the inflammatory diathesis prevails, and when this is corrected, mild, especially vernal intermittents, often yield spontaneously†. The continuance of disease tends to overcome

* What is here said is well illustrated by Sir John Pringle's Account of the Intermittents prevalent among the British troops on the Continent, which were of an inflammatory nature. He generally found it necessary to begin with opening a vein, and to repeat the blood-letting according to the urgency of the symptoms. Most of the remittents which came under his care, either in spring or towards the end of autumn, were accompanied with pleuritic or rheumatic pains; and the use of the bark often changed them into continued inflammatory fevers. It may be observed, in confirmation of what was said of the proper period for blood-letting in these fevers, that he particularly recommends the hot fit for this purpose. He generally gave a cathartic immediately after the blood-letting. There are few authors who treat of intermittents, who have not had occasion to make similar observations. Dr. Donald Munro, in particular, gives nearly the same account of the remittents which prevailed among the soldiers on the Continent. When the bark had failed on several trials, Dr. Rush observes, one or two moderate blood-lettings generally secured its success; in these cases, he adds, the pulse is full and a little hard, and the blood sily. The bark is always unsuccessful, he justly remarks, when blood-letting is necessary, and he says he has known many instances in which pounds of this medicine had been given without effect, which yielded readily after ten or twelve ounces of blood were taken away. Dr. Rush thinks that blisters often serve the purpose of blood-letting in these cases; but they are not to be depended upon. How different a mode of treatment is to be pursued, when our practice in agues is not incumbered by the presence of the inflammatory diathesis, will appear from comparing what is said by these authors, with what Dr. Jackson says of the fevers which prevailed among the troops in America. In the autumnal months, when signs of malignity and danger were present, he generally seized the first intermission for exhibiting the bark, without premising either vomiting or purging, even where the bowels were loaded. He gave two drams for a dose, and repeated it every two hours, while the fever was absent. Two ounces, he observes, taken in the space of eight or ten hours, were often more effectual than double the quantity in small doses and at long intervals.

† Dr. Cleghorn seldom gave the bark in tertians till the fifth day: From the paroxysm which took place on that day, he judged whether

this diathesis. On this account practitioners have found, that many intermittents yield to the bark with more ease, after they have run through several paroxysms, than at their commencement*.

Many, from this circumstance, have been led to lay it down as a general rule, that the bark is not to be given at the commencement of agues; and this rule they found the more useful, as it was often necessary to clear the *primæ viæ* before its exhibition. Such appear to be the sources of the prejudice against giving the bark at the commencement of intermittents; for a prejudice it certainly is, when made a

or not the bark was necessary, and in what quantity it ought to be given. If this paroxysm, namely the third, was not longer and attended with worse symptoms than the second, if the patient preserved his strength, and if a lateritious sediment appeared in the urine, he often ventured to trust the cure to nature. As he judged from this paroxysm of the future treatment of the disease, he was careful to premise such medicines as tended to moderate it, and prepare the body for immediately receiving the bark, in case the symptoms of the third paroxysm proved it to be necessary. During the first three or four days, therefore, he ordered evacuations. It was his custom to take away a little blood at the commencement of the disease, if the state of the patient admitted of it; and he never failed to clear the *primæ viæ* at this period; and to these means alone the complaint sometimes yielded. But if the third paroxysm was the longest and most severe, if it was attended with any dangerous symptom, if the sick became giddy, feeble, or languid, without delay he had recourse to the bark. As soon as the sweat ceased to flow, he ordered two scruples or a dram of it to be given every two or three hours, or every hour and half, so that five or six drams might be taken before next day at noon. It is necessary, he remarks, that a considerable quantity of the bark be given at this period: since after it, the fits are often redoubled, so that we have not a proper opportunity of giving the medicine. It is to be remembered that Dr. Cleghorn practised in the mild climate of Minorca. In general we shall find that the exhibition of the bark should not be delayed so long as he recommends, particularly in autumnal agues.

* When the patient was athletic, Dr. Brocklesby observes, he allowed the fever to run on for a little, before he gave the bark. Giving the bark too early, he remarks, in athletic habits, produced much pain of the head, yellowness of the eyes, and sometimes continued fever.—Hillary also observes, that he has frequently seen the early use of the bark render the fever continued, and of a bad kind. See Brocklesby on the Diseases of the Army, and Hillary's Account of the Diseases of Barbadoes.

In those cases, where the tendency to inflammatory symptoms prevents our giving much of the bark, Dr. Brocklesby recommends combining with it myrrh, snakeroot, or some other such medicine, till the inflammatory diathesis is sufficiently removed to admit of giving it in larger doses.

general rule. If confined to those cases in which the inflammatory diathesis prevails, it is the result of universal experience.

It would appear, however, that we are not, in such cases, as Dr. Brocklesby and others recommend, to defer the bark till the continuance of the disease has overcome this diathesis; but till it is corrected by the proper use of the means above pointed out. There is nothing in the nature of intermittents, except their being frequently attended by the inflammatory diathesis, which prevents the use of the bark, after the first paroxysm.

When the pulse is feeble and quick, and the strength greatly reduced, the early exhibition of the bark is indispensable*.

While the inflammatory diathesis is present, the bark proves the more hurtful, the more the fever shows a tendency to become continued. The use of the bark in these circumstances indeed often renders it so.

The contrary of this observation is true of the cases in which debility prevails; in these, provided the remissions are still distinctly marked, the greater tendency the fever shows to become continued, the greater quantity of bark is required; and when the debility is very great and the remissions short, it may be given through the whole paroxysm†. The more the patient is capable of receiving,

* Dr. Brocklesby observes, that when the patient was weak and irritable, he gave the bark immediately, and then did not even wait for the previous exhibition of emetics and cathartics, whatever the state of the bowels might be. This part of Dr. Brocklesby's observations is well illustrated by those of Mr. Clark on the Diseases in long Voyages to hot Climates, which in a striking manner point out the propriety of having immediate recourse to the bark wherever there is much debility; and particularly if the symptoms peculiar to typhus make their appearance. "If the remissions are distinct, (he observes) the bark will have "a more speedy effect; but even although the disease," (which was always attended with symptoms of debility) "is continued, by its use, it "is effectually prevented from growing dangerous and malignant." When the patient was too weak to receive the bark in powder, he had recourse to the decoction, and when even this could not be retained alone, he gave along with it a large dose of solid opium; for the patient's life seemed to depend on its exhibition. In such cases he found much benefit from giving wine along with the bark. This is not only serviceable by supporting the strength, but also by rendering the bark more effectual; for in very debilitated states of the system much larger quantities of the bark are required, to prevent the return of the fever.

† The bark (says Raymond) should be given during the paroxysm, with much acid, particularly the vitriolic acid, when the patient has the

the greater tendency the fever shews to resume the intermitting form.

These observations have been frequently overlooked, and much confusion has arisen from writers attempting to lay down, as generally applicable to the treatment of agues, the maxims of practice which they found suited to the particular cases which fell under their own observation.

In the exhibition of the bark, more attention has been paid than seems necessary, to the state of the stomach and bowels. It is a very prevalent opinion, that while the stomach and bowels are loaded, whatever be the state of the symptoms, the bark ought not to be exhibited*.

When the symptoms are not urgent, and especially when the inflammatory diathesis prevails, if there is reason to suspect the presence of irritating matter in the stomach and bowels, it is proper to delay the use of the bark till after the operation of an emetic and cathartic.

But in urgent cases, and where there is no inflammatory diathesis, we have reason to believe that the exhibition of the bark ought not to be delayed, whatever be the state of the stomach and bowels: for it even appears from many observations that actual vomiting and purging should not induce us to delay the exhibition of the bark, when the state of the fever greatly demands it†.

facies hypocratica, when he is subject to syncope or coma, and his pulse intermits, and then, he adds, it is the best of all remedies, and often rescues the patient from the very jaws of death. See Raymond's paper on the Intermittents of Mittlinburgh, in Baldinger's *Sylloge Opusculorum*.

* Intermittents, Dr. Mead observes, (*Monita et Præcepta Medica*) are not safely cured by the bark until the *primæ viæ* have been cleared, and most writers on the subject make similar observations.

† "I may remark," says Dr. Jackson, "that the bark was often rejected by the stomach, and in some cases past off almost instantly by stool, yet the course of the fever seemed to be no less effectually checked by it than when such effects did not occur."—"In violent cases," Dr. Donald Munro observes, (in his *Account of the Diseases of the Army*), "where it was necessary to give the bark before emetics and cathartics could be exhibited, I often gave it along with a cathartic, and found that keeping up a catharsis did not prevent the bark curing the ague." From these and similar observations it appears, that the remark of Dr. Millar (in his *Work on the Diseases most prevalent in Great Britain*), and others, that the exhibition of the bark can be of no service while a diarrhœa continues, is unfounded; or at least not to be admitted in its full extent.

From the same observations also, we must infer that the common practice of giving large doses of opium, and other medicines, to allay spontaneous vomiting and purging, in order to exhibit the bark early in urgent cases, is often improper; since the continuance of these will not prevent its salutary effects, if it can be made to lie on the stomach only for a short time, and the dose be constantly repeated; and by checking them we lay up a fruitful source of irritation, which never fails to increase the fever.

In less urgent cases, where the immediate exhibition of the bark is not necessary, if spontaneous vomiting and purging occur, the proper treatment is to promote these evacuations by diluents, till the primæ viæ are sufficiently cleared; and then to allay the commotion excited by opiates, before we order the bark.

3. The climate and season of the year influence our practice in the use of the bark. As in sultry climates the changes in fevers are frequently very sudden; evacuations, though apparently necessary at their commencement, often prove fatal by increasing the subsequent debility. In these climates, therefore, when the symptoms are not very urgent, but a full pulse and other signs of the inflammatory diathesis, appear, instead of preparing the patient for the bark by blood-letting*, it is often safer to defer the febrifuge till a few paroxysms of the fever have removed this diathesis, and to promote that effect by cooling laxatives, and diluent clysters†.

In this, as in many other instances, much depends on the discernment of the practitioner, even after he is made

* Dr. Lind, in his account of the Remitting Fever of Bengal, relates a remarkable instance of the bad effects of blood-letting in tropical climates, even when employed with caution. A patient of his, convinced that it would relieve him, insisted on being bled. Dr. Lind in vain dissuaded him from it. Although only five or six ounces were taken from him, he immediately lost his strength, and in less than an hour was carried off by the next fit. Mr. Badinock and the surgeon of the Ponsborne, he observes, bled each of them two patients; each lost one.

† It is on account of the tendency to debility in the fevers of sultry climates, that we find authors insisting particularly on the necessity of having recourse to the bark in these fevers at an early period. I have already quoted the observations of Dr. Jackson. The early use of the bark, Dr. Brocklesby observes, is particularly necessary in the fevers of the West Indies, especially in those which appear in the rainy season. It was observed above, that it is during the rainy season of sultry climates that the most dangerous fevers prevail.

acquainted with every circumstance which ought to influence his judgment. When the inflammatory symptoms run so high as to bring the life of the patient into immediate danger, we must in every part of the world have recourse to blood-letting. And we are also to remember that the continuance of violent excitement, even where life is not in immediate danger, is itself a highly debilitating cause, and will often debilitate more than a well timed blood-letting which relieves it*.

In cold climates, fevers of all kinds, and particularly agues, are more generally accompanied with inflammatory symptoms; evacuations previous to the use of the bark, therefore, are more necessary, and fortunately are not attended with the same danger.

Even the season of the year in the same climate influences the exhibition of the bark. In spring, from the greater prevalence of inflammatory symptoms in agues, evacuations are both more necessary and safer than in autumn, in which debilitating causes are apt to induce the continued form.

4. In the young and plethoric, the pulse is often full; and evacuations, previous to giving the bark, necessary. In the old and those reduced by low diet, previous disease, or any other cause, it is seldom proper unless there be a tendency to local inflammation, to prepare the patient for the bark in any other way, than by a gentle emetic and cathartic when the stomach and bowels are loaded. In these cases the bark should be given in considerable quantity during the first or second intermission, because in debilitated habits the continuance of the fever is not only most to be dreaded, but more powerful means are required to stop it. It is to the last circumstance, together with the power of habit, that we are to attribute the obstinacy of protracted cases.

5. The nature of the prevailing epidemic is constantly to be kept in view. When it is frequently attended with local inflammation, or when the inflammatory symptoms of the fever itself run high, the bark must be used with caution; and never till after proper evacuations. When, instead of these symptoms, there is a tendency to debility and consequently to typhus, it must be given early, and in large quantity, and evacuations cautiously advised.

* Dr. Lind's Treatise just referred to.

The bark may be used in extract, tincture, infusion, or decoction; but it is now generally admitted that when the stomach can bear it, the simple powder is the best preparation. It never succeeds so well as when given in substance.

When we cannot persuade the patient to take the bark by the mouth, or it will not remain on the stomach, it may be injected per anum. This, however, is a much less efficacious way of giving it.

The external use of the bark has also been recommended, and is sometimes serviceable. It is not, however, to be depended on. It is only in children, who require a smaller dose, that we can expect much advantage from it. The best mode of applying it is to sew the powder into that part of the clothes, which is wrapt about the body. It is sometimes made into poultices, and applied to the stomach and wrists, or the decoction is used as a bath for children*.

In some cases it is proper to give other medicines along with the bark. When the strength is much reduced, the powder may be given in wine, and more or less of the wine taken between the doses. When the stomach is very irritable, a dose of solid opium, or opium and camphire, given with it, often enables the stomach to retain it. Nothing is of more service in preventing the nausea and oppression which frequently attend the use of the bark, than a few drops of the vitriolic acid; when the thirst is urgent, the supertartrate of potash and vegetable acids may be given with it†.

In soldiers, sailors, and others, who have been accustomed to the use of distilled spirits, brandy and water is often the most convenient vehicle. Porter was recommended by Morton, and by Dr. Lind in the fever of Bengal. Lime water is particularly recommended by Mr. Skeete, and muriate of ammonia by Dr. Brocklesby, as increasing the virtues of the bark. The former thinks that rubbing the powder with calcined magnesia previous to preparing the infusion has the same effect.

When the stomach is habitually weak, aromatics,

* For the external use of the bark see the 2d vol. of the London Medical Observations.

† Dr. Lind on the Remittent of Bengal.

bitters, or astringents, joined with the bark are often beneficial*.

When the bark occasions purging, we must have recourse to opiates and astringents. If there is reason to suspect that the purging proceeds from acidity, which is sometimes occasioned by the bark deranging the digestive powers, an antacid must be combined with it. If on the other hand it occasions costiveness, it is necessary to give gentle aperients; for this purpose rhubarb is particularly recommended by Dr. Mead; it has the double advantage of moving the body and tending to restore tone to the stomach and bowels.

Milk and liquorice are the best means of covering the taste of the bark†.

There are three kinds of bark in use in this country, the red, the pale, and the yellow. The genuine red bark is more bitter and astringent to the taste than the pale, and shows a greater degree of astringency with chalybeate solutions. It likewise contains more resin. But the proportion of the resin differs in different parcels. There can be little doubt that the genuine red bark is more powerful in the cure of agues than the pale, as appears from the observations of Saunders‡, and Rigby§ on this bark, and Skeete's treatise on the red and pale bark. Dr. John Hunter|| says, he often found the red bark more effectual than the pale, but thought it more apt to affect the bowels.

Whatever be the efficacy of the genuine red bark, it is very doubtful whether that now sold be at all superior to the pale. It is said to owe its deeper colour to being dyed. A quantity of the genuine red bark was first brought to England in a Spanish prize, captured in 1781, and it is very doubtful if any more of it ever came to this country.

Physicians seem to agree that the yellow bark is the most powerful we now possess. It was hardly known in England before the year 1793. Dr. Ralph, physician to Guy's Hospital, has published some observations on it.

* See the works of Drs. Mead, Brocklesby, Lysons, and others.

† The Materia Medica of Dr. Lewis.

‡ Saunders on the Red Peruvian Bark.

§ Rigby on the Red Peruvian Bark.

|| See his Account of the Diseases of the West Indies.

I have treated of the bark at considerable length, because in most places the cure of agues is now almost entirely trusted to this medicine; and where it has met with a fair trial, it has been attended with a degree of success which sufficiently justifies the general partiality in its favour. Sometimes, however, it is ineffectual; in some places it cannot be easily procured; in others its high price often prevents the poorer ranks from using it in sufficient quantity; it is therefore necessary to be acquainted with the other medicines which may be used with the greatest probability of success.

I shall in the first place make some observations on the other barks which have been employed in agues.

The Angustura bark was first imported from the West Indies in 1788. It has been found successful, though inferior to the Peruvian bark in the cure of agues. We are not acquainted with the tree which produces it, its place of growth, &c. Respecting these points Mr. Brand, in a treatise on it, the second edition of which appeared in 1793, makes some conjectures. The Angustura bark is given in smaller doses than the Peruvian bark. It is less apt to disorder the bowels, and has sometimes succeeded in agues where both the red and pale bark had failed. It is to be observed that an intermittent's yielding now and then to a second remedy, after the first has failed, is no proof of the second being upon the whole preferable. There are many instances of simple bitters having succeeded in the cure of agues, after the bark had failed. The change, although to a medicine upon the whole less efficacious, seems often beneficial. The reader will find an account of the Angustura bark in the treatise just mentioned, and in several papers referred to in it.

The *cinchona Jamaicensis*, discovered by Dr. William Wright, has also been used with success in intermittents; it seems inferior, however, to the bark last mentioned. The reader will find Dr. Wright's account of it in the Philosophical Transactions for the year 1772. There are also some observations on it in Dr. Skeete's Treatise on the quilled and red Peruvian bark.

The St. Lucia bark or *cinchona Caribbæa* has also been found successful in these fevers. Dr. Kentish has published

an account of some experiments made with it, and Mr. Wilson, of St. Lucia, wrote a paper on it, which appeared in the Philosophical Transactions. Dr. Skeete thinks it probable, that a similar bark is produced in all the West India Islands. This is perhaps superior to the cinchona Jamaicensis.

The bark of the mahogany tree, Dr. Wright informed me, has often been used with success in intermittents. But from the trials he has made he considers it as much inferior to the Peruvian bark. It is so like the latter that it has been fraudulently mixed with it, or even sold for it unmixed.

The Tellicherry bark, or as it is called in the East Indies, the corte de Pala, has also been found successful.

The bark termed *Swietenia febrifuga*, an account of which the reader will find in a thesis, published at Edinburgh in 1794, by Dr. Andrew Duncan, jun. has been employed in agues. This bark was discovered and sent from the East Indies by Dr. Roxburgh. Dr. Duncan terms it *Swietenia soymida*. Soymida from the Indian name of the tree from which it is procured. It often succeeds; but from the trials made with it, both at Edinburgh and in other places, its virtues seem to be considerably inferior to those of the Peruvian bark.

The broad-leaved willow bark is also occasionally successful, though inferior to most of the preceding.

Such are the principal barks which have been recommended in intermittents. A great variety of other articles have occasionally been employed.

The *lignum quassiae* is much praised by Linnæus and Aurivillius. It is not, however, come into general use; we now know it, contrary to the opinion of these authors, to be much inferior to the bark.

The *fabæ Sancti Ignatii* has been used by Dr. Lind and others with success. Bitters in general indeed have been found a more or less successful substitute for the bark in intermittents. Those just mentioned, wormwood, *carduus benedictus*, camomile flowers, gentian, Virginian snake-root, the lesser centaury, and the bitter orange peel, have been chiefly employed.

A variety of astringents have also been employed; oak bark and galls, alum, the various preparations of iron, &c.

Astringents in general are inferior to bitters in intermitting fevers. The combinations of astringents and bitters seem to be more powerful than either singly.

Aromatics also have been recommended; camphire, musk, myrrh, &c. The reader may consult a paper by Mr. Collins, in the 2d volume of the Medical Communications, for the use of the capsicum in agues.

Various metallic preparations have been employed. There are some observations on the use of the calx and sulphate of zinc, particularly of the former, in the cure of agues, by Dr. Blane, in his work on the diseases incident to seamen. The reader will find instances of agues cured by mercury in the 6th volume of the Edinburgh Medical Essays and Observations. In one instance, related by Dr. Donald Monro in the 2d volume of the Medical Transactions, this fever yielded to no remedy that could be thought of, till after a course of mercury, which had no apparent effect but that of reducing the patient's strength. It then yielded readily to the bark. Hoffman and Willis* have also recommended mercury in intermitting fevers. Its powers, however, in these fevers are but inconsiderable. Van Swieten† says, he has seen a quartan last through the whole of a very complete mercurial salivation! and De Meza‡ even alleges, that mercury sometimes increases the malignity of intermittents.

A metallic oxyd, of greater activity than any of the medicines which have been mentioned, has lately been much employed. The medicine called Ague Drops, it is said, owes its efficacy to arsenic.

The use of this mineral in agues, however, has not been confined to the practice of empirics. Many practitioners of the first respectability employ it; and it is certain, that agues, which have resisted the most assiduous use of the bark and other medicines, have yielded to arsenic, as I have myself repeatedly witnessed. I have already had occasion to observe, that an intermittent's yielding to a second remedy after the first had failed, is no proof that the

* See Willis, Opera Omnia, published at Geneva in 1782.

† See his Comment. in Aph. Boerhaavii.

‡ See the first vol. of the Acta Societat. Med. Havniensis.

See also a paper by Schulze and Grævius on the use of Mercury in Quartans, in the 5th vol. of Haller's Disput. ad Morb. Hist. et Cur. Pertin.

second is upon the whole preferable. From many observations, however, we have reason to believe arsenic the most effectual of all the medicines which have been used in these fevers. In the medical reports of the use of arsenic in the cure of remitting fevers and periodic head-aches, by Dr. Fowler of Stafford, we have ample proof of its success, and, as far as his experience goes, of its safety*.

In the 19th volume of Dr. Duncan's Medical Commentaries there are a few additional observations on this subject, by the same author; and in letters subjoined to Dr. Fowler's Treatise, it has the sanction of many respectable practitioners. In some parts of England it is very generally employed; and no dangerous consequences appear to result from it.

The bad effects which small doses are apt to produce, even when given with caution, are, disorders of the stomach and bowels, swellings of the face, or other parts of the body, an increased or diminished flow of urine, slight eruptions, head-ache, sweating, and tremors. These effects may generally be removed by gentle laxatives and emetics, or merely by discontinuing the use of the arsenic. Combining with it small doses of opium has been found in some measure to obviate them.

Other remedies have been employed, chiefly by the vulgar, and have occasionally succeeded: such as bay leaves dried and powdered, in the quantity of a dram, three times a day; half a dram of the inner bark of the ash, or half an ounce of sulphur in a glass of strong beer, taken occasionally, &c. Some of these seem to operate chiefly, if not wholly, by their effect on the mind, such as camphire and saffron hung in a bag at the pit of the stomach, cobwebs mixed with crumbs of bread taken in pills, &c. It is a practice among the vulgar in some places to take half a pint of their own urine three mornings successively, which is said to be a very effectual remedy. Any

* The following is his mode of giving it:—64 grains of white arsenic reduced to a very fine powder, and mixed with as much vegetable alkali, is added to half a pound of distilled water, and gently boiled in a Florence flask, in a sand heat, till the arsenic is completely dissolved; half a pound of compound spirit of lavender is then added to it, and as much more distilled water as makes the whole solution amount to a pound. The dose of this is from two to twelve drops, once, twice, or oftener in the day, according to the age, strength, &c. of the patient.

thing capable of making a strong impression on the mind, whether by exciting horror, superstitious dread, or confidence, occasionally succeeds.

The means recommended when the paroxysm is expected, form the last division of those employed during the apyrexia.

When the paroxysm is expected, the patient should avoid exposure to cold. Some have recommended the use of the warm bath. He should avoid taking much food or drink; and if there is no tendency to the inflammatory diathesis, what he takes should be moderately stimulating. Diaphoretics are frequently serviceable, given a little before the fit is expected; for if we succeed in keeping up a sweat, the accession of the paroxysm is often prevented*.

It is the general opinion, that the stomach and bowels, if loaded, should be cleared at this period, by the operation of an emetic and cathartic. Few medicines more powerfully promote perspiration than emetics, and to this their effects in preventing the paroxysm of agues must in part be ascribed. They seem also to operate by making a strong impression on the nervous system.

The employment of cathartics is a more doubtful practice, and seems to have been rather the result of hypothesis than observation. Should the acrid contents of the bowels produce spontaneous diarrhœa, it may be proper to encourage it by warm diluting fluids. Checking the purging would lay up a source of irritation which would not fail to aggravate the symptoms of the ensuing paroxysm; but if purging do not spontaneously occur, it ought not to be induced at this period.

The means which prove successful in preventing the paroxysm of agues in the way I am speaking of, produce either a sudden and strong impression on the nervous system, a quickened circulation, or sweat.

Purging produces none of these, but rather their opposites. It makes no powerful impression on the nervous system; it retards the circulation, by enfeebling the powers

* "Intermittentes tertianas autumnales," Sydenham observes, "hoc pacto aggredior ægro in lectulo composito et stragulis undique cooperto sudores provoco, sero lactis cerevisiato, cui salviæ folia incocta fuere, quatuor circiter horis ante paroxysmi adventum."

which support it; and so far from promoting sweat, it even checks it when it has been induced by other means.

Sydenham recommends opium after the operation of the emetic, if this be over before the fit commences. Opium not only makes a strong impression on the nervous system, but also gives a temporary vigour to the powers supporting circulation; and is one of the most powerful diaphoretics we possess.

In whatever manner we use opium with a view to prevent the fit, the patient under its operation should be put to bed, kept moderately warm, and supplied with tepid diluting fluids.

When we have endeavoured in vain during the first paroxysms to prevent their accession, by inducing vomiting or sweat, we are not to persevere in the use of these means; since if they do not soon remove the disease by their debilitating effects, they render it more obstinate. Dr. Cullen remarks, that endeavouring to prevent the paroxysm by keeping out a sweat, has often changed the fever to the continued form.

Many medicines, however, have been employed with the same view, which instead of debilitating tend to invigorate. It has been found that a large quantity of the bark received into the stomach immediately before the paroxysm is expected, frequently prevents its return. Dr. Millar and others have observed, that an ounce of the bark taken at a single dose when the fit is expected, not only often prevents the paroxysm, but sometimes wholly removes the disease. This, however, is far from being the best mode of giving it. Few stomachs can bear so large a dose, and it seems to answer better when given at intervals as above recommended. In this way not only a greater quantity may be accumulated in the stomach and intestines at the time of accession; but by giving it at intervals its effects appear to be accumulated in the system, for those of each dose continue for a considerable time after it is taken; some suppose, and not without reason, while any part of the medicine remains in the alimentary canal.

A vast variety of articles have been employed at this period, chiefly by the vulgar, and have occasionally succeeded in preventing the return of the fit. These are, either such as make a strong impression on the stomach, as spirit of turpentine, wine, warm strong beer, brandy, &c.

with a variety of peppers and other acrid substances; or such as strongly impress the mind, swallowing a living spider, a powder prepared from human bones, and many other things of this kind.

By regular practitioners the powder of camomile flowers, wormwood, or other strong bitters, have been used in the same way. The foetid gums have also occasionally been serviceable; and some recommend a variety of external irritating applications, salt mixed with the white of eggs, applied to the wrists, &c.

Such are the means of cure to be employed at the various periods of intermitting fever, between the accession of one paroxysm and that of the next; between which and the third paroxysm the same mode of practice, varied as the symptoms vary, is to be repeated; and so on through every interval, till the fever is removed.

If the bark be immediately discontinued on the removal of agues, they are apt to return; especially if they have lasted for a considerable time, and the patient has been much reduced. It is therefore proper in general to continue its use for some time. The dose may be gradually diminished, and given chiefly at the periods at which the fever, had it lasted, would have recurred.

It is also proper for those who have lately laboured under agues, not only to avoid exposure to marsh miasma, but all those circumstances above enumerated as favourable to its operation. Exposure to cold, (we have seen) irregularities in diet, or any other cause which debilitates, is capable of renewing agues.

The rules respecting diet and exercise in the apyrexia must also be attended to for some time after the removal of the disease, both in order to prevent its return, and to restore the patient's strength.

When exposure to the causes of agues is unavoidable, as in the rainy seasons of sultry climates, the bark ought to be used as a preventive*.

* See the 47th and following pages of Dr. Lind's Essay on the means of preserving the health of seamen.

CHAP. VI.

*Of the Modus Operandi of the Remedies employed in
Intermitting Fever.*

It is a law of the animal economy, that an irritating cause applied to any part of the system, tends to induce such motions as are calculated to remove it. When these motions are excited in the more minute parts of the animal body, they are traced with difficulty. Thus an extraneous body introduced beneath the skin, excites inflammation and suppuration, by means of which it is expelled; but we cannot trace all the steps of this process. Where the larger parts, however, are thrown into action, we trace with more ease the different motions excited, and can often perceive distinctly in what manner they operate in removing the offending cause. Thus, an irritation of the nares produces a sudden and violent contraction in all those muscles which are brought into action when we expire forcibly. The consequence of which is a sudden and strong expiration, by which the air being forced violently through the nares, any extraneous body irritating this part is removed. Thus coughing also is occasioned by an extraneous body lodged in and irritating the trachea. We see an instance of the same thing in the involuntary exertions excited by tickling the sides or the soles of the feet. So in vomiting, the irritation applied to the stomach induces the action of those muscles which are capable of expelling its contents.*

Concerning the action of the muscles employed, some difference of opinion has arisen. It has generally been supposed that the abdominal muscles and diaphragm act together, by which the stomach being forcibly compressed between these muscles, its contents are thrown out by the œsophagus. An eminent professor observes, that as the patient must inspire if the diaphragm contracts in the act of vomiting, part of the contents of the stomach, in their passage over the wind-pipe, would be drawn in with the breath.

* See the experiments of Magendie on this subject.

He, therefore, supposes that the diaphragm, immediately before the act of vomiting, is fixed by a strong permanent contraction, and that the contents of the stomach are thrown out in consequence of the sudden contraction of the abdominal muscles pressing the stomach against the rigid diaphragm.

Concerning this theory of vomiting, it may be observed, that we do not find a muscle acting in the way in which the diaphragm is here supposed to do, in any analogous case. This alone must make us hesitate in admitting it. The following observation, as far as I am able to judge, altogether sets it aside. Both in this and the common account of vomiting, one effect of the violent contraction of the abdominal muscles is overlooked, that of drawing down the ribs. In the act of vomiting, the ribs are forcibly drawn down, as any person will feel by applying the hand to the side of the thorax while under the operation of an emetic. We know that if the ribs descend, the diaphragm must at the same moment either contract or yield to the pressure of the abdominal muscles, which we cannot suppose it to do in the act of vomiting. It would, therefore, seem that the diaphragm and abdominal muscles must contract at the same instant; the latter drawing down the ribs, lessen the capacity of the thorax in one way, in proportion as the descent of the diaphragm enlarges it in another. To assist in depressing the diaphragm, expiration, any one may readily perceive in himself, is forcibly prevented by his involuntarily pressing down the epiglottis. We are not to suppose however that these means are unaccompanied by any effort in the stomach itself. The same cause of irritation which excites the foregoing actions, excites an antiperistaltic motion in this organ.

With regard to the peculiar effects of vomiting, by which it tends to put a period to the cold, and induce the hot stage of intermittents, we cannot speak with the same certainty; there is reason to believe that it does so, both in consequence of the sympathy which is known to subsist between the stomach and the surface, and because vomiting acts as a stimulus to the system in general.

With regard to cathartics. Catharsis is induced by a double operation of these medicines, which still act, as in the case of emetics, by exciting such motions as tend to expel them from the body. This they do partly by increasing

the peristaltic motion of the intestines, and partly by increasing the secretion from their surface.

It is almost unnecessary to observe, that different medicines are fitted to excite different parts of the system. Peppers and aromatics strongly affect the taste, and excite a flow of saliva, but they neither occasion vomiting nor purging. The preparations of antimony, which act so violently on the stomach and intestines, are almost insipid.

But the remedies employed during the paroxysm of an intermittent, whose *modus operandi* has most demanded the attention of physicians, are opium and blood-letting.

In a treatise, entitled *An Experimental Essay on the manner in which opium acts on the living animal body*, I have endeavoured by comparing the numerous experiments which have been made on the subject, whether by myself or others, to give a view of the *modus operandi* of this medicine; that is, to point out on what parts of the body it acts in producing each of its effects, and particularly by its action on what parts an over-dose proves fatal. It would be foreign to my design here to enter on any account of the experiments by which we arrive at this knowledge; I shall only quote from the treatise the result of what is there said. *

* As other authors had given a different account of the result of several experiments related in my treatise, I took an opportunity, in the summer of 1796, when I read a course of lectures on febrile diseases at Edinburgh, of publicly repeating these experiments. The pupils stood as near the table, on which the experiments were made, as their number would permit, and expressed their satisfaction with respect to the result. Many of them were men well acquainted with the subject, and indeed with medicine in general. In the treatise alluded to I have mentioned several circumstances in the experiments in question, which may have occasioned to others, results different from those which occurred to me. A gentleman, however, present at the above meeting, Dr. Woolcomb, suggested a circumstance to which I am now inclined, almost wholly, to attribute this difference, namely, that the authors alluded to had not distinguished the spasms induced by an over-dose of opium, from the voluntary struggles of the animal. This admitted, explains the difference of result, in almost every case. And that the authors alluded to permitted themselves to be deceived in this way is probable, because they take no notice of the spasms occasioned by opium being of a peculiar kind; a circumstance which must have struck them had they properly distinguished these spasms, which, both in the warm and cold blooded animals, always assume the

The effects of opium on the living animal body may be divided into three classes. The first, comprehending its action on the nerves of the part to which it is applied, does not differ essentially from that of other local irritations. It is doubtful whether the first impression made on the system by the action of opium on the nerves of the part to which it is applied has ever been sufficient to destroy life.

A large quantity suddenly applied to a very extensive surface is capable, perhaps, of instantly killing animals less tenacious of life than frogs and rabbits are, which were the subjects of the experiments above alluded to. A variety of strong impressions, that, for instance, produced by drinking a large quantity of spirits of wine, or of very cold water when the body is overheated, are well known to have occasioned sudden death. From all the facts with which I am acquainted, however, opium never occasions death in this way.

The second class of the effects of opium according to the division I propose, are those on the heart and blood vessels; namely, that of increasing their action when it is applied in small quantity;* and that of altogether destroying it when applied more freely. In neither of these effects, however, does the action of opium differ essentially from that of other agents. Most active substances applied in small quantities, excite contractions in the muscular fibre, and destroy its power when applied more freely. It does not appear, that the quantity of opium absorbed by the lacteals, from the largest dose, is sufficient to destroy the muscular power of the heart merely by its action on that organ. It may be safely asserted, that opium never kills by destroying the muscular power of the heart, except when a large quantity is injected into it, or into the blood vessels. Opium received into the stomach, therefore, never induces death in this way.

It is ascertained, by the experiments related in the above treatise, that the action of the strongest solution of opium applied to the heart, is merely local; it destroys the excitability of this organ, but it produces no other effect; the

form of that species of tetanus which is termed the opisthotonos. Dr. Woolcomb indeed made the observation in consequence of having sometime before been present when one of these authors repeated the experiments without making this distinction.

* Compare a note in the 99th page of my Essay on Opium with Dr. Crumpe's experiments on the pulse. See Dr. Crumpe's Treatise, entitled "An Inquiry into the Nature and Properties of Opium."

excitability of all the other muscles of the body remaining unimpaired. It is almost unnecessary to observe, that I here speak of the effects of opium when its application is confined to the heart; if it is allowed in the course of circulation to pass to the brain, it then produces the effects which form the third class.

These, when the dose is moderate, are impaired sensibility, languor, sleep; effects which are occasioned, in a greater or less degree, by all other gentle irritations of this organ, and which do not follow a moderate dose of opium till we know from the symptoms it produces, compared with the experiments which have been made on this subject, that it has been conveyed to the heart; from which, in the course of circulation, it is sent to the brain, as well as to other parts of the body. What share its action on the latter parts has in producing these effects, it is impossible to say. We have reason to believe it but trifling, because opium directly applied to the brain, produces the same effects on the nervous system, as when it is permitted to circulate with the blood. It appears from the experiments just alluded to, that no part of these effects is to be ascribed to its action on the heart itself.

Opium applied to the brain more freely produces effects similar to those produced by other violent irritations of this organ—convulsions and death. And this is the way in which opium received into the stomach occasions death: it is taken up by the lacteals, and in the course of circulation applied immediately to the brain. According to the quantity thus applied, it produces sleep, convulsions, or death; for opium, even in the human body, does not always prove fatal when it induces convulsions.* In all its effects on the living animal, opium has much in common with other agents; at the same time we can perceive in each, as pointed out in the above treatise, something peculiar to itself.

The effects of opium, on which the benefit derived from it in agues appears to depend, are the impression it makes on the nervous system, and its increasing the action of the

* In some of the experiments mentioned in the Treatise I have alluded to, convulsions were induced on rabbits by large doses of opium, which were not sufficient, however, to prove fatal; and there are several cases on record in which this happened in the human body. See cases related by Mr. Dobson and an anonymous author in the Medical Museum.

heart and blood vessels, which, particularly when combined with the effects of those medicines that relax the skin, tends to induce perspiration.

There is no remedy whose *modus operandi* demands more attention than blood-letting.

We know that the heart, deprived of the stimulus of the blood, ceases to contract almost instantly in the human body, and in a short time in all animals. The presence of the blood, therefore, is as necessary for the continued action of the heart, as the peculiar structure by which it is fitted for contraction. But every thing capable of exciting contractions in the muscular fibre, produces within certain limits more or less powerful contractions, in proportion to the quantity applied.

In the change from a state of health to synocha, one of three things must take place; either the blood is conveyed to the heart in greater quantity than usual, or it becomes more capable of stimulating the heart, or the heart itself becomes more capable of being acted upon, and thus contractions more powerful than those consistent with health are excited.

Whichever of these be the cause of the stronger action of the heart in synocha, it still holds good, that the effect of the stimulus is within certain limits proportioned to the quantity applied, and consequently that lessening the quantity of blood must diminish the force of its contractions.

The following experiment directly ascertains the point, which is otherwise so well established indeed as not to require this additional proof: Dr. Hales opened the blood vessels of living animals, adapted glass tubes to their orifices, and observed to what height the blood rose in the tubes at each systole of the heart; he then drew from the animals different quantities of blood, and observed the force of the heart diminish in proportion as the blood was abstracted.

It must also happen, that the more suddenly the abstraction of blood is made, the greater will be its effect in diminishing the force of the heart and vessels, for the same observations apply to them. When it is gradually abstracted, their capacity is readily adapted to the quantity which remains. When more suddenly, the change of capacity is effected with greater difficulty. The diminished action of the powers supporting circulation, when the abstraction of blood is made suddenly, is in a great measure to be at-

tributed to the vessels not immediately adapting themselves to their contents, and consequently the quantity of blood returned to the heart, being more diminished than in proportion to the real loss of blood. It seems to be in this way, that the loss of a few ounces of blood very suddenly abstracted, often induces syncope, even in strong people who could lose six times the quantity without inconvenience were it abstracted more slowly. Syncope from loss of blood in general, indeed, must in a great measure depend on this cause. Did it proceed from the absolute loss of blood it would be much more fatal than we find it. It was common with the ancients, in a variety of diseases, to bleed the patient till he fainted, and this is still recommended in some cases.

If diminishing the action of the heart and blood vessels be the only effect of blood-letting in idiopathic fevers, it follows, that this remedy can here only be of service when the action of these organs is too powerful. Till lately indeed it has been the practice to have recourse to blood-letting in typhus as well as synocha. This practice was chiefly founded on hypothesis; in part, however, it was countenanced by observation. There can be little doubt that a spontaneous hemorrhagy sometimes proves a favourable crisis in typhus, but it is very doubtful whether the hemorrhagy is the cause or consequence of the favourable change; I am inclined to the latter opinion, because I have not, either in the course of practice or reading, met with any unequivocal case in which artificial loss of blood was of decided advantage in this fever. If the state of body in some rare cases of typhus be such, that the advantages derived from venesection will more than compensate for the harm done by its debilitating effects, nobody has yet succeeded in pointing out the means of distinguishing such cases.

We shall afterwards find reason to believe that the other symptoms, which are termed critical, a flow of sweat, a sediment in the urine, &c. are also rather the consequences than the causes of the favourable change which attends them.

One part of the *modus operandi* of blood-letting has, as far as I know, been overlooked by writers. It chiefly respects those cases in which the disease is wholly or in part local. We know that in inflammation of the lungs, for example, or of the abdominal viscera, great relief is often

obtained by taking such a quantity of blood from the skin, in the immediate neighbourhood of the inflamed part, as would produce little or no effect if taken from a distant part. Why this should be the case it seems difficult to say, because there is often no direct communication of vessels between the diseased part and that from which the blood is taken; between the skin of the chest and lungs, for example, that of the abdomen and bowels, &c. This question seems to be of the same nature with the following; why is inflammation apt to spread to contiguous parts, although there is no direct communication of vessels, from the bowels to the parietes of the abdomen, from the lungs to those of the chest, and *vice versa*? Inflammation of the bowels is almost as apt to spread to contiguous bowels, as to parts in the course of the vessels of the inflamed part, I mean even before any adhesion takes place. The adhesion does not seem to take place till after both surfaces have been inflamed.

For an explanation of such phenomena we must look to the sympathy which exists between different parts of the body through the medium of the nervous system. This explanation seems to be supported by a curious fact, which we shall see fully illustrated in considering the Phlegmasiæ, that in those cases where the inflammation exists in one part, and the pain is referred by nervous sympathy to another, which is sound; the latter, if the disease continues, will also become inflamed, although the cause of the inflammation is wholly confined to the part first affected. This we shall find has been clearly ascertained by dissection. We have a familiar instance of it in some cases of hepatitis. The pain is often referred to the top of the shoulder; it is evident, however, that at the commencement, there is no disease in the latter part, we may press and rub it without giving any uneasiness; but after the pain has for a considerable length of time been referred to it, it often, as I have repeatedly observed, becomes so tender that the patient can hardly bear it to be touched. And if the hepatitis is relieved, although by means as much as possible confined to the region of the liver, the affection of the shoulder yields with it. It may then be pressed or rubbed as before.*

* This subject I have considered more at length in a paper on Dyspeptic Phthisis, which the Medico-chirurgical Society did me the honour to publish in the seventh volume of their Transactions.

Thus we see that local blood-letting not only relieves the vessels of the part from which the blood is taken, but also of the parts which sympathise with it, that is, sometimes of distant parts, but always of neighbouring parts, for all neighbouring parts sympathise. These observations thus far apply to general blood-letting, that as the heart and largest vessels contribute most to support the circulation, there is some advantage in taking the blood from those parts which most sympathise with them; hence appears to be one advantage of bleeding from the upper rather than the lower extremities.

On the *modus operandi* of the means employed during the *apyrexia*, I have only to remind the reader of a few observations which have already been made.

I have had occasion to point out the way in which the medicines given at the time the fit is expected, seem to act. The effects of many of these can only be ascribed to the impression made on the nervous system, since they are too sudden to be attributed to any change induced on other parts. It is only in this way that we can account for the effects of the bark, when the paroxysm is prevented by this medicine given only half an hour before the time at which it should have appeared. And when we reflect on the observation of Dr. Jackson, Dr. Monro, and others, that if we persevere in giving the bark, the fever will be removed, although the medicine is constantly discharged by vomiting and stool; we have every reason to believe, that in whatever way the bark is exhibited, its effects in the cure of agues are to be attributed to its action on the nerves of the stomach and intestines.

The circumstance of agues being frequently removed by affections of the mind proves that they may be cured by means acting wholly through the medium of the nervous system.

BOOK II.

OF CONTINUED FEVER.

CONTINUED Fever is defined in the Introduction, an Idiopathic Fever with slight remissions and exacerbations.

For the sake of perspicuity, this fever was divided into two genera, the Synocha, and Typhus.

The Synocha was defined, a continued fever, in which the temperature of the body is greatly raised, the pulse frequent, strong, and hard, the urine high coloured, and the sensorial functions but little disturbed.

Typhus, it was observed, is characterised by being a contagious disease, by the temperature being little raised, the pulse small, weak, and frequent, the urine little changed, the sensorial functions much disturbed, and the strength greatly reduced.

It was remarked, however, that although this division is useful in practice, and still more so in acquiring a knowledge of continued fever, it cannot be regarded as accurate, since we scarcely ever meet with simple Synocha or Typhus; almost every continued fever assuming the form of the Synochus, that is, being a combination of the Synocha and Typhus, beginning with the symptoms of the former, and terminating in those of the latter. In the proportional degree in which either set of symptoms prevails, there is infinite variety; and it is convenient to apply the terms Synocha, or Typhus, according as the symptoms of the one or the other predominate.

CHAPTER I.

Of the Symptoms of Continued Fever.

THE symptoms of continued fever are less regular and more protracted than those of agues. The cold stage is more frequently absent, and generally consists of irregular chills, or of short fits of cold and heat, which frequently alternate with each other for the first day or two, and often continue to do so, after the temperature of the body, measured by the thermometer or the feeling of another person, is uniformly raised.

The cold and shaking are never so severe as in agues, but the attending symptoms, languor, weariness, soreness of the flesh and bones, head-ache, &c. are often equally so. The pulse during the chills in typhus, as in the cold stage of agues, is small and frequent; but in synocha, even during the chills, it is often strong, regular, and full.

It is generally less frequent at the commencement of continued, than at that of intermitting fever*.

These symptoms are at length succeeded by more permanent heat, often partial at first, soon becoming general. But the change from the cold to the hot stage is more gradual than in intermitting fever.

As the hot stage advances, the various functions are affected in the same way as in agues; but the heat, except in well-marked synocha, is generally less in continued, than in intermitting fever. It is not, as in the latter, relieved in a few hours by sweat, but continues along with the other symptoms of the hot stage, suffering more or less evident remissions, once or twice in the day, often for weeks, or even months; and at length frequently leaves the patient gradually, without a remarkable increase of any of the excretions†. In other cases, the symptoms of con-

* See Dr. Fordyce's third Dissertation on Fever. Part I.

† During the exacerbations the heat generally rises one or two degrees above the mean heat of the fever in the trunk, and more in the

tinued fever are more suddenly relieved in various ways, afterwards to be pointed out.

During the first days of the disease the symptoms generally return with increased violence after the slight remissions which take place; if they do so for many days the danger is great. When they begin to return with less violence after each remission, the prognosis is favourable.

It frequently happens, however, that the symptoms continue to return with nearly the same degree of violence for many days; and then, if they are not alarming, and the patient bears them without a remarkable diminution of strength, although the disease will prove lingering, the event will probably be favourable.

Such are the general course of continued fever, and the principal circumstances in which it differs from agues. It is necessary to consider its symptoms at greater length; and it will be the most distinct plan, to give separately those of the two species, into which it has been divided.

SECT. I.

Of the Symptoms of Synocha.

The symptoms of synocha are as simple as those of typhus are complicated. The prostration of strength, which precedes the attack of fevers, is generally less considerable; and the cold stage is more frequently absent in synocha, than in typhus.

The pulse, even in the cold stage, is seldom small or extremities. See Dr. Currie's Med. Reports on the effects of water, cold, and warm, &c. In the cold stage of continued fever, Dr. Currie observed the heat under the tongue as low as 92° of Fahrenheit, and he mentions 105° as the highest degree of febrile heat generally observed; but he takes notice of one case of continued fever, in which it was as high as 108°. While the cold stage is changing to the hot, he remarks, some parts of the body are above, while at the same time others are below, the healthy degree; nor is the heat diffused with any regularity, but is sometimes greater in one place, sometimes in another, and this irregularity continues till by degrees the heat becomes general and steady.

very frequent; after the heat commences, it becomes more or less hard, full, rapid, equal, or, as it has been termed, vibrating; still, however, its frequency is less than it often is in those fevers in which debility prevails.

The respiration is frequent, hurried, generally oppressed, and often attended with a dry cough.

The heat is greater than in other continued fevers, and of that kind which has been termed burning, in contradistinction to acrid*. The face is full and florid; the eyes inflamed and incapable of bearing the light.

The secreting powers are more completely suspended than in most cases of typhus. The skin, mouth, and throat are dry, and the mucus covering the tongue becomes foul and viscid. The urine is scanty and high-coloured, and the bowels costive.

The head-ache is generally considerable, with watchfulness, throbbing of the temples, or tinnitus aurium. The depravation of the senses, however, is less frequent in synocha than in typhus, nor is delirium a common symptom of this fever; but when it does occur, it rises to a degree which from the debilitated state of the system we hardly ever meet with in typhus. The patient becomes frantic, and seems to acquire preternatural strength.

When the delirium is obstinate, or coma attends, we have reason to suspect an inflammatory affection of the brain. In treating of symptomatic fevers I shall have occasion to point out the circumstances which form the diagnosis between synocha and phrenitis.

It is said that when synocha proves fatal in a few days (which, if it ever happen, is a rare occurrence) the pulse does not become weak or intermitting before death; the patient seems to be carried off by the violence of the excitement.

When the disease continues for a longer time, however, and the remissions are considerable, the pulse during these (although the fever has not yet assumed the form of typhus) becomes weak and languid, the patient appearing to be exhausted by the foregoing paroxysm; which is soon renewed, however, with its former violence.

Hemorrhagies, which frequently occur in this fever, are

* See the observations on the heat in typhus, in Sect. ii. of this chapter.

generally from the nose, ears, lungs, rectum (if the patient happen to labour under the hemorrhoids) or from the uterus; and are almost always favourable; the blood discharged has the healthy appearance, except that the coagulum is frequently covered with the buffy coat *. Hemorrhagies from the higher parts of the intestines, kidneys, urethra, skin, eyes, &c. are rarely, the two last perhaps never, observed in synocha.

Such are the symptoms of well marked synocha. They vary in different cases from those just enumerated, to the mild febrile symptoms attending a common catarrh.

After they have continued for some time, they always, at least in this country, begin to be changed to those of typhus. The proportional duration, as well as violence, of the synocha and typhus, is different in different cases; and proves an endless source of variety. The manner in which the symptoms of synocha are changed into those of debility also varies much. The duration of continued as well as intermitting fevers is shorter, their symptoms more violent, and their changes more rapid, in the warm, than in the cold, and temperate climates.

The symptoms which follow the state of increased excitement are the most dangerous, as well as most varied part of the fever.

SECT. II.

Of the Symptoms of Typhus.

An uneasy and peculiar sensation in the stomach, sometimes attended with nausea and giddiness, frequently denotes the approach of those fevers, in which the symptoms of debility prevail †. In many cases, however, this sensation is scarcely, or not at all, perceived, and the fever comes on with lassitude, anxiety about the præcordia, alternate heats and chills, or a sense of creeping in different parts of the body, which has been termed horripilatio.

* We shall afterwards have occasion to consider this appearance.

† Dr. Jackson's Account of the Fevers of Jamaica, Dr. Smith on the Jail Fever of Winchester, &c.

The patient complains of uneasiness of the head, and fixes his attention with more difficulty than usual; is dejected, and wishes to be alone. His appetite is impaired, he becomes restless, or if he remains long in the same posture, it is rather a sensation of languor than of ease, which prevents him from changing it.

Either sleep forsakes him, or he is more inclined to sleep than usual, and then his sleep is such as does not refresh, disturbed by groans and starts.

At this period the pulse for the most part is frequent, small, and easily compressed; in other cases it is nearly natural, and the patient often labours for some days under more or fewer of these symptoms, not well enough to engage in business, nor sufficiently indisposed to be confined to bed.

The first symptoms of typhus are often more severe. It makes its attack with a troublesome head-ache; acute pains in the back, loins, and extremities, which often resemble a general rheumatic affection; a distressing sense of weariness, much thirst, and nausea, sometimes attended with a burning pain of the stomach, more frequently by vomiting, vertigo, dimness of sight, or numbness of the extremities.

In some instances, the rigors from the first are strong, the pulse soft, small, frequent, and sometimes irregular. The general uneasiness, confusion of head, and dejection of spirits excessive. There is often great debility from the very commencement. The tongue trembles, impeding the speech, the limbs shake, and the patient with difficulty supports himself. There are even instances of people, on the first attack of typhus, falling suddenly to the ground, as if shot*. There are few diseases in which the symptoms are more varied, either in the commencement or progress.

Of the State of the Animal Functions in the Progress of Typhus.

As the disease advances, the debility of the muscles of voluntary motion increases. In the advanced stage, the

* This sometimes happened, for example, in the fever of Grenada, described by Dr. Chisholm.

patient, incapable of any exertion, lies on the back, and if turned on either side, soon resumes this posture. He even slides insensibly towards the foot of the bed, and has not power, although he understands what is said to him, to put out his tongue, which is affected with a tremulous motion. Sometimes tormented with extreme anxiety, he is constantly changing his posture; in other cases the limbs are affected with numbness or palsy, more commonly they are moved by a frequent twitching of the muscles, which now and then proves the forerunner of general convulsions, in which the patient expires; sometimes in the first attack, more generally after several returns. In some cases the muscles of the limbs are affected with more permanent spasm, and cases are on record, in which complete tetanus has supervened towards the fatal termination of malignant fevers*.

The head-ache is often a source of great uneasiness. It most frequently has its chief seat in the forehead, sometimes in the occiput, and in some cases in the under part of the orbits, sometimes the orbit of one eye. It is generally attended with strong throbbing of the temples; the carotid and temporal arteries often beating strongly, while the pulse at the wrist is small and weak†.

The confusion of head increases with the debility, and often on the second or third night a degree of delirium comes on, which frequently goes off, however, on the succeeding day, and continues to return in the evening for several days. As the symptoms increase, a wandering of the mind remains throughout the day, and sometimes rises

* See Vogel, De Cog. et Cur. Morb. and others.

† When this state of the circulation is obstinate, and accompanied with an acute or deep seated pain of the head, or with a considerable degree of coma or delirium, it generally denotes an inflammatory affection of the brain or its membranes. In these cases, abscesses are now and then found in the encephalon after death. Cases of this kind are related by Sir John Pringle and others. Dr. Fordyce has justly observed, however, that abscesses of the brain very rarely occur in the fevers of this country. The same throbbing, also frequently indicating an inflammatory affection, is sometimes observed in other parts of the body, particularly in the fevers of warm climates. "In the yellow fever," Dr. Linning observes, "there is a remarkable throbbing in the temporal arteries and hypochondria; in the latter sometimes so great, as to cause a constant tremulous motion of the abdomen."

at night, to a degree of phrensy, resembling the delirium of synocha. More frequently, however, the patient is rather stupid than violent. At a more advanced period he continues uniformly sullen and sad, muttering to himself as if brooding over some misfortune. The countenance is dejected, and the eyes heavy and inflamed. When the evening exacerbations are remarkable, the countenance appears more lively, the dull appearance of the eyes especially is less observable, and the patient is then easily irritated, speaks quick, and answers hastily. In other cases insensibility, or as it is termed in fever, coma comes on. If this increases, the jaw at length falls, and the patient lies in a state of apoplexy.

The different organs of sense are variously affected in the progress of typhus. Deafness is generally, not always, a favourable symptom*. A depravation of the sight is always unfavourable. As the fatal termination approaches, the patient frequently starts up, catching at things which he sees passing before him, or picks the bed-clothes, which appear to him striped or covered with black spots; sometimes every thing appears indistinct, as if seen through a mist. The eyes indeed are variously affected throughout the disease; and some assert, that from their appearance alone the state of the fever may be ascertained. In the commencement of typhus they are dull and languid; the tunica albuginea having a bluer, and sometimes whiter, appearance than ordinary. In the furious delirium they are red, quick, and piercing; in the comatose, they are generally inflamed also, but heavy, half shut, and as if covered with a film. The last of these appearances indicates much danger; but the prognosis is still worse, if blood flow from them. For some time before death they appear hollow, involuntary tears sometimes fall from them, and they become fixed and glossy. The sensibility of the skin seems often much impaired; and the taste and smell are frequently depraved or lost. The patient often complains of a nauseous bitter which mixes itself with every thing he takes.

* Dr. Rush and others mention fevers in which deafness was a very unfavourable symptom.

Of the State of the Vital Functions in the Progress of Typhus.

The pulse continues soft, weak, small, and frequent*: and these states of it increasing as the disease advances, it often becomes intermitting, or otherwise irregular. As death approaches, its weakness and irregularity become more remarkable, till at length the extremities grow cold, and it cannot be felt. This sometimes happens ten or twelve hours before death. In the advanced stages, there is a tendency to syncope on the slightest exertion, particularly in the erect posture; and for some time before the fatal termination, the debilitated state of the circulation occasions a

* In tedious fevers, in which the symptoms are moderate, the pulse is often as slow as natural for some hours during the day; and in the more malignant forms of typhus, it has sometimes been observed a great deal slower. I mean even in those of this country. In the fevers of some tropical climates, this is much more frequently the case. This state of the pulse in malignant fevers is taken notice of by a variety of authors, particularly by those who give an account of the fevers of the West Indies. Dr. Fordyce, in one of his Dissertations on Fever, observes that the pulse is sometimes as low as 50 or even 45. In the fever of Philadelphia, Dr. Rush found the pulse at 44, and in one instance as low as 30.

The pulse at a certain period of the yellow fever becomes as slow or slower than natural, and continues so till within a short time of the patient's death, for recovery is rare after this change of the pulse takes place. When the pulse becomes slow, the heat at the same time sinks to the natural standard, and sometimes below it. This and the other peculiarities of the fevers of sultry latitudes depend on some local affection. The slow pulse indicates an affection of the brain, which is farther indicated in many cases of the yellow fever by a dilatation of the pupil and squinting. Dr. Chisholm particularly takes notice of the slow pulse and dilatation of the pupil in the fever of Grenada, and found water in the ventricles of the brain in those whom he examined after death.

The yellow fever is so called from the skin being tinged with yellow; when the yellowness is late in appearing, it sometimes comes on so suddenly that the patient almost instantly becomes of a yellow, deep orange, or copper colour. This circumstance, together with the urine and discharge from blistered parts not always appearing yellow when the skin is so, demonstrate, contrary to what was once supposed, that the yellow colour is not owing to the presence of bile in the circulating fluids.

It sometimes happens towards the fatal termination of malignant fevers, that the pulse at the wrist, before it is wholly lost, beats for some time less frequently than the heart.

shrinking of the features, and conspires with the relaxation of the muscles of voluntary motion to occasion what has been termed the *Facies Hippocratica*, a presage that cannot be misinterpreted by the most inexperienced. The face assumes a livid, cadaverous appearance, the nose is sharpened, and the cheeks become hollow. In the progress of typhus, the face during the exacerbations is generally flushed, and pale in the remissions. In both it often has a bloated appearance. There is an expression of countenance peculiar to this fever which cannot be described, but is easily recognised by those who have seen it.

The state of the breathing corresponds to that of the circulation; it is weak, generally frequent and interrupted with sighing or a dry cough; but as the debility increases, it often becomes calm and less frequent than natural, sometimes rattling.

The voice is low, weak, often shriller or hoarser than natural, and sometimes wheezing. Its being much affected in any of these ways affords an unfavourable prognosis. It is always a favourable sign when it again becomes natural.

The heat of the body at the commencement of typhus is seldom much increased, and even in the progress of the disease is sometimes little more than natural*. But in general, after the first days, especially when the worst symptoms shew themselves, a person touching the patient perceives a heat of a penetrating kind, which remains in the hand for some time after it is removed from the patient†.

• This is often the case in what has been termed the nervous fever, the Typhus Mitior. It is not uncommon in malignant fevers, particularly those of warm climates, for the extremities to be considerably below the natural temperature, while there is a burning heat in the breast and other parts of the trunk.

† This peculiarity of the heat in typhus has been remarked by a variety of authors. "In the beginning," Sir John Pringle observes, "the heat is moderate, and even in the advanced state, on first touching the patient, seems inconsiderable; but upon feeling the pulse for some time, I have been sensible of an uncommon ardour, leaving an unpleasant sensation in my fingers for a few minutes after. The first time I observed this," he continues, "I referred it to the force of imagination; but I was assured of the reality by repeated experiments, and by the testimony of others, who, without knowing my observations, had made the same remark."

Of the State of the Natural Functions in the Progress of Typhus.*

The tongue at the beginning is covered with a thin white mucus; as the disease advances, this mucus becomes thicker and of a brownish colour, and the clamminess of the mouth and brown colour of the tongue generally increase with the fever. In the advanced stage deep chops often form in the tongue, the mucus covering it becomes fetid, dry, and firm, and a corresponding change taking place in that which besmears the teeth and other parts of the mouth, and probably also in the mucus of the trachea and bronchiæ, the breath becomes offensive, and the deficiency of moisture renders the speech inarticulate. Sometimes, however, the tongue continues moist to the end of the disease, and then, particularly in the middle, it often assumes a yellowish or greenish appearance.

In other cases it is dry and smooth, of a shining dark red, which at last becomes brown or almost black, while at the same time a black furring covers the lips and teeth. The last appearance of the tongue sometimes supervenes in the progress of fever, although at an earlier period it has been covered with mucus.

There is often a difficulty of swallowing from the dryness, sometimes from a paralytic affection, now and then from convulsive† contractions of the throat‡. The fauces are sometimes covered, particularly towards the end of

Dr. Moore, in his Medical Sketches, Dr. Huxham, in his work on the ulcerous Sore-Throat, and others have also taken notice of this peculiarity of the heat in typhus. Frank observes of it, “*sæpe mani-
feste acer digitosque urens.*” Dr. Wright calls it a biting heat. (Annals of Med. vol. 2.) It was remarked, in speaking of intermittents, that Galen makes a similar observation respecting the heat in some of them.

* I have here adopted the usual division of the functions into animal, vital, and natural; the reader, however, will readily perceive that there is no well defined line of distinction between the two last.

† Even the hydrophobia has been known to supervene towards the fatal termination of malignant fevers.

‡ If the respiration and deglutition be free, Dr. Fordyce observes, the prognosis is seldom bad, although the other symptoms appear alarming.

the disease, with *apthæ*, that is, specks of a white, brown, or blackish colour, often becoming ulcerous; and when they occur in the worst kinds of fever, very commonly the forerunner of mortification. We shall have occasion to consider this eruption more particularly, when I come to speak of it as characterising a variety of fever.

The patient complains of thirst, which is seldom, however, so urgent as in the *synocha**, the appetite is impaired or wholly lost; and nausea and vomiting are frequent symptoms at an early period. The matter rejected is frequently a viscid, colourless, transparent fluid, without much taste or smell; an astonishing quantity of which is often secreted in fevers. It is frequently mixed with, and sometimes the matter discharged almost wholly consists of, bile; often in a very vitiated state, especially in the fevers of warm climates†.

The bowels, as in other fevers, are generally costive, except their irritating contents excite a diarrhœa, and are often affected with flatulence and spasmodic contractions. A little before death, an ichorous diarrhœa frequently occurs, without any evident cause; this is always one of the worst symptoms. At an earlier period, diarrhœa is for the most part salutary.

The appearances of the urine are various. Sometimes it is pale or limpid, which is never a favourable appearance; sometimes high coloured, and turbid, often giving a good deal of uneasiness in being discharged, which is sometimes favourable, and is never to be regarded as unfavourable. The same cannot be said of the urine appearing brown, and depositing a matter like coffee grounds. This is

* Not to complain of thirst, when the mouth and fauces are very dry, is an unfavourable symptom, as it generally denotes a considerable degree of insensibility. In the low nervous fever, however, even when the sensibility is not impaired, there is often no thirst.

† The black vomiting, a symptom so much dreaded in the fevers of sultry climates, in which the matter discharged resembles coffee grounds, appears to be the consequence of a very vitiated state of the bile, which assumes this appearance. When the progress of the fever is rapid, Dr. Jackson observes, this matter is often as black as soot. When it is more gradual, it is not so dark, and often of a greenish colour. The bile in these fevers is often passed also by stool in so acrid a state as to inflame and excoriate the anus and parts in its neighbourhood. Towards the fatal termination, the stools in the yellow fever of the West Indies often assume the appearance of tar or molasses.

owing to an admixture of blood, and is uniformly a bad symptom. Sometimes the urine is of a dark olive colour, the effect of bile in the circulating system. It sometimes deposits a lateritious, or light whitish sediment; these have been termed the critical sediments, and their appearance is generally, though not universally, a favourable symptom. In some epidemics it has been found a very fatal one*. These sediments have obtained much of the attention of physicians, and have given rise to some very ill-founded hypotheses. I shall have occasion to speak of them at greater length, in considering the crises of fevers†.

The urine is sometimes suppressed, or passed in small quantity, although the bladder is distended. This is an unfortunate accident, from the irritation it occasions. Sometimes it is suppressed without pain or distension of the bladder, which denotes a suspension of the secreting power of the kidneys, and affords a very unfavourable prognosis.

The skin for the most part is dry; sometimes a moisture is observed on it, particularly in the mornings, and while this continues, there is generally some abatement of the symptoms‡. In some cases a freer discharge by the skin takes place, but this symptom, with the manner in which we form the prognosis from it, will also be considered at some length, in speaking of the crises of fevers. It may, according to the circumstances which attend it, afford a good, or bad, prognosis.

* See Dr. Linning's Observations on the Yellow Fever of America, in the 2d vol. of Essays and Observations, Physical and Literary.

† In particular epidemics the urine has assumed a variety of uncommon appearances, some of them probably depending on affections of the urinary organs, but none have been very distinctly marked. Thus, Dr. Chisholm observes, the urine was sometimes green, sometimes inclining to black, and of an oily consistence. Those which have been mentioned are the more common changes which happen in the progress of fever. Dr. Fordyce has attempted to describe a state of the urine which he regards as peculiar to malignant fevers, and his account is probably accurate; but the circumstances which characterise this state of the urine do not admit of being sufficiently defined to enable common observers to distinguish it. "The urine has a more viscid appearance than common; is frothy, browner, and not absolutely transparent, although there is no cloud or sediment." Dr. Fordyce's 3d Diss. on Fever. Part 1.

‡ In malignant fevers the sweat often tinges the linen with an ichorous appearance. Fordyce's 3d Diss. on Fever.

I have already had occasion to observe, that hemorrhagies are to be regarded as unfavourable in typhus. Hemorrhagies from the eyes and kidneys have already been mentioned*. It would not, we should suppose, a priori afford a much better prognosis when blood flows from the stomach and intestines, occasioning a vomiting of blood, and tinging the stools with a dark red, or blackish colour. These, however, are much less fatal appearances, and I have often seen them attend a general abatement of the symptoms. There is perhaps no hemorrhagy which may be regarded as affording a more unfavourable prognosis in typhus than that from the pores of the skin; which is not an uncommon occurrence in the worst forms of the disease. The blood in these cases is particularly apt to flow from blistered parts, from old sores, or wounds, although quite healed up, from the holes, for instance, made in the ears for ear-rings, or places where the patient on former occasions had been let blood, &c. In the worst cases of malignant fever, indeed, blood, or rather a thin serum, in which more or fewer of the red globules are broken down and suspended, sometimes runs from almost every surface of the body, whether external or internal.

The epistaxis is the most favourable hemorrhagy in typhus. This also indeed is often a bad symptom, especially when the blood falls only in drops; when it flows more freely, it has sometimes been attended with a sudden and favourable change.

Other hemorrhagies, enumerated among the symptoms of synocha, also occur, though less frequently, in typhus. These are not so often favourable as the epistaxis, but more so than those which more peculiarly belong to typhus†.

* Dr. Linning observes of the bloody urine in typhus, that he always found the admixture of blood become less, when the pulse acquired any degree of fulness, and again increase as the pulse sunk; denoting how much such hemorrhagies depend on a debilitated state of the system.

† Dr. Fordyce, in his 3d Dissertation on Fever, gives the following account of the state of the blood in malignant fevers. It is the best I have met with. "At the beginning, when the putrefaction has not gone to any great length, if blood should happen to have been taken from the arm, the coagulum is loose and easily broken, the serum being hardly of a browner colour than common. Sometimes, when the depression of strength is not very great, the blood retains this appearance during the whole course of the disease."

I shall have occasion to recur to this subject in speaking of the crises of fever.

It sometimes happens in typhus, that the blood which flows from the vessels of the skin is detained beneath the cuticle, giving the appearance of small round spots, which have been termed petechiæ. So frequent are petechiæ in the typhus gravior, that this fever has got the appellation of typhus petechialis. But typhus (it was observed in the Introduction) often appears in its very worst forms, unaccompanied by this symptom.

Petechiæ occasion no elevation of the cuticle, so that they are seen, but not felt. They are red, brown, or blackish; the darker the colour, the more they indicate danger. Their shape is also various; in general they are circular, at other times running into each other they assume various forms. They vary from a size scarcely perceptible to that of a shilling, and are sometimes even larger. Petechiæ generally make their first appearance on the neck, breast, and back; they more rarely appear on the face and extremities, except on the inside of the arm, where the skin is tender, and about the wrist. They are sometimes so crowded together, that at a little distance the skin appears uniformly reddish. In other cases they are thinly scattered. For the most part they appear before the end of the second week, and are generally, but not universally, an unfavourable symptom. There are instances of the febrile symptoms abating on their appearance.

Instead of petechiæ the skin is sometimes covered with blotches of a larger size, and generally of a purplish colour,

“ If there is greater depression of strength, and by consequence
“ putrefaction is in a greater degree, the serum becomes of a browner
“ colour. In a still greater degree, it is red; in this case, on examining
“ the red particles with a microscope, many of them are found di-
“ minished in size, and not regular spheres, or oblate spheroids; some
“ have the appearance of being broken in two, and look like half
“ moons; but most of them retain their healthy appearance. If the
“ putrefaction goes on still further, there is hardly any distinction be-
“ tween serum and coagulum; if still further, the coagulable lymph
“ forms a kind of bag, leaving the serum on the outside distinct. In
“ the substance of the bag itself there is no intermixture of red par-
“ ticles, so that it looks like the buff which is on the surface of the
“ coagulum in cases of general inflammation; but within this bag a
“ red fluid is contained, which upon being examined with a micro-
“ scope, shews the red particles of a variety of forms.”

termed vibices; at other times it is marked with streaks or stains of different colours, which sometimes cover almost the whole body, particularly the breast, and give it the appearance of stained marble.

These are symptoms which indicate much danger. The danger, however, is not always proportioned to the number of petechiæ or vibices. It is usually the greater, the earlier they appear. Ramazzini observes, that those in whom they appeared on the first day almost all died. Petechiæ do not always continue through the whole course of the disease, but sometimes disappear in a few days; in other cases they disappear for a short time, and return. They have been observed to continue, however, not only during the whole course of the disease, but for a considerable time after every other symptom had disappeared*.

Petechiæ sometimes, though much more rarely, appear in synocha. The reader will find cases of this kind in Eller de Cognos. et Curand. Morbis, and Dr. Grant's Treatise on the Fevers most frequent in London†.

Petechiæ and the worst kinds of hemorrhagies or other symptoms denoting extreme debility in the vital and natural functions are generally accompanied with a tendency to gangrene, the sweat and other secretions having a putrid smell. Gangrene sometimes occurs spontaneously. It is then most apt to appear on the nose, lips, cheeks, fingers, and toes. Sometimes it attacks a whole limb, the hands or feet becoming black‡; and it has been known to extend as

* Strack de Feb.

† Petechiæ sometimes appear unaccompanied by fever of any kind. For cases of this kind the reader may consult the inaugural Dissertations of Dr. Edward Graaf and Dr. Adair, Dr. Grant's Treatise just alluded to, Dr. Duncan's Medical Facts and Observations, and the last vol. of his Commentaries, in which there are four cases of this disease. It is mentioned by various other writers, and is not very uncommon, especially among the lower ranks, although it is only of late that it has demanded much of the attention of physicians in this country. I have seen many cases of it in this neighbourhood. It has received a variety of appellations: Petechiæ sine febre, Petèchianosos, &c. It belongs to the third order of Dr. Cullen's third class of diseases, the Impetigines. It is often accompanied with a tendency to hemorrhagy in different parts of the body; the disease itself indeed is to be regarded as very nearly allied to hemorrhagy. It has sometimes disappeared with a flow of sweat, lasting for several days, more frequently without any remarkable crisis. In some cases it has proved fatal.

‡ Huxham on Fevers, Frank's Epitome de Curand. Hom. Morb.

high as the elbow or knee. The extremities thus affected become cold, and often remain in this state for many days before death. In general, however, mortification is not spontaneous in typhus, but the consequence of slight injuries, and then it may occur in any part of the body, although it is still most apt to appear in the extremities.

I need hardly observe, that this tendency to mortification, or in other words to the extinction of the powers of life, affords a very unfavourable prognosis. Notwithstanding Dr. Miller, in his account of the diseases most prevalent in Great Britain, and some others, have maintained that a degree of mortification appearing on the ends of the fingers is to be regarded as a favourable symptom in bad kinds of typhus*.

The patient often groans and seems uneasy, but is unable to explain or point out the seat of his uneasiness. This is an unfavourable symptom, not only indicating a considerable degree of stupor, but the presence of an irritation, which cannot fail to increase the disease. It is the business of the attendants to discover the source of this irritation, and if possible to remove it. It often proceeds from the urine being too long retained, very frequently from excoriations, in consequence of the patient having lain too long in the same posture. This, in cases where the tendency to mortification is considerable, is often attended with very melancholy effects. Instances have occurred in which, after the danger from the fever is past, a mortified sore on some part of the body, on which the patient had lain, is discovered, which baffles all the succeeding care of his attendants. Accidents of this kind warn us to have the parts on which the patients rests examined from time to time, and when any degree of redness appears, if possible to make him change his posture. When he is so weak that he can lie only on the back, the parts on which he chiefly rests should be defended by proper plaisters. But such in many cases is the proneness to mortification, that no care can prevent it.

Vogel de Cog. et Cur. Morb. &c. Vogel particularly notices spontaneous mortification in typhus, and points out the parts of the body most liable to it.

* It must be admitted, that in some rare cases the appearance of gangrene has been attended with a favourable change, the fever abating soon after it.

Typhus sometimes terminates in ten or twelve days, or within that period; if it be protracted for a longer time, the symptoms usually suffer but little change during a considerable part of the disease. When it is protracted beyond the fourteenth day, without the more alarming symptoms of debility shewing themselves, the prognosis is generally good.

Dreadful as this fever often is, it may appear in a very mild form. Those who have been exposed to the contagion or other causes of typhus are sometimes affected with alternate heats and chills, listlessness and debility; yet never become so ill as to be confined to bed; and these symptoms, after teasing the patient for days, sometimes weeks, often wholly disappear. Between the worst and mildest forms there are innumerable degrees, which insensibly run into each other.

If the case is about to terminate fatally, the symptoms which have been enumerated denoting extreme debility, gradually shew themselves. Cold viscid sweats at length appear on different parts of the body, or the colliquative diarrhoea, which has been mentioned as a frequent forerunner of death, supervenes; and the patient, reduced to the last stage of weakness, either calmly expires, or is carried off by convulsions.

When the event is about to prove favourable, the state of the patient is sometimes evidently changed for the better in the space of a few hours. After each succeeding remission, the symptoms return with diminished violence, till the fever is wholly removed, leaving the various functions in a state of debility, from which in general they soon recover, and often acquire a greater degree of vigour than they possessed before the fever.

In many cases, however, the debility which remains after long protracted fevers is the source of fatal diseases, of the various kinds of dropsy, of phthisis, or any other disease to which the patient happens from other causes to be pre-disposed. For the circumstances which usually act as pre-disposing, often become exciting causes in debilitated states of body, however induced.

It is not uncommon for fevers, in which much debility prevails, to be followed by a permanent derangement of

some of the functions. The patient has been known to remain deaf or blind. More frequently these senses are only impaired. The voice also is sometimes so much altered, that it never recovers its usual tone, and in some cases is wholly lost. It is not uncommon for the judgment to remain impaired, particularly after fevers in which the delirium has been obstinate. From this melancholy consequence the patient generally recovers, if he has no hereditary predisposition to it.

When the change to health is sudden, it is generally attended with some of the symptoms that have been termed critical. Before leaving the symptoms of fever, it will be proper to make a few additional observations on these.

SECT. III.

Of the Crises of Fevers.

Of the symptoms which attend the more sudden changes from fever to health, the most common is what has been called the critical deposition of the urine.

During continued fever the urine is usually passed in small quantity, is sometimes high-coloured, more frequently pale, and for the most part without much cloud or sediment. As the symptoms abate, it is passed in greater quantity, and generally deposits a more or less copious sediment. This sediment consists either of red crystals, which usually do not appear till several hours after the urine is passed, and fall to the bottom, leaving it limpid; or of a white and sometimes pinky matter, which generally appears sooner, and only falls in part to the bottom, the urine remaining turbid. The latter of these sediments has been termed furfuraceous or branny; the former, from its resemblance to brick-dust, lateritious; but the last term has not been used in a very definite sense. Sometimes both take place from the same portion of urine. But when there is much of the one, there is generally little of the other.

These sediments were long regarded as a morbid matter, the cause of the fever, and to the discharge of which its abatement was ascribed. But the truth is, that both sedi-

ments are almost constantly met with in greater or less quantity in the urine of people in health.

I had occasion some years ago to make observations on the urine, with a view to determine the modes of life which dispose this fluid to deposit, what its discoverer Scheele calls lithic, now frequently called uric, acid, of which the brick-coloured sediment of febrile patients consists*. From these observations it appears, that this sediment is most copious when, from an acescent diet or a debilitated state of the digestive powers, there is much acidity in the primæ viæ, or when the perspiration is checked, in consequence of which, the acid, which ought to have passed by the skin, is thrown upon the kidneys†.

It is farther shewn, that we have reason to believe, that when the action of the kidneys as well as that of the skin is debilitated, the acid causing this deposition from the urine in some degree accumulates in the system, and is thrown off by the skin and kidneys when their vigour is restored; and that in proportion as the perspiration is free, the less of this acid passes by urine. Thus the appearance of the lateritious sediment is merely a symptom of returning health, but generally indicating a less free perspiration than natural.

The other, the cream-coloured or furfuraceous sediment, which consists of the phosphats of the urine, which also now and then assumes more or less of a red or rather a pink colour, but has an appearance very different from the former, was found most copious in the urine of those who used an alkalescent diet, or in whom the perspiration was unusually free, so that any acid received into, or generated in, the body passed chiefly by the skin. Both depositions were most copious when the urine was highest coloured and had the strongest smell, demonstrating that it was much charged with the peculiar substances excreted by the kidneys. The same portion of urine, however, as in fevers, never deposited a great deal of both.

* An account of these observations was published in 1792, entitled *An Inquiry into the Remote Cause of Urinary Gravel*.

† It is ascertained by experiment, in the Treatise alluded to, that an acid passes off even by insensible perspiration, and that all acids as far as they were tried, even the carbonic acid gas, occasion the precipitation of lithic acid from the urine. The circumstance of acids occasioning this precipitation was first noticed in an anonymous publication on the origin of gout and gravel, afterwards claimed and republished by Mr. Murray Forbes.

The latter sediment, therefore, like the former, is merely a symptom of returning health, and particularly indicates the renewal of a free secretion by the skin, which in fevers is generally a favourable symptom.

But whether a favourable symptom or not, it is still attended with the same deposition from the urine. In some fevers terminating fatally there is an unusual tendency to sweat, which only exhausts the strength. In these, this deposition constantly attends, but without removing the fever. This is the case in hectic fever. I have observed this deposition in all cases where there were night sweats, although without fever. Nay I have found on repeated trials, that I could at pleasure occasion it in the urine of healthy people, by promoting the perspiration by small doses of tartrate of antimony, or compound powder of ipecacuanha. These appearances in the urine, therefore, at the favourable termination of fevers, are certainly not the cause, but the consequence, of recovery*.

Next to the critical deposition of the urine, there is no symptom which so generally attends the change from fever to health as sweating. This we found is almost uniformly the crisis of intermittents, and continued fever seldom terminates favourably without some degree of moisture appearing on the skin.

It is surprising that the best effects, even in those fevers in which debility prevails most, sometimes attend profuse and long continued sweats, provided they are general, and the patient bears them without much loss of strength†.

* The following are the only appearances of the urine, if we except those it assumes in consequence of morbid affections of the urinary organs, which can be distinctly marked. The pale urine without cloud or sediment; the pale urine with a light cloud appearing a few hours after it has been passed; the high-coloured urine remaining clear, or having a light cloud formed in it without sediment; the high-coloured urine remaining clear, or having a light cloud formed in it, and depositing usually a considerable time (from 4 to 12 hours) after it has been passed a red crystallized sediment; the high-coloured urine becoming turbid after it has been passed for a short time (from half an hour to two hours) and depositing a light-coloured sometimes pinky sediment, now and then (after the urine has stood for a longer time) mixed with more or less, if the light-coloured sediment is copious, never with much, of the red crystallized sediment; and in almost every disease, as well as in health, the urine occasionally assumes all these appearances.

† Dr. Donald Munro remarks, that in the petechial fever the sweat

From this, however, we are not to draw an inference, which long misled physicians, and proved a source of much mischief; that the solution of the fever is to be wholly attributed to the flow of sweat, and that could this symptom by any means be induced, it would always prove equally beneficial. To this hypothesis, besides other erroneous practices, we may trace the employment of the hot regimen in fevers; an error so fatal, that it may be seriously questioned whether the medical art, during its prevalence, did more good or harm in these diseases. It has just been shewn, that the critical sediments in the urine are to be regarded, not as the cause, but the consequence, of recovery. Nearly the same may be said of critical sweats. It favours this opinion that in certain symptomatic fevers when the disease is removed wholly by local means, sweating, notwithstanding, often attends the change to health.

Nothing would be more hurtful than checking a sweat which is attended with relief, and it is even proper, as will be pointed out more particularly in considering the treatment of fevers, to use innocent means to promote sweat; but to endeavour to force it out by warmth and heating medicines is universally prejudicial. The wished for crisis is never obtained in this way, and the attempt has often proved fatal.

Even spontaneous sweats are not always to be encouraged. When they continue without relieving the symptoms, they indicate danger, and ought to be checked. Nor are those sweats to be encouraged which are viscid and partial. Unless the sweat be thin and universal, it is seldom attended with a remission of the fever.

Sweating not only does not always afford a favourable prognosis, but is sometimes among the most fatal symptoms in fevers. Sweat running copiously from the head and neck is a frequent forerunner of death in the yellow fever*.

often continued for three or four days with the best effects. Another remarkable peculiarity of this fever (the petechial) says Hoffman, is the profuse cold sweats, of an acid smell, continuing for several days and nights, and proving a salutary crisis.

He justly adds, however, that these sweats, although proving critical, always indicate much debility, and that if the patient's strength be not supported while under them, he frequently sinks when on the brink of recovery.

* See Dr. Jackson's observations on this fever.

It is of the same fever that Dr. Linning observes, that the urine often shows the critical sediment on the very first day, which he uniformly found a bad symptom, and the more copious the sediment was, the worse, he observes, was the prognosis*. One of the most fatal fevers of which we have any account is the *Ephemera Britannica*; the chief symptom of which was a profuse flow of sweat, from which it received the appellation of *Sudor Anglicus*†.

If we except the critical deposition from the urine and sweating, there is no symptom which oftener attends the more sudden changes from fever to health than diarrhœa‡.

In many epidemics there is a peculiar tendency to terminate in this way, and then the discharge is generally more or less dysenteric. It is in autumn, the season in which dysenteric affections are apt to appear, that fevers most frequently terminate by a discharge from the intestines||.

This crisis is often for some time preceded by flatulence, gripes, and pains of the loins.

Spontaneous diarrhœa, however, is far from being universally favourable. If it does not soon bring relief, and particularly if it is attended with much loss of strength, it should be checked. The diarrhœa, which by medical writers is emphatically termed *colliquative*, I have already had occasion to notice.

Vomiting may also be enumerated among the crises of fevers; it never proves critical, however, except at, or very soon after, the commencement of the disease; then, whether spontaneous or induced by art, it sometimes stops the fever.

* See Dr. Linning's letter to Dr. Whytt, on the yellow fever of South America, in the 2d vol. of the *Essays and Observations, Physical and Literary*.

† See Caius de *Ephemera Britannica*.

‡ If diarrhœa supervene on any of the critical days, Hassenhorl* observes, we must be careful to do nothing that may check it; and Hoffman remarks, that in his practice he has more frequently observed a diarrhœa critical in the petechial fever than either sweat or hemorrhagy.

|| *Quarin De febris*.

* See his *Historia Febris Petechialis*.

A spontaneous flow of blood from different parts of the body, we have seen, is frequently attended with an abatement, or total removal of the symptoms of synocha; and, what we should not a priori have expected, sometimes of those of typhus.

As physicians inferred from the critical deposition of the urine, that fever is owing to the presence of a morbid matter in the blood, and that this morbid matter must be thrown out of the body before the fever could be removed; and as they inferred from the relief obtained during critical sweats, that this matter may be thrown off by the skin; so they inferred, from the abatement of the symptoms which frequently attends hemorrhagies, that it may be expelled from the system by venesection. Nor did the very obvious objection, that although fever be admitted to arise from the presence of morbid matter in the blood, a partial abstraction of this fluid cannot free the system of a matter diffused through the whole mass, prevent them from recommending venesection in all kinds of fever.

If there be any practice which has been more baneful than the hot regimen, it is the indiscriminate use of blood-letting, in these diseases. This subject it will soon be necessary to consider at length; it is sufficient here to observe, that the effects of venesection and spontaneous hemorrhagy in fevers are often so different, that the favourable change, which frequently attends the latter, must be attributed to something else than the loss of blood. And as we certainly know that the critical depositions of the urine, and have often reason to believe that critical sweats are the consequence, and not the cause, of the favourable change which attends them; so we have reason to believe of spontaneous hemorrhagy, that it is, at least, in part owing to the general relaxation of the extreme vessels which takes place in the change from fever to health. The loss of blood in critical hemorrhagies, indeed, is often too trifling to be supposed capable of any considerable effect.

Of hemorrhagies, that from the nose is most frequently critical. It is generally preceded by some of the following symptoms. An unusual redness of the eyes, sometimes an increased secretion of tears, a sense of weight in the temples, dimness of sight, pain of the head, generally, Quarin observes, of the occiput, itching of the nose, and the *pulsus dicrotus*, regarded by physicians as one of the

chief symptoms portending a critical hemorrhagy in fevers. In this state of the pulse, which is also called rebounding, the artery seems at each diastole to give a double stroke to the finger.

Before hemorrhagies in general, the patient usually complains of heat, tension or pain in the part from which the blood is about to flow. The worst species of hemorrhagies which occur in malignant fevers, however, are not preceded by any other symptoms than those of general debility, and never prove critical.

The symptoms which precede critical hemorrhagies seem to oppose the idea of their being the effect of the general relaxation of the vessels; but we know that in all states of the system the above symptoms are generally the consequence of the congestion which precedes the rupture of vessels.

Critical hemorrhagies, it has been observed, are most frequent in those fevers which arise from cold, gluttony, the abuse of intoxicating liquors, or suppressed discharges.

Eruptions of various kinds now and then prove critical in fevers; this is sometimes, but not often, the case with the eruptions enumerated in the Introduction as characterising particular species of synochus. Of these eruptions aphthæ most frequently bring relief*.

Aphthæ, however, are far from always being favourable. When light-coloured, and accompanied with a considerable flow of saliva, they are often attended with an abatement of the symptoms. But when there is little flow of saliva, and particularly when the aphthæ are of a dark colour, they are never a favourable, and often a very fatal symptom.

An increased secretion of mucus from the fauces, or of saliva, unattended with aphthæ, is often favourable†. The latter sometimes amounts to a salivation, and has been

* "Ad Aphthas," Sydenham observes, "cum jam discessum meditaretur, erat propensior." (See Sydenham De Febris Continuis). The favourable termination of that species of synochus, which is attended with the miliary eruption, is often preceded by the appearance of aphthæ. (See Mead's Monita et Precepta Medica.)

† The former of these is mentioned as having generally been attended with an abatement of the symptoms in the fever of Philadelphia.

known to prove critical. Both Sydenham* and Huxham† relate cases of this kind.

A scabby eruption appearing about the mouth or behind the ears, more frequently than any of the above eruptions attends the favourable termination of fever‡.

One of the most remarkable crises of fevers, is a swelling and suppuration of glandular and other parts of the body. This crisis rarely happens in the synocha. The parotid glands are the parts most commonly affected. They swell and become inflamed, and the event of the fever seems often to depend on the discharge of the matter generated in them. It has generally been found the most successful practice to lay them open as soon as, or even before fluctuation can be perceived in them||.

* See Sydenham de Febribus Continuis.

† See Huxham on Fevers. Vogel observes, that intermittents are sometimes cured by a salivation.

‡ Rush on the Yellow Fever of Philadelphia, Chisholm on that of Grenada, &c.

|| "If the disease," Sir John Pringle observes of typhus, "terminates in a suppuration of the parotid glands, one caution only is needful, which is to open the abscess soon without waiting for a fluctuation, or even a softness of the tumour, which may never happen. The pus being here so very viscid, that after it is ripe the part will feel as hard as if the suppuration had not begun*."

I have heard Sir Walter Farquhar observe, that when he attended a regiment on the continent, there appeared among the troops a violent fever accompanied with a swelling of the parotid glands, which never came to suppuration. Almost every patient attacked with this fever died, till it occurred to him that an incision of the enlarged gland might prove serviceable; from which he found the best effects.

"Swellings of the parotid glands," Dr. Donald Monro† observes, "appeared in many subjects towards the decline of the fever, which came to suppuration and proved critical. In two only, out of those I attended while in Germany, they came on early in the fever, but did not suppurate: both patients died. All the rest recovered, except an old man, an invalid of Bremen‡."

* Sir John Pringle's Observations on the Diseases of the Army.

† See Dr. Monro's Treatise on the Diseases of the Army.

‡ Whose case demonstrates in a striking manner the connexion between the suppuration of the parotids and the solution of the fever. A swelling appeared on the right side, which came to suppuration and proved critical. The fever in a short time returned; another swelling appeared on the other side, which came also to suppuration, and the fever again ceased. The patient afterwards died hectic, in consequence of the profuse secretion from the sores.

In some cases, after the fluctuation of the matter is distinctly perceived, a purulent discharge from the intestines, fauces, or nose supervening, the tumors subside, and the fever ceases. Physicians have endeavoured to promote the termination which nature pointed out, giving gentle laxatives as soon as the matter was formed, during the operation of the third of which, it is observed, the stools were generally mixed with purulent matter, the tumors subsided, and the fever disappeared.

The tumors sometimes appear in the arm-pits, or in the groin, and sometimes in the testicle. Dr. Rush observes, that glandular swellings frequently accompany the yellow fever. He never saw them come to suppuration, but generally found them favourable. Dr. Chisholm, however, remarks, that they were among the unfavourable symptoms of the late dreadful fever of the West Indies, which differed in many respects from the common yellow fever, particularly in being accompanied, at least in Grenada, with pestilential eruptions.

A peculiar affection of the testicles and scrotum sometimes appeared in this fever, and proved critical*.

The last symptom I shall mention, as deserving a place among the crises of fever, is shivering. When this occurs in the progress of continued fever, it is sometimes followed by the hot stage, and other symptoms of the paroxysm of an ague, and the fever assumes the intermitting form.

Various other symptoms are said by authors to be critical in fevers, but most of them have been observed so rarely that their occurrence may rather be regarded as accidental than as particularly connected with the solution of the

Dr. Munro applied poultices and gummous plasters to the inflamed glands, and as soon as the presence of matter could be perceived he laid them open. The cases in which the patients died before this happened would seem to point out Sir John Pringle's mode of treatment to be preferable. Some epidemics, however, afford a different inference, as appears from the observations of Acrel, in the Memoirs of the Royal Academy of Sciences at Stockholm. He often met with abscesses in different parts of the body in malignant fevers. At first he opened them as soon as matter was formed, the consequences of which were, that the strength sunk, the fever became worse, and the patient generally died within eight days.

* See the 122d and following pages of Dr. Chisholm's Treatise.

fever, suppurations in different parts of the body happening a considerable time after its termination, rheumatism, catarrhus vesicæ, or common catarrh, occurring about the time the fever goes off, indolent swellings, schirrus of the different viscera, various affections of the teeth, jaws, joints, and bones*, spasmodic and other nervous affections, &c.

SECT. IV.

Of the Prognosis in Continued Fever.

The prognosis in continued fever has been delivered in what has been said of the symptoms and crises of this disease, and of the prognosis of intermittents.

The danger in fevers arises from two causes, increased excitement, and debility. The symptoms of increased excitement are less to be dreaded than those of debility, because we possess more certain means of removing them.

There is a third head, to which authors refer many of the symptoms of typhus, namely putrescency. "From all this it appears," Dr. Cullen observes of the prognosis in fevers, "that the symptoms shewing a tendency to death may be discovered by their being either of the symptoms

"Of violent reaction;

"Of great debility;

"Or of a strong tendency to putrefaction in the fluids†."

In the 105th paragraph he observes, "the symptoms denoting a putrescent state of the fluids are,

"1. With respect to the stomach; the loathing of animal food, nausea and vomiting, great thirst, and a desire of acids.

"2. With respect to the fluids; 1. The blood drawn out of the veins not coagulating as usual. 2. Hemorrhagy from different parts, without marks of increased impetus. 3. Effusions under the skin or cuticle, forming petechiæ, maculæ and vibices. 4. Effusions of a yellow serum, under the cuticle.

* Some of the latter perhaps have a better claim to be regarded as connected with the solution of the fever. See Vogel de Cog. et Cur. Morb.

† See Dr. Cullen's First Lines, vol. i. p. 160.

“ 3. With respect to the state of the excretions; fetid breath, frequent loose and fetid stools, high-coloured turbid urine, fetid sweats, and the feter and livid colour of blistered places.

“ 4. The cadaverous smell of the whole body.”

The first set of symptoms, the loathing of animal food, nausea and vomiting, thirst, and a desire of acids, are common to all kinds of fever, and as strongly marked in synocha, in which no putrescency of the fluids can be suspected, as in typhus.

Of the second set of symptoms it may be observed, that the hemorrhagies and effusions so common in malignant fevers are readily accounted for, and might have been foreseen from the relaxed state of the solids, independently of any change induced on the fluids. We know, however, that in such fevers the blood is thinner and consequently more apt to be extravasated than in health; but in a machine so complicated as the animal body, may not this change be owing to many other causes than putrescency? Is not the debilitated state of the various functions in typhus, particularly that of the secreting organs, sufficient to account for it? That the blood is in no degree actually putrid, even in the worst forms of typhus, we are well assured. It does not indeed coagulate so readily as usual, but never has any feter.

It is only at first view that the remaining symptoms seem to afford a better argument for the opinion of a putrescency of the fluids.

When the various functions are much impaired, the contents of the stomach and alimentary canal stagnate. These form no part of the living body. They are as apt to run to fermentation as the same matter out of the body exposed to the same degree of heat and moisture, unless the antiseptic fluids of these cavities are supplied to check this tendency. Thus it happens, where the powers of life are much exhausted, that the contents of the intestines become putrid. The same happens on the surface of the body. The failure of the due secretion and absorption there causes a stagnation and putrefaction of the natural moisture. Hence the putrid smell of the sweat. This also happens in parts which have been blistered, in ulcers, &c. so that it is easy to account for the cadaverous smell of the body, without supposing any degree of putrefaction in the circulating

fluids. And those labouring under typhus, being more subject to gangrene than people in health, only proves, that in them the vital powers are more languid and apt to fail.

It would seem, therefore, that the various symptoms arranged by authors under the head of putrescency come under that of debility. And in considering the treatment of fever, we shall find that the means employed with a view to obviate what are called the symptoms of putrescency are only effectual in proportion as they restore the lost power.

CHAPTER II.

Of the REMOTE CAUSES of CONTINUED FEVER.

I HAVE already had occasion to observe that I would not always attempt a division of the remote causes into predisposing and exciting: because the same causes often act in both ways. This is true of the remote causes of continued fever. There are two, however, which generally act as exciting causes; cold, occasioning the fevers characterised by an increase of excitement; and contagion, those in which debility prevails. As the remote causes of intermittents were arranged under the head of marsh miasma, I shall arrange those of continued fevers under the two heads of cold and contagion; because in considering these, we shall have occasion to take a view of the various circumstances which produce, or tend to produce this order of fevers.

SECT. I.

Of Cold as a Cause of Fever.

This part of the subject Dr. Cullen has considered fully in his First Lines; and to what he has said there is little to be added. I shall therefore quote his observations, omitting such as appear to be hypothetical.

“ The operation of cold on a living body is so different
“ in different circumstances as to be of difficult explanation;
“ it is here, therefore, attempted with some diffidence.

“ The power of cold may be considered as absolute or
“ relative.

“ The absolute power is, that by which it can diminish
“ the temperature of the body to which it is applied. And
“ thus, if the natural temperature of the human body is, as
“ we suppose it to be, that of 98 degrees of Fahrenheit’s
“ thermometer, every degree of temperature less than that
“ may be considered as cold with respect to the human
“ body; and in proportion to its degree will have a
“ tendency to diminish the temperature of the body. But
“ as the living human body has in itself a power of gene-
“ rating heat, so it can sustain its own proper heat to the
“ degree above-mentioned, though surrounded by air, or
“ other bodies of lower temperature than itself; and it ap-
“ pears from observation, that in this climate, air, or other
“ bodies, applied to the living man, do not diminish the
“ temperature of his body, unless the temperature of the
“ bodies applied be below 62 degrees*. From hence it
“ appears that the absolute cold in this climate does not
“ act on the living human body, unless the cold applied be
“ below the degree just now mentioned.

“ It appears also, that the living body being surrounded
“ by air of a lower temperature than itself, is necessary to
“ its being retained in its proper temperature of 98 degrees;
“ for in this climate every temperature of the air above 62
“ degrees applied to the human body, though still of a
“ lower temperature than itself, is found to increase the
“ heat of it†. And from all this it appears, that the absolute

* There is an evident inaccuracy in this statement, because the velocity with which the temperature of an animal is reduced by the surrounding medium is not regulated by its temperature only. The temperature of the human body is not diminished by air at the temperature of 62°; but it is diminished by water or quicksilver at the same temperature.

† There is also an inaccuracy in this statement: for the increase of temperature in this case is almost wholly confined to the surface. It appears from a variety of experiments, particularly those of Dr. Crawford, Dr. Fordyce, and Mr. Hunter, that the living body resists an increase as well as a diminution of its temperature, and that there is no temperature to which we can venture to expose it which will raise internal parts more than a very few degrees above the natural tem-

“ power of cold with respect to the human body is very different from what it is with respect to inanimate bodies.

“ The relative power of cold, with respect to the living body, is, that power by which it produces a sensation of cold in it; and with respect to this it is agreeable to the general principle of sensation, that the sensation produced is not in proportion to the absolute force of impression, but according as the new impression is stronger or weaker than that which had been applied immediately before. Accordingly, with respect to temperature, the sensation produced by any degree of this depends upon the temperature to which the body had been immediately before exposed; so that whatever is higher than this feels warm, and whatever is lower than it feels cold; and it will, therefore, happen that the opposite sensations of heat and cold may, on different occasions, arise from the same temperature as marked by the thermometer.”

“ With respect to this, however, it is to be observed, that although every change of temperature gives a sensation of cold or heat as it is lower or higher than the temperature applied immediately before, the sensation is in different cases of different duration. If the temperature at any time applied is under 62 degrees*, every increase of temperature applied will give a sensation of heat; but if the increase of temperature does not arrive to 62 degrees, the sensation produced will not continue long, but be soon changed to a sensation of cold. In like manner, any temperature applied to the human body, lower than that of the body itself, gives a sensation of cold; but if the temperature applied does not go below 62 degrees,

perature. See an account of Dr. Crawford's experiments in his *Treatise on Animal Heat*; of those of Dr. Fordyce, Sir C. Blagden, and others, in the LXVth volume of the *Philosophical Transactions*; and of those of Mr. Hunter, in his work on the *Animal Economy*. Mr. Hunter's experiments, if accurate, are the most conclusive in favour of the living body possessing a peculiar power of resisting an increase of temperature, as in them the result cannot be attributed to the effects of evaporation. Dr. Crawford's experiments prove, that an animal disengages a less quantity of caloric in a high than in a low temperature; but if Mr. Hunter's experiments are accurate, our bodies must possess a power of combining, as well as disengaging, caloric. A temperature above 62°, therefore, may rather be said to exhaust the powers, than increase the temperature of our bodies.

* See note in page 155.

“ the sensation of cold will not continue long, but be soon
“ changed to a sensation of heat.” The paragraphs which
follow in Dr. Cullen’s First Lines, respecting the manner
in which cold acts on the living animal body, are omitted,
as not only hypothetical but in some parts inconsistent.
In the 92d paragraph Dr. Cullen enumerates the morbid
effects of cold :

“ 1. A general inflammatory disposition of the system,
“ which is commonly accompanied with rheumatism or
“ other phlegmasiæ.

“ 2. The same inflammatory disposition accompanied by
“ catarrh.

“ 3. A gangrene of particular parts.

“ 4. A palsy of a single member.

“ 5. A fever, or fever properly so called, which it often
“ produces by its own power alone, but more commonly it
“ is only an exciting cause of fever by concurring with the
“ operation of human or marsh effluvia.

“ Cold is often applied to the human body without pro-
“ ducing any of these morbid effects, and it is difficult to
“ determine in what circumstances it especially operates in
“ producing them. It appears to me, that the morbid
“ effects of cold depend partly upon certain circumstances
“ of the cold itself, and partly on certain circumstances
“ of the person to whom it is applied.

“ The circumstances of the cold applied which seem to
“ give it effect are, 1. The intensity or degree of the cold.
“ 2. The length of time during which it is applied. 3. The
“ degree of moisture at the same time accompanying it. 4.
“ Its being applied by a wind or current of air. 5. Its
“ being a vicissitude, or sudden and considerable change
“ from heat to cold.

“ The circumstances of persons rendering them more
“ liable to be affected by cold seem to be, 1. The weakness
“ of the system, and particularly the lessened vigour of the
“ circulation, occasioned by fasting, by evacuations, by
“ fatigue, by a last night’s debauch, by excess in venery,
“ by long watching, by much study, by rest immediately
“ after great exercise, by sleep, and by preceding disease.
“ 2. The body, or its parts, being deprived of their ac-
“ customed coverings. 3. One part of the body being ex-
“ posed to cold, while the rest is kept in the usual or a
“ greater warmth.

“ The power of these circumstances is demonstrated by
“ the circumstances enabling persons to resist cold. These
“ are, a certain vigour of constitution, exercise of the body,
“ the presence of active passions, and the use of cordials.

“ Beside these, there are other circumstances which, by
“ a different operation, enable persons to resist cold, acting
“ as a sensation; such as passions, engaging a close at-
“ tention to one object, the use of narcotics, and that state
“ of the body in which sensibility is greatly diminished, as
“ in maniacs. To all which is to be added, the power of
“ habit with respect to those parts of the body to which
“ cold is more constantly applied, which both diminishes
“ sensibility, and increases the power of the activity gene-
“ rating heat.”

When cold acts as the exciting cause, the fever is generally of that species which has been termed synocha. It is chiefly when cold concurs with the marsh miasma or contagion in producing intermitting fever or typhus, that it acts as a predisposing cause.

SECT. II.

Of Contagion.

Without detaining the reader, by remarks on the indefinite manner in which the terms contagion and infection have been employed; it will be sufficient to define the sense in which I shall use them.

If it can be proved that the plague, for instance, is communicated to a healthy person, not only by the sick themselves, (in which case it is possible to ascribe the spreading of the disease to sympathy) but also by any thing which has been in contact with the sick, although the person infected is ignorant of its having been so; if this, I say, is an established fact, it is then ascertained, that matter of some kind passes from the sick, to the person receiving the disease. This matter I shall call contagion; and its action on the person in whom it produces the disease I shall call infection.

The following observations may be divided into three parts.

In the first we shall consider the source from which contagious fever springs.

In the second, the different ways in which it spreads; and

In the last, (what depends on a knowledge of these) the means of preventing its appearance and checking its progress.

There are few parts of medicine involved in greater obscurity than the nature of contagion. Universal experience only could convince us, that the application of a matter, which cannot be detected, and which is often applied in very small quantity, should so constantly produce nearly the same train of symptoms, whatever be the state of the body at the time it is received into it.

Many have attempted to ascertain the origin of contagious diseases; but such inquiries have for the most part proved fruitless, and often led to very absurd opinions.

In the history of medicine we observe contagious diseases which had long prevailed suddenly disappearing, and others arising in their stead. But the facts preserved, concerning the production and disappearance of these diseases, throw no light on the sources from which they arose. The leprosy of the Jews, and other species of leprosy which raged in Europe in the 12th and 13th centuries, are scarcely now to be met with. We find Celsus speaking of the hydrophobia as a new disease; and we have a remarkable instance both of the production and disappearance of a contagious disease in the *Ephmera Britannica*, or, as it was termed, the *Sudor Anglicus*, described by Caius* and others. The gangrenous sore throat, Allionius† observes, was scarcely known before 1610, since which time it has made dreadful havoc in almost every country of Europe. The *Plica Polonica* seems to have made its appearance only in the last century. The address of the Polish physicians to the University of Paris is still extant, in which the disease is described as new, extremely contagious, and incurable by any means they could think of. The “yaws,” Dr. Ferriar‡ observes, “the sibbens, and other national infectious disorders afford strong proofs of the variety of animal poisons; and Mr. Hunter, in his excellent work on the Lues, has given good reason for believing that new poisons are constantly produced among the poor of

* Caius de *Ephmera Britannica*.

† Allionius de *Miliarium Origine*.

‡ Dr. Ferriar's *Medical Observations and Reflections*.

“great cities.” From these and many similar observations, it appears that Dr. Cullen is wrong in attempting to limit contagions to a very few species.

Concerning the source of the above and other contagious diseases, there is but one conjecture which appears at all probable. That each, though afterwards propagated by its peculiar contagion, is at first produced independently of contagion, by a concurrence of causes which rarely takes place. And when, at any period, it happens, that no person labours under the disease, it cannot be reproduced unless a sufficient quantity of the contagion is preserved in fomites, substances impregnated with contagion, till the same causes, which first gave rise to it, again conspire. Thus contagious diseases may for a long time disappear, while a different combination of causes may give rise to others, which in like manner spread by their contagions. The probability of this conjecture will be strengthened by what I am about to say of typhus.

Whatever be the difficulty of tracing the source of other contagious diseases, it is no difficult matter to detect that of typhus. The combination of a very few circumstances, and those of frequent occurrence, is sufficient to produce this disease.

It may arise in any ill-ventilated and crowded place. Mr. Howel and others, who escaped from the black hole of Calcutta, were seized with this fever. Thus Dr. Lind ascribes the production of many contagious fevers on shipboard to keeping the hatchway shut. Typhus frequently arises in hospitals, jails, transport ships, &c. when due attention has not been paid to ventilation. It is evident, therefore, that the effluvia of the living body, become putrid by stagnation, are capable of producing it.

Putrid effluvia, from any other source, may have the same effect. This uncleanness of all kinds is favourable to the production of this disease; and on this account such fevers generally take their rise among the poor, and among them are most fatal*.

The confinement of the putrid effluvia is not always ne-

* See the observations of Sir J. Pringle, Dr. Ferriar, &c. It is observed, by Dr. Fordyce and others, that many brute animals are subject to typhus, when crowded together in ill-ventilated places. This fever has been observed to break out among hogs, and more frequently among sheep.

cessary for the production of typhus. When the cause is sufficiently powerful, the whole air of a neighbourhood may be so loaded as to be capable of producing it. Senac gives an account of a malignant fever occasioned by the offal of a city being accumulated without the walls*. It has often happened that typhus has spread over the adjacent country, when the dead were left unburied on the field of battle. And Forestus mentions a fever of the same kind, which raged at Egmont, in North Holland, occasioned by a whale left on the shore.

The putrid effluvia of animal and vegetable substances produce continued fever when the situation and air are dry, and intermittents when they are damp†.

Such is the principal source of typhus; but in the causes of every species of fever we find a source of this; for from whatever cause fever arises, and whatever appearance it at first assumes, it may by various accidents be protracted, and become a contagious typhus.

It is said, that typhus has been found more apt to arise among people who live much on animal food, particularly if salted, than among those who use a large proportion of fresh vegetables. It is least apt to arise when the diet is such as best preserves the vigour of the system: and this diet is different in different circumstances. Peculiarity of constitution and habit influence it much. I shall presently have occasion to point out the states of body which predispose to, or tend to prevent, infection.

It has been a favourite opinion, that certain states of the air, independently of the circumstances which have been pointed out as the sources of typhus, often produce this, as well as other contagious fevers. This induced Sydenham to mark attentively the state of the weather, in different years, during which epidemics of different kinds prevailed. But after very careful observation he was obliged to confess that he could perceive no difference in seasons in which the contagious diseases were very different.

Van Swieten made a similar set of observations, which led him to the same conclusion. He noted for ten suc-

* The air was so loaded with putrid effluvia, that those who lived near the heap of putrefying matter could not keep meat sweet for three hours.

† Compare what is here said with what was said of the remote causes of intermitting fever, B. i. c. iii.

cessive years, three times a day, the height of the barometer and thermometer, and the direction and strength of the wind. He also marked the quantity of rain that fell, the various changes of the air, diseases, number of the sick, and of those who died. These observations, like those made by every person in the course of his own experience, prove, that certain diseases, pleurisies, quinsies, &c. are most frequent in certain kinds of weather; but they throw no light on the source of contagious diseases.

Of the Ways in which Typhus spreads.

In whatever manner typhus is produced, it is generally* propagated by contagion.

There are three ways in which a contagious disease may spread:

1. By actual contact.
2. Through the medium of the air.
3. By means of substances which have been in contact with, or near the sick.

Concerning the first of these, little need be said. It is probable, that the larger the surface which has been in contact with the sick, and the longer it has been so, the less will be the chance of escaping infection. Of the other ways in which contagious diseases spread, it will be necessary to speak at greater length.

The air is the medium through which contagion in most instances perhaps is applied to the body. It is common for people to be infected in consequence of approaching the

* It is remarkable indeed, that we sometimes meet with malignant fevers, which do not appear to be at all contagious. "Sometimes," Dr. Lind observes, "one man may be seized with the petechial, or "with the yellow fever, while the rest continue unaffected." Dr. Lind gives several instances in support of this observation. I shall not here enter on the question, whether or not the yellow fever is ever a contagious disease. I am inclined with Dr. Lind, to believe that both this and other forms of typhus are sometimes contagious, and sometimes not so. That this is the case with another disease, the influenza, I cannot help thinking, that the facts stated in the third edition of my *Treatise on Febrile Diseases*, leave little room to doubt, at least I see no other mode of explaining the facts there mentioned.

sick, without touching them or any thing which has been in contact with them.

It appears, from a variety of observations, however, that the contagious atmosphere, that is, the air sufficiently impregnated with the contagion to produce the disease, extends only for a short distance around the sick, not only in typhus, but in all other contagious diseases; certainly not above a few yards, probably not above a few feet.

Contagion, however, may be conveyed from place to place by the wind, and thus the disease may be communicated at a considerable distance. In proof of this, many facts might be adduced; one of the most striking on record happened on the 11th of May, 1750, at the Old Bailey. The prisoners were kept for nearly a whole day in a small, ill-ventilated, and crowded apartment; some of them laboured under the jail fever. When they were brought into court, the windows at the end of the hall, opposite to the place where the judges sat, were thrown open; the people on the left of the court, on whom the wind blew, were infected with the fever, while those on the opposite side escaped. The lord chief justice and the recorder, who sat on the lord mayor's right hand, escaped; while the lord mayor and the rest of the bench, who sat on his left, were seized with the distemper. Many of the Middlesex jury, on the left side of the court, died of it, while the London jury, who sat opposite to them, received no injury*.

Some maintain, that we may often detect the presence of contagion in the air; that it may be perceived by the sight or smell. There seems to be no proof of this opinion, and much of what has been said of it must be ascribed to the effects of imagination. To this at least may be attributed what has been said of a mist surrounding those who labour under the worst kinds of fever, and of a cloud hanging over a city where such disorders rage. Caius observes of the *Sudor Anglicus*, that a disagreeable smell preceded the distemper, and a black cloud was seen to move from place to place as if driven by the wind, the distemper following

* We may thus explain why contagious diseases have sometimes appeared to be most malignant in calm weather, the wind being a principal means of preventing the accumulation of the contagion. It is said, that during a plague at Vienna, the wind did not blow for three months; at the end of this time a breeze arose by which the distemper was alleviated. See Van Swieten's Comment. in Aph. Boerhaavii.

the course of the cloud. Concerning the accuracy of observations, which so many have had the same opportunity of making, and so few have made, there must be much doubt.

The smell of patients labouring under fever, seems, from a variety of facts, to depend on something distinct from the contagion. Fomites may be highly impregnated with contagion without having any particular smell; where the smell of the patient is strongest the contagion is often weakest, and vice versa. Upon the whole we have reason to conclude, with Dr. Fordyce, that the presence of contagion in the air is not to be detected by any of the senses.

It is remarked above, that there is no particular state of the weather, which, independently of the circumstances pointed out as the sources of typhus, are capable of producing this fever. It has been observed, however, that while contagious distempers rage, certain states of the air are more or less favourable to their progress. Calm weather often appears favourable to it. The plague has been found to spread more rapidly in damp foggy, than in clear dry, weather. Dr. Lind observes of typhus, that a damp air seems to increase the strength of its contagion; Dr. Smith makes a similar observation. This has been ascribed to the contagion being diffused through the air with greater difficulty when loaded with watery vapour. It is more probably owing to the sickly state of body which a damp air induces; it checks the perspiration, disorders the stomach, and sometimes renews febrile and other diseases*.

It is generally supposed, that hot weather is favourable, and cold weather unfavourable, to the spreading of contagious diseases; and this, with some exceptions, is true. It is common for contagious diseases to suffer a check, or cease altogether, when the winter sets in. But the worst fevers have often raged at the coldest seasons. The plague did so in London, and there have been instances of the plague suffering a check as the weather grew warmer.

There seem to be particular states of the air, not to be distinguished by the senses, which are favourable to the spreading of contagious diseases. It appears, from the observations of Dr. Linning on the yellow fever of North

* See the observations on the states of body which dispose to infection, towards the end of this section.

America, that although this fever infects readily the inhabitants of a town where it rages, and particularly those lately come from the country, yet if the sick retire to the country, they do not communicate the fever. Dr. Lind mentions a fact, for which it is still more difficult to account, that the same fever brought to this country in several American ships, attacked those only who had been on board the ships, others remaining uninfected, notwithstanding the freest intercourse with the sick on shore.

The stools, it has been observed, especially if unusually fetid, are most apt to communicate the contagion to the air; next to these, the patient's breath; and then the effluvia from his body.

The last of the ways in which a contagious disease may spread, is by *fomites*, substances impregnated with the contagion. Fomites often retain contagion for a great length of time, and may convey it to any distance. It is a general opinion, that fomites more readily communicate the disease, and communicate it in a worse form than the sick themselves*.

Contagion adheres to the furniture and utensils employed about the sick, as well as to all kinds of clothes, woollen, cotton, linen, &c. and even lurks in the walls of the apartments where the sick have lain. Woollen materials and wood are thought most apt to retain it.

It is a curious and wholly unaccountable fact, that contagious diseases generally run a certain course notwithstanding all the means which can be employed to check their progress, and after this cease spontaneously, while the

* "It appears to me probable," Dr. Cullen observes, "that contagions as they arise from fomites are more powerful, than as they arise immediately from the human body." In the observations of Sir John Pringle and others, we find striking instances of the virulence of infection from fomites. Dr. Lind remarks, "I am convinced, from very extensive experience, that the body of the sick is not so apt to communicate the infection, as the dirty linen, &c. which has been about him." The sick, Dr. Smith observes, and even the dissection of those who died, were not so apt to communicate the disease, as substances which had been in contact with them. It is even said, that contagion may be conveyed in the smoke arising from fomites while burning. Dr. Mead makes this observation with respect to the contagion both of small-pox and typhus. See Mead's *Monita et Præcepta Medica*. The same observation is also made by Van Swieten and others.

walls of the houses, furniture, &c. must still be supposed to be highly impregnated with the contagion. This observation is made by Russel and others of the plague, and has been made, indeed, of all contagious diseases.

Those who have been near the sick may infect others without being infected themselves. Nay, those who have only been exposed to putrid effluvia may excite typhus in others, while they themselves escape. "The most pernicious infection next to the plague," Lord Bacon observes, "is the smell of the jail, where the prisoners have been long, and close, and nastily kept, whereof we had in our time experience, twice or thrice, when both the judges who sat upon the bench, and numbers of those who attended the business, sickened upon it and died, therefore it were good wisdom, that in such cases the jail were aired before they be brought forth. It is probable," Sir John Pringle observes, after quoting this passage, "that one of the times hinted at, by this noble author, was at the fatal assizes held in the year 1577, of which we have a more particular account in Stowe's Chronicle, in these words. On the 4th, 5th, and 6th days of July, were the assizes held at Oxon, where was arraigned and condemned Rowland Jenkins for a seditious tongue, at which time there arose amidst the people such a damp (an expression in the language of those days signifying bad air) that almost all were smothered, very few escaped that were not taken, here died in Oxon 300 persons, and sickened there, but died in other places, 200 and odd."

The greater the debility, and the more strongly marked those symptoms which have been called putrescent, petechiæ, fetor of the breath, and perspiration, &c. the more contagious in general is the fever. This, however, is far from being an universal rule; the milder forms of typhus are sometimes as contagious as the more malignant.

The time during which the contagion lies in the body before it excites the disease, is different in different cases. Sometimes its effects are almost immediate; in general, however, the infected feel no symptom of the disease for one, two, three, or more days, and in some cases, though much more rarely, even for weeks after.

It sometimes happens, that when those employed about patients labouring under contagious diseases are suddenly

taken ill, the illness proves to be different from that under which the sick labour. People have, for instance, on approaching those ill of the small-pox, been suddenly attacked with sickness, head-ache, pain in various parts of the body, and other febrile symptoms, which have gone off without shewing any of the symptoms peculiar to small-pox*. Dr. Chisholm observes, that those exposed to the contagion of the fever of Grenada, were often immediately seized with nausea and slight rigours, which always proved transitory, the fever not appearing till the 2d or 3d day, or perhaps not appearing at all.

Similar to these observations are those of Sydenham and Rush, respecting the measles. What Sydenham calls the morbillous fever, and Rush the internal measles, are diseases in certain respects resembling, in others differing from, measles; but which frequently attacked those, who were exposed to the contagion of measles. Rush also observes, that he frequently met with a slight feverish disease, which those who formerly had had the measles were subject to, on approaching patients labouring under this disease.

It is not only true, that many exposed to the action of contagion escape infection, but it appears from a variety of observations, that many escape infection who have actually received the contagion of typhus into the system, or have it lurking about them for a considerable time, in such a manner that it may readily be called into action by slight causes. This is sufficiently confirmed by the observations of Dr. Lind in his *Treatise on Fevers and Infections*. He found that those who had been but slightly exposed to the contagion often escaped the disease, if not soon after subjected to the action of debilitating causes; and many recovering from contagious fevers, their bodies not yet being free from the contagion, had the fever renewed by such causes. He remarks, that sailors, after they have been for some time on shore, are frequently seized with fever, which at first seems merely the effect of a debauch, or some such cause, but which soon assumes the precise form of that which raged in the ship they had left. In such cases we find contagion acting merely as the predisposing cause. These observations are illustrated by

* Cases of this kind are mentioned by Dr. Lind and others.

what is said by other writers, particularly by what Dr. Rush says of his own situation while the yellow fever raged at Philadelphia.

In speaking of the means of preventing the progress of contagious diseases, I shall have occasion to mention circumstances favourable to, or tending to prevent, their spreading, which to save needless repetition I omit at present; particularly those states of body which are favourable to, or tend to prevent, infection. It is remarkable, that although typhus, as has been observed, sometimes arises among brute animals, in the same way as among men, and is communicated from one to another in the same manner, yet brutes cannot communicate it to men, nor men to brutes*; nor can one species of brute communicate it to another. Hogs, for instance, cannot communicate typhus to sheep, nor vice versa. It is remarkable, that white people cannot communicate certain contagious fevers to blacks. And I have been informed by West Indians, that there are among the negroes many contagious febrile diseases, to which white people are not subject.

The means of preventing the Generation, and checking the Progress of Typhus.

With regard to the means of preventing the generation of typhus, all that is necessary to be known was delivered in speaking of the sources of its contagion. If these are avoided, its generation will be prevented. It will be necessary to speak at greater length of the means to be employed for checking its progress.

On what has been said of the different ways in which contagious diseases spread, are founded many of the precautions employed for checking their progress. It is obvious,

* Illud præterea notabile est (Waldschmidt observes) venenum pestilentielle, hominibus infestum, non nocere brutis; et e contrario brutorum pestem non nocere hominibus. See Haller's Disput. ad Morb. Hist. et Cur. pertinentes, vol. v. There are instances, however, of human contagion proving fatal to brute animals. Boccace says, he saw two hogs eat some pieces of bread thrown from a poor man's house, who had died of the plague, in consequence of which they were seized with convulsions and expired in an hour.

that the first of these, actual contact with the sick, is to be avoided. The means suggested, by our knowledge of the air being a medium through which contagion spreads, are more various.

As the contagious atmosphere extends only for a short distance round the patient, a principal means of avoiding infection is not to approach the sick. But as contagion is carried from place to place by the wind, and as every place where the sick have been, even for a short time, may be supposed to be more or less impregnated with it, it must frequently happen, in close and crowded parts of cities, when the number of sick is great, that the whole atmosphere will become more or less loaded with contagion. And it is difficult for those who inhabit such places to escape infection. It is prudent, therefore, on the breaking out of pestilential distempers, to remove to the less populous parts of the city. Europeans residing at Aleppo, and other places frequently visited by the plague, choose the suburbs for their residence. By this means, and by shutting themselves up in their houses, and avoiding all intercourse with their neighbours, while the disease rages, they rarely suffer from it. Even the inhabitants of colleges and monasteries in these countries, who live in a great measure secluded from intercourse with their neighbours, frequently escape infection.

For those, however, who are obliged to remain in crowded parts of the city, where the deaths are numerous, it is proper to use some further precautions.

Contagion sufficiently diffused becomes inert; were not this the case, the very purifying of goods impregnated with it, (which is generally done by exposing them to the air) would be sufficient to spread the disease on all sides. Either owing to this circumstance, or the specific gravity of contagion, it has been observed, that those who reside in the upper parts of houses often escape, while those living on the ground floor are attacked with, pestilential fevers.

The greater purity of the air at some distance above the surface, in places where these fevers rage, has been so thoroughly ascertained, in eastern countries, that those who shut up (as it is termed) during the plague, converse with their neighbours from high windows, or if those who live next them are also cut off from intercourse with the infected, the families meet on the house top, without dreading

the fever which rages below. Dr. Russel* was accustomed to prescribe for a crowd of patients in the plague who daily assembled under his window, and by whom the air to a certain height must have been strongly impregnated with contagion; yet he neither received the disease himself, nor communicated it to those he lived with.

It should be the endeavour, therefore, of those who live where the deaths are numerous, to be supplied with air from the tops of their houses. In those countries where most rooms have chimnies, a very simple expedient is sufficient for this purpose, and will at the same time promote a free circulation of air in the house. If fires be kindled in several of the apartments, as the air of the house ascends through the heated chimnies, the doors and windows being kept close, the external air can enter only by the chimnies which have not been heated. By similar means miners often procure a current of fresh air, when they work at a considerable depth under ground.

A free ventilation is generally kept up in the wards of hospitals, by kindling fires at the ends of the wards and throwing open the upper parts of the windows. It appears, however, that these means are less effectual than at first sight they appear to be. Maret observes, in the *Memoires de Dijon* for 1788, that in a ward, where the hospital fever raged, he found from several experiments, that the air towards the ceiling, on a level with the open windows, was pure enough to preserve the life of birds; while in the lower parts of the same ward, on a level with the patient's beds, they sickened and died. This fact tends to confirm the observation just made respecting the specific gravity of contagion; and shows the necessity of ventilating the wards of hospitals, where contagious fevers rage, by openings near the floor as well as the ceiling; and it is probable, that the former of these modes of ventilation will be found the most effectual.

The knowledge of the air being a medium through which contagious diseases spread, has suggested another set of means, whose object is to destroy, or correct the noxious properties of, the contagion, while suspended in the air.

It is necessary, however, to premise that it is impossible in every instance to discover whether these means operate

* See Russel on the Plague.

by destroying, or correcting the properties of the contagion; or merely by fortifying the body against its action. Many of them may be supposed to act in both ways. I shall arrange under the present head, those which may be supposed to act in the former way; and under another division, point out the means which act evidently by fortifying the body against the effects of the contagion. There can be no objection to this mode of arrangement, if the hint here suggested be kept in view.

We may determine whether any particular means possess the power of destroying or correcting the properties of contagion, by observing whether they are capable of purifying fomites. What means have, in this way, been proved to possess that power will be pointed out in speaking of the purification of fomites.

Heat is one of the most ancient means employed for destroying or correcting the properties of contagion suspended in the air. It has been an opinion since the days of Hippocrates, that by exposing air impregnated with contagion to the action of fire, the contagion is as it were burned out of it. And it will appear, when we consider the means employed for purifying fomites, that this opinion is probably true. But how shall we apply the temperature sufficient for this purpose, which we shall find is very considerable, to the infected air? Fires have frequently been made in the streets throughout a whole city, where the plague or other pestilential fevers raged. From this, however, we should not, *a priori*, expect much benefit; and the fact is, it has not been attended with any good effect*.

It even appears, upon the whole, that fires employed in this way, by overheating the atmosphere are often hurtful.

* In the year 1721, the plague raged at Toulon with such violence, that in the space of 10 months it destroyed about two thirds of its inhabitants. Many having insisted on fires being made in different parts of the city, the public records were consulted, and it was there found that on a similar occasion the same means had been tried without success. This, however, did not prevent the inhabitants from repeating the experiment. Wood was, therefore, laid before every house, and at the sound of a bell all the fires were lighted, by which the city was involved in a thick smoke for nearly a whole day. The plague, however, suffered no abatement. The same measure was had recourse to both at Marseilles and London, when the plague raged in these cities, with no better success.

Dr. Rush observes, that bakers, hatters, and blacksmiths, are more liable than others to contagious diseases. Thus it was, perhaps, that when fires had been kept burning for three days in London, while the plague raged there, on the night which succeeded these days no less than 4000 died, although not more than 12000 had been destroyed during the preceding three or four weeks.

It appears, I think, upon the whole, that there are only two ways in which heat proves useful in checking the progress of contagion, by supporting a free circulation of air, in some such way as that above pointed out, and by destroying or correcting the properties of contagion lurking in fomites. The manner in which it is employed for this purpose we shall presently have occasion to consider. Some have supposed, that it is of service in contagious diseases, by drying the air in damp situations.

Various substances are supposed, while burning, to possess a peculiar power of destroying or correcting the properties of contagion, independently of the heat which attends their use. Most of these, however, being employed for the purpose of purifying fomites, as well as the contagious atmosphere, will be considered with more propriety under the next division. The firing of gunpowder is chiefly employed with a view to purify the latter, and is frequently used in hospitals, on shipboard, &c. How it acts has not been certainly ascertained; the agitation of the air, occasioned by the sudden explosion, must diffuse the contagion through a larger tract of air, and may thus render it milder, and its properties, as some have suspected, may be corrected by the elastic fluid disengaged during the conflagration of gunpowder.

It has long been thought, that the carbonic acid gas tends to correct the properties of contagion; and the opinion seems to derive some support from its having been observed, that in southern climates pestilential fevers generally suffer a check during the vintage, which has been ascribed to the gas evolved from the fermenting vats. However this may be, there are many other circumstances during the vintage, which tend to this effect. The fresh fruits, the approach of the cold season, and the general cheerfulness which harvest inspires.

A variety of strong smelling substances are supposed to correct the properties of contagion, without the assistance

of heat. This quality is commonly ascribed to the odour of pitch and tar. When the plague raged in London, few of those employed about the shipping, it is said, were seized with it. We are also informed, that those who work in storehouses of spices are less liable to contagious disorders than others. One of the most celebrated of this class of substances is juniper*. There are none of them, however, on which much dependance can be placed. Camphire, so generally used as a preservative from infection, is supposed to act rather by fortifying against contagion, than by correcting its properties.

The steam of water has been recommended for purifying the air in jails and hospitals, and is probably more effectual†. Many have thought, that large tubs filled with cold water, with fresh willow and other boughs thrown into it, and placed in the apartment of the sick, especially in summer, are serviceable.

But of all the means belonging to this head, the fumes of mineral acids seem, from various trials, to be by far the most effectual. The muriatic and nitrous acids appear to possess equal power. The latter is preferable, as it is breathed with least inconvenience. In Dr. Carmichael Smith's Treatise on the Effect of the Nitrous Vapour in preventing and destroying Contagion, ascertained by a variety of trials, made chiefly by Surgeons of his Majesty's Navy, &c. and in the Report of the Council of Health on purifying the Air in the Military Hospitals of the French Republic, the reader will find ample proofs of the efficacy of the acids, and an account of the best mode of using them‡.

The means of preventing infection through the medium of substances, which have been in contact with or near the sick, (for fomites may receive the contagion from the air) equally demand attention.

It was once a custom to destroy the apparel, and other

* Dr. Monro's Treatise on Inoculation.

† See Considerations on Contagion in Maidstone Jail by Mr. Day; and Dr. Alderson's Essay on Contagion.

‡ Some dispute exists respecting the person to whom we are indebted for the first proposal of using the acids in this way. Those who wish to enter on the merits of the dispute may consult the Publications of Dr. C. Smith, and Dr. J. Johnstone of Birmingham on this subject. The latter supports the claim of his father, the late Dr. Johnstone, of Worcester, author of several ingenious Essays.

substances, which had been in contact with the sick; and, if the disease was of a highly contagious nature, even to pull down their houses.

The total destruction of clothes, furniture, &c. however, being expensive, various means have been proposed, and practised with success, to purify infected goods. It is unnecessary to give a detail of all the means which have been employed with this view. I shall point out those which have been found most successful.

The most simple means of purifying houses and goods, is washing and exposing them to the air, and these are generally sufficient. It is common to wash, or what is better, white-wash the walls of houses, where the sick have lain; and to procure a free circulation of air by opening the windows, and making fires in the house. The clothes, and other articles which have been in contact with the sick, are washed and exposed to the air for a considerable time. And in the different lazzarettos of Europe, exposure to the air, for a certain length of time, is generally thought sufficient to purify merchandize, even from cities where the plague rages.

Washing seems to be a less powerful means of purification than exposure to air; and those employed in washing fomites run the risk of infection. Dr. Lind particularly cautions against washing clothes, impregnated with contagion, in warm water, as the steam is dangerous, unless they have been steeped for some time in water, or soap lees. The same author observes, that the air around fomites is sometimes so impregnated with contagion, that it is capable of communicating the disease.

Fomites, highly impregnated, should be fumigated before they are exposed to the air, both on account of this circumstance, and because the purification of substances highly impregnated with contagion, especially such as have been in contact with the sick, ought not to be trusted to exposure to air alone.

Fumigation has been performed in various ways, and with a great variety of materials. The most simple way is smoking with coals or wood; the latter is preferred by Dr. Lind, and some think charcoal preferable to either. The articles to be purified being inclosed in a convenient place, fires are kindled, and the smoke and heat confined, which are thus applied to the fomites for a considerable time. If

a house or ship is to be purified, the windows and other openings are closed, and fires kindled within.

Much of the good effects of smoking in this way seems to depend on the temperature, which, it is said, should be but little inferior to that for baking bread. And this degree of heat seems capable of destroying contagion in every thing which can be exposed to its action for a sufficient length of time. Dr. Lind says he never knew an instance in which a ship, after being smoked, did not become quite healthy.

But in order to make the purification as complete as possible, different articles have been added to the fire. The chief of these are yellow and white arsenic and sulphur. The last has been known as an antidote against infection since the infancy of medicine. In the same manner, tar, pitch, rosin, frankincense, camphire, cascarilla, various spices and aromatics, juniper, pine-tops and shavings, turpentine, &c. have occasionally been used.

But we are often obliged to purify a house or ship, when, from various circumstances, the patients are prevented from leaving it. It is then of course necessary to avoid the use of sulphur, arsenic, and other pernicious articles, to employ a less degree of heat, not too much to diminish the oxygenous part of the air, and in particular to avoid the use of charcoal. The purification, on these accounts, is much less perfect than when the inhabitants can be removed. Sometimes, cascarilla and other aromatics have merely been burned at the patient's bed-side. All these means are now superseded by the employment of the vapour of the nitrous or muriatic acids, unless the infected goods are of such a nature as to be injured by it.

It is to be observed, under this head, that there should be as little furniture as possible in the bed-rooms of the sick. It is an observation of Dr. Rush, which has not been sufficiently attended to, that every thing around a patient being charged with the contagion, not only renders those about him more liable to infection, but increases the virulence of his disease. To this circumstance we must in part attribute the benefit derived from removing those labouring under contagious diseases to fresh apartments.

Wood and woollen materials, as observed above, seem particularly apt to retain contagion, and should therefore be used by the sick as little as possible. The bedsteads in

hospitals should be of iron; and Howard advises the floors to be laid with bricks.

Certain states of the body have been observed to be more favourable to infection than others. When the body is vigorous, and the mind undisturbed, we are least liable to infection. Whatever debilitates and relaxes is favourable to it. These observations point out most of the means to be employed, and most of the circumstances to be avoided, by those who are exposed to contagion.

The most effectual means of preventing infection is a generous but temperate diet, and regular exercise. Wine has been long celebrated as a preventive; and it is, upon the whole, the best. This can only be said, however, of the moderate use of it. The body is at no time more liable to infection than after intoxication, of which there is sufficient proof in the observations of many of the authors whom I have had occasion to mention. If, however, when the debility subsequent to a debauch in wine commences, it be driven off by again having recourse to wine, the tendency to infection is prevented. Thus it has frequently been observed, that habitual drunkards escape contagious diseases.

Distilled spirits are more apt to be followed by debility, and strengthen the body less than wine. On these accounts they are less powerful in preserving against infection.

Opium and tobacco seem to act in the same way, but are inferior to wine. Tobacco*, whether used as snuff, smoked, or chewed, has long been a celebrated preventive. Chewing tobacco, in the presence of the sick, has the additional advantage of reminding us not to swallow the saliva, which, in a contagious atmosphere, is believed to be dangerous. It would be difficult to prove, that any advantage is derived from an attention to this circumstance; yet as it is not improbable, from several facts which I shall presently have occasion to mention, that the first attack of contagion is sometimes on the stomach, a precaution so easy should not be neglected. For similar reasons we are advised to stand with the back towards the patient.

To this head belong those remedies which have been termed tonics. The Peruvian bark, when it neither op-

* See Van Swieten's Comment. in Aph. Boerhaavii.

presses the stomach nor otherwise deranges the system, may be ranked next to wine, and should be used along with it when the danger is great. Pure bitters are also used, but their effects are more doubtful. To these might be added a great variety of articles of less note, most of which do not deserve to be mentioned. Vinegar is used in various ways; frequently washing the mouth and hands with it, or dossils of lint dipt in it, or in a mixture of vinegar and spirits of rosemary, and put into the nostrils, are precautions little to be relied on. Some place confidence in chewing lemon peel and other aromatics, in wearing camphire about them, &c. The opinion, that mercury tends to prevent infection, has in some places gained ground. Whatever be the truth of this opinion, quicksilver worn in a quill, which has sometimes been done even by medical men, can be regarded as nothing better than other amulets, a great variety of which are in use among the vulgar in every country. What truth there is in the observation, that those who have issues in any part of the body are less subject to infection than others, it is difficult to say*.

We have reason to believe, from the observations of Dr. Currie in a treatise which I shall have occasion to mention more particularly in considering the treatment of fever, that the cold bath will be found a better preventive than most of the other means employed as such.

One powerful mean of fortifying the body against infection on many accounts deserves attention, namely, the frequent exposure to contagion. It is well ascertained, that those who are frequently exposed to contagion become at length, in some measure, hardened against its effects, as those who are accustomed to drink much wine are less readily intoxicated by it. Thus nurses and physicians often escape infection.

Few things are better preventives than fortitude and equanimity. Nothing, we are informed by those who voluntarily exposed themselves to the contagion of the most pestilential fevers, was found so effectual as a steady adherence to their duty, banishing from their minds, as much as possible, all thoughts of danger, and avoiding every kind of passion, particularly the depressing passions. Every body knows how much fear disposes to infection;

* See Dr. Smith's Treatise on the Jail Fever of Winchester.

on this account it is of consequence to strengthen the faith of the ignorant in the efficacy of any thing they believe capable of preserving against it.

Not only fear, and the other depressing passions, but every thing else that debilitates, disposes to it. "The yellow fever," Dr. Lining remarks, "was most fatal to those deprived of fresh air, those from cold climates, those who had most dread of it, those who overheated themselves by exercise in the sunshine, or by intoxicating liquors." And Dr. Chisholm observes, that convalescents, and those labouring under chronic disorders, were remarkably subject to the fever of Grenada; visiting the sick with an empty stomach, he adds, or when perspiring, was dangerous.

In short, we may regard every cause of derangement as predisposing to infection; immoderate evacuations; the depressing or the debilitating effects of the exciting passions; a poor and scanty diet, or excess in eating and drinking; much heat, or a cold and damp air; long continued vigilance, &c. Even sleep, in which the vital functions are more languid than while we are awake, has been very generally observed to be favourable to the action of contagion. It is remarkable, that so slight a debilitating cause as a disagreeable odour may have the same effect*.

In checking the progress of contagious diseases, it is of great importance, as much as possible, to separate the sick from the healthy. No more attendants should be employed than are absolutely necessary; and on the breaking out of a contagious fever a proper house should be prepared for the reception of the poor, who are attacked with the disease.

The proper choice of nurses, and other attendants, is also a matter of consequence. As those employed about the sick are unavoidably exposed to infection, it is of importance to choose such as are least liable to it. The attendants on the sick in particular should be made acquainted with the circumstances which dispose to, or

* Every kind of soap, Van Swieten observes, has a nauseous smell, but particularly the coarser kinds, which are made of impure alkaline matters and quick lime mixed with train oil. Diermerbroeck observes, that in his hospital, three women who had been washing linen were next morning seized with the plague, and were all of them persuaded they had taken it from the fetid smell of the soap.

tend to prevent, infection; and when, as frequently happens, there is any set of people in the place, who from having formerly had the disease, from having been frequently exposed to contagion, or any other cause, are less liable to infection than others, they should be induced to undertake the office of attendants.

All the exanthemata, and even the yellow fever of sultry climates, are less apt to attack those who have formerly laboured under them. It was observed, that negroes are not subject to the yellow and some other fevers. This is true, however, only of those negroes who have come immediately from the coast of Africa, or have been born and bred in the West Indies. It appears from the observations of Dr. Jackson, that negroes who have been in Europe, or the higher latitudes of America, are subject to the yellow fever. It was probably owing to this circumstance, that Dr. Rush having assured the black inhabitants of Philadelphia that they were in no danger from the fever which lately raged there, many of them perished in consequence of attending the sick.

It has been said, that people of different shades between white and black are as subject to the fevers of white people as these themselves are. Dr. Chisholm remarks, of the fever of Grenada, however, that although people of all colours were subject to it, mulattoes and mustees were less subject to it than whites, and negroes least of all.

The habit of mind and body, as well as other circumstances, which dispose to infection, have just been pointed out. An attention to these, it is evident, is proper in choosing attendants for the sick. People labouring under certain disorders are less liable to infection than others. But from the diseased we cannot choose attendants.

While such as are the least subject to infection are chosen for attendants, care should be taken to prevent those from approaching the sick, who from any peculiarity in their situation are particularly liable to it.

It is observed, in cities where pestilential distempers rage, that those lately from the country are particularly liable to infection, and that the fevers of warm climates are most apt to seize on those from cold latitudes. It often happens in the West India islands, that fevers are kept up for years, in consequence of a constant supply of fresh troops from Europe. Dr. Jackson observes, that it is uncommon for

people to have the yellow fever a second time, unless between the first and second attack they have been for some time in a cold climate.

Such are the circumstances relating to the contagion of typhus, which deserve attention. Concerning the manner in which it acts, and the parts of the system on which it makes its first attack, nothing satisfactory has been determined. It is a common opinion, that it makes its first attack upon the stomach, in support of which some plausible arguments may be adduced. A disagreeable sensation in the stomach, and other disorders of this organ, are often the first symptoms of contagious fevers. Dr. Lind even observes, that an uneasy sensation in the stomach is sometimes perceived at the moment the patient is infected. It is also in favour of this opinion, that dyspeptic affections often occasion irregular chills, resembling the cold stage of contagious fevers; and that fevers are sometimes cut short at their commencement, by the operation of an emetic; and sometimes, though more rarely, by diarrhœa. But when we reflect on the sympathy which subsists between the stomach and other parts of the system, the inference from these facts is rendered very doubtful. It has been observed, that contagious fevers are particularly apt to derange any part of the system which has been debilitated, and consequently rendered more sensible to injury, by former disease or other causes. From which it does not appear improbable, that the superior sensibility of the stomach is the only cause of its being particularly affected at the commencement of those diseases.

It is remarkable, that contagious diseases seem (to use the language of medical authors) to change others into their own nature; so that while a contagious fever rages very generally, few other diseases make their appearance, and those which do, commonly partake of the symptoms of the prevailing disease. This observation has often been made of typhus, and still more frequently of the plague. This curious subject is considered at some length in Dr. Rush's work on the Fever of Philadelphia.

CHAPTER III.

Of the TREATMENT of CONTINUED FEVER.

I HAVE in the preface given a short outline of my opinion of the nature of fever. The debility which in inflammation takes place in the capillaries of a part, appears to take place in those of the whole system in fever; and as inflammation is removed by restoring the due action of the capillaries of the inflamed part, fever is removed by restoring that of the capillaries of the whole system. To this conclusion, as far as I am capable of judging, the experiments which have been made with a view to ascertain the nature of inflammation, when compared with the phenomena of fever, lead. Without however entering into the arguments which appear to support it, I here offer it to the reader's attention, only as enabling us to simplify the arrangement of the means of cure. How much it enables us to do so, will appear by comparing the arrangement of Dr. Cullen, with that adopted in the following pages.

It appears from the symptoms of fever, that although the extreme parts of the circulating system are always in a state of debility in the progress of this disease, the fever ceasing as soon as the tone of the secreting and absorbing surfaces is restored; the central parts are often in a state of increased excitement, namely, while sufficient excitability remains in the heart and larger vessels to enable them to obey the increased stimulus arising from the debility of the capillaries. We shall therefore find, that, while the means of exciting the extreme parts of the sanguiferous system are always indicated; those of exciting the central parts are only proper in the advanced stages.

It farther appears, as in the case of inflammation, that although the increased action of the heart and larger vessels evidently tends to excite the capillaries, yet it frequently, when there is great difficulty in exciting them, becomes so violent as to occasion debility of the central parts of the circulating system, before the due action of its extreme parts is restored. When the action of the heart and larger vessels,

therefore, is so much increased as to threaten this consequence, our practice must be directed to restrain it; a long continued and gentle stimulus often effecting what a more powerful and transitory one fails to do.

We find that the debility of the extreme vessels may be induced, not only by debilitating powers acting immediately on the sanguiferous system; but also by too great and long continued excitement of the functions termed animal, as might a priori have been inferred, the vigour of the brain and nerves immediately depending on the action of the capillaries. It is hence apparent, that debility of the latter having taken place, excitement of the animal functions must increase it.

The reader will perceive that, from this view of the subject, the various indications in fever resolve themselves into two.

I. To remove the causes which tend to increase the debility of the capillaries, which is done:

I. By removing the causes of the fever.

II. By removing, as far as we can, all causes which excite the animal functions;

III. By lessening the sensibility to those which remain.

II. To restore the due action of the capillaries, which is done:

I. By the use of stimuli, which act immediately on the capillaries.

II. By so regulating the action of the heart and larger vessels as may tend most effectually to restore vigour to the capillaries.

I. Of the means of removing the causes which tend to increase the debility of the capillaries.

I. For the means of fulfilling the first part of this indication, it is only necessary to refer to what has been said of the causes of fever.

II. The causes which excite the animal functions, are:

1. Exercise either of mind or body.

2. All impressions on the external senses.

3. The irritation occasioned by the presence of aliment, or feculent matter in the alimentary canal.

1. When the symptoms of fever are considerable, every kind of exertion is to be avoided, and the easiest posture, the horizontal, preferred. The bed should not be too hard, that the patient may be as little as possible oppressed with his own weight, and the covering should be light. Speaking, it has justly been observed, as it accelerates the respiration, is particularly to be refrained from.

In the latter stages of the Typhus mitior, which is often protracted for a great length of time, and in which the febrile symptoms are mild; some degree of exertion, sitting up a few hours, or if the weather is favourable, being carried into the open air is often serviceable. In the use of such means, however, much caution is requisite.

With respect to the mind; whatever excites the attention, whether business, or amusement, is hurtful; and whatever excites the passions, still more so. Some have thought there is advantage in calling the patient's attention to familiar objects, when he is threatened with delirium. This cannot be carried far without injury.

2. The sensation of thirst must be removed, by permitting the patient to drink as freely as he pleases: and the irritation of a noxious atmosphere is to be avoided by proper ventilation, by permitting only one attendant to remain in the patient's room, and by the speedy removal of all excrementitious matter. And as it is necessary that the patient should not only respire a pure air, but that his body should not be long immersed in its own effluvia, he should have frequent changes of linen, than which there is nothing more refreshing to febrile patients. In all kinds of fever, except when the skin is damp or the temperature below the healthy degree, the linen should be cold. It should always be dry.

Even while the symptoms of synocha remain distinctly marked; if the disease has arisen from contagion, the body is found to generate it. In these cases, therefore, to the foregoing means, should be added, those for destroying or correcting the properties of contagion, pointed out in the last chapter. We have reason to believe that a contagious atmosphere is injurious to the patient, as well as dangerous to his attendants.

No part of the treatment deserves more attention than the temperature of the patient's room. In considering cold as a cause of fever, it was observed, that the temperature of

the human body is not diminished by so rare a medium as the air, unless it be under 62° ; nor in air of this temperature does it increase above the healthy degree; the rapidity with which caloric is abstracted being duly proportioned to the quantity evolved.

But if the body disengage more caloric than in health, a lower temperature will be required for its due abstraction. This always happens in synocha, and for the most part in typhus*. How much below 62° the temperature of the air should be, must be determined by the temperature of the patient. In synocha, the application of cold may be freer than in typhus. In the former, the temperature of the patient's room, when the state of the weather permits it, should never, perhaps, exceed 35° or 40° , and may often, with advantage, be still further diminished. It is not meant that it would be proper, constantly to expose the body to air of this temperature; but it is better that the proper temperature of the body should be preserved by covering it, that the patient may enjoy the refreshing effects of breathing a cool atmosphere.

When the temperature of the air is too low, there are many evident ways of raising it. The only circumstances which require attention are, that it shall be as uniformly raised as possible, and that the due proportion of oxygen in the air shall not be diminished; for the last purpose we

* We have reason to believe from various experiments (see the different works on animal temperature) that wherever the temperature of the body is increased, independently of an increased temperature of the surrounding medium, the blood passes through the lungs more frequently than in health, and consequently that the rapidity of the circulation is increased. That this should happen in synocha cannot appear surprising; but in typhus, where the powers supporting the circulation are weakened, we should expect to find the circulation less rapid than in health, and consequently a less quantity of caloric disengaged, and this is the case in exquisitely formed typhus, in which the temperature of the body falls below the healthy degree; but it would appear that in other cases of this fever the increased frequency of contraction in the heart and blood vessels more than compensating for its feebleness, the rapidity of the circulation is increased. In determining the temperature in typhus we should always use the thermometer; if we judge by the feeling, the acrid secretion by the skin which attends this fever, will generally make the temperature seem higher than it really is. Dr. Currie, in the Treatise above referred to, describes the thermometer and the manner of using it, which he found most convenient.

must take care that no part of the vapour arising from burning fuel shall remain in the room, and that the external air shall have free access.

It is much to be regretted that we are not possessed of means for lowering, equally efficacious with those for raising, the temperature of the air. When it is too high, which it always is, except in cases of extreme debility, if it exceed 45° , we have no means of reducing it many degrees. This seems a principal cause of the great fatality of the fevers of warm climates. The hotter the weather, the more fatal they are observed to be; and it is even said of the yellow fever of the West Indies, that the weather becoming very warm or cool during it, is often sufficient to save or destroy the patient. The only means of lessening the temperature of the patient's room, in sultry weather, are as much as possible to exclude the light, while the air is freely admitted; and frequently sprinkle the floor and other parts of the room with water. I have found covering the windows, especially if the sun shines into them, with linen blinds constantly kept wet, very effectual.

As the means we possess of reducing the temperature of the air are so limited, various methods have been proposed for more directly reducing that of the patient's body. "Whenever the patient is in a climate whose heat is less than 97° of Fahrenheit's thermometer, which is nearly the heat of the body of the patient, removing the air which is in immediate contact by means of putting the atmosphere in motion by any kind of fan, renders that which is in immediate contact with the body much colder than it would otherwise be. Such means in case of too warm an atmosphere seem to be very proper to be employed*." They also tend to reduce the temperature of the patient's body by promoting evaporation. "When the object is to diminish heat, that may be obtained with great certainty by the repeated use of the tepid affusion, suffering the surface of the body to be exposed in the interval to the external air, and if the beams of the sun are excluded, and a stream of wind blows over it, the heat may thus be reduced where cold water cannot be procured, even in the warmest regions of the earth, on the plains of Bengal or the sands

* See Dr. Fordyce's Third Dissertation on Fever.

"of Arabia*." Dr. Wright† adopted a similar practice. "Some lucky expedients, however, he observes, have been practised, which success alone can justify: thus, when the most urgent symptoms have been subdued, the patients were wrapt up in a wet blanket, a profuse sweat was brought on, and an immediate recovery was the consequence."

Noise of any kind, and any degree of light which attracts the attention, are injurious.

3. Irritation of the primæ viæ is to be prevented by abstinence, by the food which is taken being of the mildest nature, and if the fever is considerable, wholly in the fluid form, by emetics at an early period, and at all periods, by supporting a free and regular action of the bowels. Of all these means, which are also employed in fevers for other purposes, I shall have occasion to speak at length.

III. Besides removing as far as possible all causes of irritation, most physicians think it proper, when the patient is restless, to diminish by opium the sensibility to those still applied, provided the excitement is not considerable. Some have opposed this practice, it would seem, however, not on sufficient grounds. When the skin is soft, and the increase of temperature and other symptoms during the exacerbation inconsiderable, a moderate dose of opium may be given at bed-time. But when the skin is parched, and the temperature rises considerably during the exacerbation, we must either defer the opiate till the symptoms begin to remit, and particularly till the hot-parched skin is in some degree relaxed, or give a few grains of James's powder, or some other antimonial along with it‡. Small and repeated doses of opium often succeed where larger doses fail. Dr. Currie proposes to combine the exhibition of opium with the affusion of cold or tepid water, of which I shall presently have occasion to speak. If we cannot succeed in inducing a degree of relaxation in the skin, and prevent the opium increasing the heat, it must be deferred till towards the decline

* See Dr. Currie's Treatise on the Use of Warm and Cold Water in Fevers. We shall soon have occasion to consider more particularly the use of water in fever, as a means of exciting the action of the skin as well as of diminishing the temperature.

† See Annals of Medicine, vol. 2.

‡ I have found a combination of the pulv. Ipecac. compositus with Pil. Hydrargyri an excellent opiate in the early stages of fever.

of the exacerbation, or perhaps to a more advanced period of the fever*.

Such are the means of answering the first indication in fever. The more powerful parts of the treatment belong to the second indication, namely, to restore due action to the capillaries. This indication, it has been observed, is answered,

I. by employing stimuli, which act immediately on the capillaries; and

II. by so regulating the action of the heart and larger vessels as may tend most effectually to restore vigour to the capillaries.

It has been observed from the infancy of medicine, that increasing the action of the skin often removes fever, but it is only lately that we have been taught how this ought to be done. When the patient was confined to a hot room and loaded with bed-clothes, if a sweat were induced it was the consequence of the exhausting effect of the temperature, not of a return of the healthy action of the skin; and so far from being accompanied with the good effects of spontaneous sweating, it almost always did harm, by leaving the skin in a more debilitated state than before its appearance, not to mention the injury done by the painful impressions occasioned by this mode of treatment.

We now excite the action of the surface, by suddenly propelling the blood towards it by emetics; by diaphoretic medicines; and by the application of cold. The means which excite the usual action of the skin are more powerful in relieving fever, than those which tend directly to produce sweat, during which this organ seems to be rather in a state of relaxation than of vigour; thus we succeed better with tartarised antimony than with the compound powder of ipecacuanha; and for this among other reasons, we succeed better by the application of cold than by the hot regimen.

It is only in the commencement of fever that we succeed

* In a letter to J. Bedley by Dr. Martin Wall, the reader will find an account of some cases of typhus treated with opium. For the use of opium in fevers he may also consult Dr. Fordyce's Dissertations on Fever; Dr. Lind's Treatise on Fevers and Infections; Dr. Blane's Treatise on the Diseases of Seamen, Dr. Campbell on the Fever of Lancashire, &c.

in exciting the healthy action of the extreme vessels by emetics. On the first or second day, they sometimes put a period to the disease; but after it has lasted for some time, a remedy, whose operation can be longer continued, becomes necessary.

Physicians have very generally abandoned the practice of giving wine and other heating medicines, with a view to promote sweat in fevers, and opium is rarely employed with this view, except in Intermittents, or in small doses to aid other medicines.

Nauseating doses of emetics are more successful. The following are the circumstances to be attended to in their exhibition.

As nauseating doses are debilitating, either by promoting sweat or catharsis; they are best adapted to an early period.

They may often be employed with advantage at later periods, if given about the commencement of the exacerbations, when these are distinctly marked.

When much debility is expected, and they do not soon relieve the symptoms, we should not persevere in giving them.

Ipecacuanha and the preparations of antimony are the medicines usually employed. The latter are preferable, both because they more powerfully promote the action of the skin, and because small doses of ipecacuanha are more apt to excite vomiting. James's powder and tartarised antimony are the preparations of antimony at present generally used in fevers. Most practitioners prefer James's powder. How far this preference is well founded it is difficult to say. When emetics are employed, tartarised antimony is preferable to all other medicines in these diseases.

The power of neutral salts in promoting diaphoresis is less than that of antimony, although, as I have already had occasion to remark, almost all of them seem to possess this property in a greater or less degree. The acetate of ammonia seems to possess most of it. It may often be advantageously given in the effervescing state.

Various other medicines are recommended as diaphoretics in fever, chiefly by the older writers, which appear to have little effect of any kind.

The external and internal use of water both cold and warm are to be ranked among the most powerful of this class of remedies.

Of the employment of cold water in fever.

I have already had occasion to make some observations on the advantage of a cool atmosphere.

In warm weather the skin is more relaxed, in cold weather it is more vigorous. Even when the relaxation occasioned by warm weather goes so far as to produce sweat, the secreting power of the skin is not so great as under a due degree of exercise in a cold atmosphere. This appears both from the state of the urine, from which, as I have elsewhere pointed out, the degree of activity of the skin may be ascertained*, and from the greater appetite in the latter case. Now a state of fever comes in place of exercise, it supports the proper warmth of the body under the application of cold to its surface, and secures its good effects; for the application of cold to the surface is never proper in fever when the temperature falls below the healthy degree, and is most beneficial when it is considerably above it, provided the skin is dry. In short, it is most successful in fevers in the same circumstances in which it is found in health most to excite the action of the skin; only in the one case, the increased temperature is supported by exercise, in the other, by a preternatural action of the heart and blood vessels.

It seems to be from a want of attention to these circumstances, that there has been so much difference of opinion respecting the propriety of sweating in fevers. From comparing the various observations on the subject, we have reason to believe that it is only when the sweat indicates a return of vigour to the skin that it is beneficial. In this way the reader will find, that apparently contradictory observations may be reconciled. Clammy and partial sweats, and even general and profused sweats, unattended by other signs of returning vigour, are unfavourable.

Both the external and internal use of cold water in fevers was known to the ancients; but among the moderns, it is only lately that the former has demanded much attention. Washing the body with cold water is said to have been first practised in fevers, in modern times, at Breslaw, in Silesia†; and it appears that the practice was followed in some of the

* See a Dissertation entitled, *Epidemia Verna quæ Wratislaviam anno 1737 afflixit*, in *Act. Nat. Curios.* vol. X.

† In a Treatise published many years ago, entitled an *Experimental Inquiry into the Remote Cause of Urinary Gravel*.

neighbouring countries. Whatever were the effects of these trials, however, it has never been prevalent in Europe, probably, as Dr. Currie supposes, from the manner in which it should be regulated not having been understood.

Several late practitioners in sultry climates, particularly in the West Indies, have employed it freely; and in 1786, Dr. Wm. Wright, who had practised for many years in the island of Jamaica, gave an account of some cases of fever successfully treated by the affusion of cold water, in the *London Medical Journal* *. Dr. Jackson † was among the first who attempted to bring it into general use. Even the alternation of the warm bath and affusion of cold water has in these climates been practised in fevers, and it is said with the best effects. But no other writer has bestowed so much attention on the use of cold water in fevers, and so accurately observed its effects, as the late Dr. Currie, of Liverpool ‡.

The most effectual way of using cold water externally in fever, is by affusion. The patient is stripped naked, and a bucket of cold water is thrown over him. The temperature of the water should be from 40° to 60° ; the quantity from three to five gallons.

Dr. Wright used sea water; Dr. Currie at first used fresh water, afterwards fresh water and vinegar, lastly a solution of common salt. "I was led," the latter author observes, "to prefer salt water to fresh on account of the stimulating effect of sea salt on the vessels of the skin, by which I apprehend the debiliating action of cold is prevented. Salt water, either for the purpose of immersion or affusion, is more grateful to the patient than fresh water; and it is well known that it may be applied to the surface for a length of time with much less hazard. Persons immersed in sea water, and especially in saturated

* He has since published some additional observations on the same subject, in a letter to Dr. Garthshore, in the 7th volume of the *Medical Facts and Observations*, in which he gives an account of Dr. Gregory's manner of employing this remedy, and the success which attended its use in the Royal Infirmary of Edinburgh; and in the 2d vol. of *Annals of Medicine*, he again gives a favourable testimony of its effects in the fevers of the West Indies.

† See Dr. Jackson's *Treatise on the Fevers of Jamaica*.

‡ See Dr. Currie's *Treatise* just referred to.

“brine, for some time together, preserve the lustre of the
“eye and the ruddiness of the cheek longer than those in
“fresh water of an equal temperature; and such persons
“exhibit the vital reaction stronger when removed from
“it.”

Dr. Currie used brine in preference to vinegar and water, on account of the greater expense of the latter; but thinks that vinegar and water of a proper strength will probably be found preferable. He observes, however, that no bad consequences ensued from performing the affusion without the addition of either salt or vinegar*.

Washing the body with cold water, or cold water and vinegar, is a milder, but less effectual way, of using this remedy. It may be employed when the patient refuses to submit to the affusion, or when from debility or the advanced state of the disease, the latter is judged improper.

The proper period of the disease for the external use of cold water is the commencement of the hot stage. It cannot be employed too early, provided the chills are over, and the temperature is steadily above the healthy degree. On the first or second day, if the hot fit is completely formed at so early a period, it often puts a stop to the progress of the fever. It rarely has this effect when employed on the third or fourth day, and never at a later period. Still, however, during the first eight or ten days, it is found to moderate the symptoms, and shorten the disease. Dr. Currie says he has seen it of service on the eleventh, twelfth, or thirteenth day. At an advanced period, he observes, the water should not be more than fifteen or twenty degrees below the heat of the body; and in most cases he thinks that after the ninth or tenth day, or earlier if the patient be much debilitated, washing the body with tepid vinegar and water answers better than the cold affusion. He also observes, that injury is done by continuing the employment of the cold affusion during the period of convalescence; an application of cold, safe in the violence of fever, often proving hurtful after it has subsided.

Dr. Currie frequently employed the cold affusion twice in

* The addition of distilled spirit to the water has been recommended. Added in small quantity it could be of little service, and the expense of using it in large quantity will prevent its effects from being accurately ascertained.

the day, at noon and in the evening. When it was only employed once in the day, the evening was found the best time. "The safest and most advantageous time," he observes, "for using the aspersion or affusion of cold water, is when the exacerbation is at its height, or immediately after its declination is begun; and this has led us almost always to direct it to be employed from six to nine o'clock in the evening."

The immediate effects of the external use of cold water in fever are a diminution of the temperature and of the frequency of the pulse, which are generally followed by diaphoresis and sleep.

In the following quotation Dr. Currie enumerates the cautions to be kept in view, in the employment of this remedy.

"If the aspersion of cold water," he observes, "on the surface of the body be used during the cold stage of the paroxysm of fever, the respiration is nearly suspended; the pulse becomes fluttering, feeble, and of an incalculable frequency; the surface and extremities become doubly cold and shrivelled, and the patient seems to struggle with the pangs of instant dissolution. I have no doubt from what I have observed, that in such circumstances the repeated affusion of a few buckets of cold water would extinguish life. This remedy, therefore, should never be used when any considerable sense of chilliness is present, even although the thermometer applied to the trunk of the body should indicate a degree of heat greater than usual." In the 37th and 38th pages of his Treatise, Dr. Currie relates a striking instance of the bad effects of the cold affusion employed during the chills.

"Neither ought it to be used when the heat measured by the thermometer is less than, or even only equal to, the natural heat, though the patient should feel no degree of chilliness. This is sometimes the case towards the last stages of fever, when the powers of life are too weak to sustain so powerful a stimulus.

"It is also necessary to abstain from the use of this remedy when the body is under profuse perspiration; and this caution is more important in proportion to the continuance of this perspiration. In the commencement of perspiration, especially if it has been brought on by violent exercise, the affusion of cold water on the naked

“body, or even immersion in the cold bath, may be
 “hazarded with little risk, and sometimes may be resorted
 “to with great benefit.” The accuracy of this observation
 may in the present state of our experience be questioned.
 Dr. Currie relates a case (p. 40 and 41) in which the cold
 affusion was employed at the commencement of perspira-
 tion, and although the event proved favourable, yet it
 suddenly produced a degree of cold in the extremities that
 was alarming, and had not the temperature at the time of
 affusion been very high, (106°) it is probable that it would
 have had worse effects. “After the perspiration has con-
 “tinued for some time and flowed freely, especially if the
 “body has remained at rest, either the affusion or im-
 “mersion* is attended with danger, even though the heat
 “of the body at the moment of using them be greater than
 “natural. Perspiration is always a cooling process in
 “itself, but in bed it is often prolonged by artificial means,
 “and the body is prevented from cooling under it to the
 “natural degree, by the load of heated clothes. When the
 “heat has been thus artificially kept up, a practitioner,
 “judging by the information of his thermometer only, may
 “be led into error. In this situation, however, I have ob-
 “served, that the heat sinks rapidly on the exposure of the
 “surface of the body even to the external air; and that the
 “application of cold water either by affusion or immersion
 “is accompanied by a loss of heat and a deficiency of
 “reaction, which are altogether inconsistent with safety.”

Most of the trials which have been made with the cold
 affusion have been in contagious fevers, that is, in those
 fevers in which more or less of the synocha is succeeded by
 a greater degree of the typhus, which forms the chief part
 of the disease. It is while the symptoms of synocha last,
 however, as appears from the foregoing observations, that
 the cold affusion is most beneficial†.

* The immersion is more troublesome and less beneficial than the
 affusion. The former was the manner in which the ancients used this
 remedy in fevers.

† Dr. Currie relates many striking proofs of the good effects of the
 cold affusion in these fevers; of seventeen soldiers attacked with a
 fever of this kind, all of whom were immediately subjected to the cold
 affusion once or twice a day, in fifteen the fever was cut short, in two

What Dr. Currie calls the cool affusion, is a milder form of the cold; the temperature of the water employed in the cool affusion is from 75° to 87°. This, like washing, is recommended where from debility, or the continuance of the disease, the cold affusion is judged to be hazardous.

The same cautions are still to be attended to, whether we recommend affusion, immersion, or washing. When there is a sense of burning, in the palms and soles of the feet, keeping them moistened with vinegar is often very beneficial, and always safe and refreshing*.

With respect to the internal use of cold water, here, as in intermitting fever, it is not to be used as a drink in the cold stage. It increases the chills and other symptoms of this period. After the hot stage is completely formed, and especially when the heat is considerably above the healthy degree, there are few things either more grateful or more beneficial than large draughts of cold water. They produce the same effects as the cold affusion, but in a less degree, diminishing the heat and frequency of the pulse, and disposing to perspiration and sleep.

After the sweat has become general, cold water is inadmissible†. Dr. Currie remarks, however, that at the commencement of the sweat, before it flows freely and where the heat is considerable, a draught of cold water will often reduce the temperature to the degree at which perspiration flows more freely, and thus bring the fever to a speedy issue.

The action of cold drink in fevers, being in every respect similar to, though less powerful than that of the cold affu-

it went through its ordinary course. In the last edition of Dr. Currie's work, the reader will find similar instances of success attested by others.

* See Dr. Currie's Treatise, p. 71.

† "At this time," Dr. Currie observes, "I have perceived in more than one instance, an inconsiderate draught of cold water produce a sudden chillness both on the surface and at the stomach, with great sense of debility and much oppression and irregularity of respiration. At such times, on applying the thermometer to the surface, the heat has been found suddenly and greatly reduced. The proper remedy is to apply a bladder filled with water heated from 110° to 120° to the scrobiculus cordis, and to administer small and frequent doses of tincture of opium, as recommended by Dr. Rush. By these means the heat is speedily restored."

sion, the same cautions are necessary in the exhibition of both.

Of the employment of warm water in fevers.

The tepid affusion is performed in the same way as the cold. There is no addition made to the water, and the proper temperature is from 87° to 97° . When the water is applied by immersion it should be some degrees colder.

It may appear at first view, that the tepid affusion would be a means of raising the temperature of the body; that it should be employed where the cold affusion is improper; and avoided in cases where the latter is found beneficial. All this is contradicted, however, by the trials which have been made with it. "At first," the author just mentioned observes, "I imagined that the tepid affusion might be beneficial in cases where the heat of the body is below the degree necessary to render the cold affusion safe. I employed it, therefore, in those stages of fever where the heat did not exceed the temperature of health. A little experience, however, convinced me that this practice was not without hazard, for I found that in many cases at least, the heat of the human body is lowered as speedily by the affusion of tepid water, as by the affusion of water that is cold. If I mistake not, the heat is lowered more speedily by the tepid water."

It appears from Dr. Currie's observations, that the tepid affusion is beneficial in all those cases of fever, and in those only, in which the cold affusion has been found so; but that the effects of the former are much less permanent. He never saw the tepid affusion stop the progress of fever.

The effects of immersion in warm water, however, do not correspond with those of the tepid affusion. The warm bath is generally improper where the temperature is considerable, and often serviceable when it has fallen too low.

The same may be said of the internal use of warm water in fever. During the cold fit, or in a more advanced stage, when the temperature has fallen below the healthy degree, it is proper; and where the temperature is not much above this degree, it assists the operation of other sudorifics. The drink should also be tepid during the sweating, by whatever means induced, except in those debilitating sweats which occur in typhus, and reduce the strength without bringing relief. With these exceptions, cold drink is more beneficial in all fevers.

It will be necessary afterwards to make some additional observations on the internal use of water as a means of diminishing excitement.

It is said that the application of distilled spirits alone to the skin, has been of great use in fever*. Rubbing it with warm oil is also said to have been of service in certain species of this disease. This appears a doubtful practice from the heat and irritation which must attend it.

Among the means of exciting the action of the skin may be ranked the use of mercury, which is very generally recommended by the practitioners of sultry climates, and whose good effects seem in part to depend on its diaphoretic property. "By calomel," Dr. Wright observes, "the pores of the skin were opened, a resolution of the fever was brought about, and the patient happily recovered." In another place he observes, "And we recollect of no instance, where mercury had been freely given, and persevered in till it shewed itself in the mouth, which was not attended with the happiest consequence."

Dr. Chisholm gave mercury to very great extent, endeavouring as soon as possible to excite a salivation. He sometimes gave ten grains every three hours till this effect was produced, by which he observes he has succeeded in cases which seemed desperate.

These observations, however, will not apply to the fevers of this country. I have already had occasion to remark, that the fevers of sultry climates are generally accompanied with local affections, for many of which mercury is a powerful remedy.

Dr. Chisholm is one of the few practitioners who have given us any account of the appearances on dissection after death in the fevers of such climates. From his dissections it appears that, besides other local affections, the liver, as indeed might be inferred from the symptoms of most of the fevers of the West Indies, was almost always diseased. It is owing to the local affections which attend the fevers of sultry latitudes, that their treatment is so difficult, and that that which succeeds in one epidemic is often hurtful in another.

* Medical Observer, vol. ii.

With respect to the beneficial tendency of a mercurial affection of the mouth, even in the fevers of warm climates, it is by no means so well established as from the first view of the facts we should be inclined to believe. A considerable degree of fever tends to prevent this affection, so that when the fever abates from whatever cause, while there is much mercury in the habit, it is apt to come on, and may therefore be regarded rather as the consequence than the cause of recovery, which, when it is considerable, it seems sometimes by its debilitating effects to retard. We have reason to believe, however, especially where the above mentioned local affections are present, that a certain degree of it, or rather of the mercurial influence which it indicates, if it is not the chief means of cure, is favourable to the removal of fever. Respecting this point, as those who have had the most extensive opportunities of practising in the above fevers differ, future experience must determine. In the mean time it may be observed, that the beneficial effect of occasional mercurials in promoting the secretions, particularly in the early stages of fever, is acknowledged by the writers of all climates. When the biliary secretion is much deranged they are indispensable.

Such are the means of promoting the action of the skin in fever, and the circumstances which influence their employment. Blisters and rubefacients have been much recommended in this disease, and might at first view be supposed an effectual means of exciting the action of the skin. From their operation being partial, however, and from the nature of inflammation, this inference appears doubtful, and their effects by no means sanction it. They are improper both in the well marked synocha, and in the worst forms of typhus. In the former their irritation increases the excitement; in the latter, which is generally attended with a disposition to gangrene, they often induce it*. The species of continued fever therefore in which blisters are chiefly employed is the typhus mitior, or what is commonly called the nervous fever. And respecting the propriety of employing them even in this

* See the observations of Sir John Pringle, Mr. Clark, and others. A thick tough matter like leather, covering blistered parts, shews a tendency to gangrene. "If under this," Dr. Lind observes, "white or ruddy specks appear, it is a favourable symptom; if pale or dark, a very bad one."

fever, unattended by any local affection, there is much difference of opinion*.

* No author has given so favourable a testimony of the effects of blisters in the typhus mitior as Dr. Lind. He recommends their application at an early period, and observes, that, "In a moderate infectious fever, where the source of infection is not very violent, if twenty patients be blistered, sixteen will next morning be entirely free from head-ache, heat, pain, and fever." Dr. Cullen was also a strong advocate for the use of blisters in fever; but thought that they are employed with most advantage at an advanced period of the disease. "It appears to me that blistering may be employed at any period of continued fever; but that it will be of most advantage in the advanced state of such fevers, when the reaction being weaker, all ambiguity from the stimulant power of blistering is removed."

When we compare these observations with those of other authors, however, we cannot help suspecting that both Dr. Cullen and Dr. Lind had too favourable an opinion of this remedy. "Whether exciting inflammation," says Dr. Fordyce, "has or has not the same effect in a regular continued fever, which it has in health, can only be known by making these applications to the body of a person affected with regular continued fever. As far as the author's experience goes, when any stimulus has been employed so as to produce inflammation, when a patient has become weak towards the end of a regular continued fever, the only difference which has occurred has been, that phlegmonous inflammation has not produced hardness, fulness, and strength of the pulse; but both phlegmonous inflammation, and inflammation of the skin have occasioned greater frequency of the pulse, have rendered it weaker and smaller, and as in health have prevented sleep, and the patient taking the same quantity of nourishment, and have depressed and deranged the whole system*."

Sir John Pringle observes, that blisters were only of service in the jail fever when the patient was threatened with an inflammatory affection of the brain. "Blisters, before *useless*, became then of service†." He also remarks of the inflammatory fever, that at first he used to employ blisters at an advanced period of the disease, when he thought the patient could not bear any further loss of blood, but afterwards confined their use to those cases where the head-ache was considerable, which they seldom fail to relieve.

"Notwithstanding my having watched the effects of blisters," Dr. Moore‡ observes, "with all the attention I am capable of, and formerly with a strong prepossession in their favour, I cannot assert that I ever knew vesications of any use in this disease," the typhus mitior, "but I have frequently seen the patient teased by their irritating quality, without their seeming to have any other effect."

Upon the whole; although it is probable that the observations of Dr. Cullen and Dr. Lind are not wholly without foundation, those of the majority of writers tend to prove that little is to be expected from blisters in fevers unaccompanied by local affections.

* Dr. Fordyce's third Dissertation on Fever.

† Observations on the Diseases of the Army.

‡ Medical Sketches.

For the removal of many local affections they are among the most powerful remedies we possess. When used with a view to remove head-ache, coma, or delirium, they should be applied to the nape of the neck, or if these symptoms be considerable after the powers of circulation are much reduced, the head should be shaved, and the blister applied over it. For, like other local remedies, blisters are the more powerful, the nearer they are applied to the part affected. The strangury, which they sometimes occasion, may generally be prevented or removed by small doses of camphire or merely by dilution with mucilaginous fluids.

With respect to rubefacients, they are still more improper than blisters in the synocha, because they occasion an equal or greater degree of irritation, and are unattended by any discharge. In the worst forms of typhus, indeed, they are safer than blisters; even rubefacients, however, may be the means of inducing gangrene, where there is a great tendency to it, and it does not appear, that in any kind of typhus, unattended by local affections, they have been found of much use. Mustard poultices applied to the feet are often employed with advantage when coma supervenes on the typhus mitior.

Analogous to the office of the skin, the external surface of the animal system, is the office of its internal surface, if I may use the expression, the alimentary canal; and such is the sympathy between these surfaces, that if one is languid, the other is generally affected in the same way; and if we excite either, we at the same time, in a greater or less degree, promote the action of the other. If the bowels are constipated we find the skin dry and shrunk; as soon as the bowels are restored to action, the skin often becomes soft and moist, and vice versa, except when, the secretion by the skin being suddenly stopped, the fluid which should have passed by it, is thrown on the bowels, applying to their vessels a stimulus which prevents their inactivity.

We might, therefore, from the effect of diaphoretics, a priori, have expected considerable advantage from exciting the bowels, not to mention that their extreme vessels form so large a portion of the capillary system. No other writer has placed this subject in so clear a point of view as Dr. James Hamilton, of Edinburgh*. I have found the most

* Observations on the Utility and Administration of Purgative Medicines in several Diseases, by James Hamilton, M. D. &c.

decided advantage in the earlier stages of fever from exciting catharsis to the extent which he recommends. So free a use of cathartics has not appeared to me equally beneficial in the more advanced stages. Dr. Hamilton gives the following account of his practice, and of the circumstances which led to it. Speaking of a preparation of antimony, he observes: "This antimonial remedy was not ineffectual; but
 "I remarked, that it was beneficial only when it moved the
 "belly, the stools were black and fetid, and, in general,
 "copious. On the discharge of these, the low delirium,
 "tremors, floccitatio, and subsultus tendinum, which had
 "prevailed, abated in some cases; the tongue, which had
 "been dry and furred, became moister and cleaner; and a
 "feeble creeping pulse acquired a firmer beat.

"Reflecting afterwards on these circumstances, it occurred
 "to me, as the purgative effect appeared to have been the
 "useful one, that any purgative medicine might be substituted for the *calx antimonii nitrata*; and that by this substitution, the unnecessary debilitation of an exhausted
 "patient, by vomiting and sweating, might be avoided.

"More extended experience confirmed these conjectures;
 "and I was gradually encouraged to employ purgative medicines early in typhus, and to repeat them in the course
 "of the disease. And after having long and strictly directed
 "my attention to this point of practice, I am now thoroughly
 "persuaded that the full and regular evacuation of the
 "bowels relieves the oppression of the stomach, and mitigates
 "the other symptoms of fever."

In one part of the preceding quotation, my experience does not correspond with that of Dr. Hamilton. I think I have seen very decided advantage from combining antimonials with the purgative plan in the commencement of fever; and in a great number of instances I have seen the former produce the best effects, even where they did not prove cathartic*.

The debility produced by cathartics is less permanent than we should be led to suppose, either from the extent of the discharge, or its effects in subduing excitement. This

* There are few medical writers to whom the public are so much indebted as to Dr. Hamilton. It is not the practice in fevers only which has been improved by the above work, but that of many other diseases. In the chorea S. Viti in particular, hitherto so little under the power of medicine, I have found his plan almost uniformly successful.

arises from its being only the thinner and less important part of the blood which is abstracted by them.

Some attention is requisite in the choice of cathartics. In the commencement of fevers, particularly when the excitement runs high, the mercurial, antimonial, and saline cathartics are the best. At more advanced periods, those which tend less to reduce the excitement are preferable, senna, rhubarb, &c.; and Dr. Fordyce has justly observed, that when several cathartics are combined, they occasion less sickness and pain, and are more certain in their operation than when taken singly. Clysters have been much used in fevers for the purpose of exciting the bowels. By their effect, however, the upper and more important part of the alimentary canal is little if at all excited. They should never be trusted to for the purpose of moving the bowels in fever*. We shall presently see that they are sometimes used with advantage for another purpose.

The only other secreting surface of sufficient extent to demand particular attention in the treatment of fever is that of the kidneys. Medicines have seldom been used in this disease expressly with a view to excite the kidneys, but many of those employed for other purposes seem to owe much of their beneficial effects to their action on these organs, particularly the acetate, nitrate, and super-tartrate of potash.

Such are the means of fulfilling the first part of the second indication in fever, those which act by more directly stimulating the capillaries. We are now to consider those, by which the action of the heart and larger vessels may be so regulated, as may tend most effectually to restore vigour to the capillaries.

II. The general principle to be kept in view, in this part of the treatment, is, that the action of the capillaries is best restored, as appears from a variety of observations, by a moderate and long continued excitement of the heart and larger vessels. If their excitement is allowed to run high,

* See Dr. Hamilton's observations on this subject.

which it is apt to do when the debility of the capillaries is great, and there is considerable vigour remaining in the system, these organs are debilitated before due action is restored to the capillaries: and if on the other hand it is allowed to fall too low, the stimulus applied to the capillaries, even though long continued, may be too feeble to excite them.

As the means which more directly excite the capillaries tend to remove the cause of preternatural action in the heart and larger vessels, and as by the evacuation which they occasion they tend to reduce the volume of the blood, the remedies we have just been considering, it is evident, with their other good effects, must reduce the excitement, which is almost always too great at the commencement of fever, and are sometimes sufficient for this purpose.

In the early stages of most fevers, however, it is proper, with the preceding means, to have recourse to such as more directly reduce the increased action of the heart and larger vessels.

It appears from the observations made in speaking of blood-letting in intermittents, and the *modus operandi* of this remedy, that diminishing the quantity of blood is the most powerful means of diminishing the action of the heart and blood-vessels. But as the quantity of blood cannot be much diminished without debilitating every function of the system, it is of consequence, where the symptoms run high, to lessen as much as we can its stimulating power, that the excitement may be diminished with as little evacuation as possible.

The means of diminishing the stimulating power of the blood are,

1. Dilution, and
2. The medicines which have been termed refrigerant.

1. There is a large proportion of water in the blood, to which it owes its fluidity; and the power of this fluid to excite the vessels, is inversely as the degree in which its saline and other stimulating parts are diluted. Dilution, therefore, is the most successful means of diminishing this power, and that which nature by an increase of thirst points

out in all cases of excessive excitement. In typhus there is often little or no thirst; but in synocha it is generally insatiable. Every person in this fever, says Van Swieten, unless his intellects be deranged, is led by instinct to demand water and watery liquids. And this instinct best points out the quantity which is necessary. We are neither, as was once a practice, to prevent the patient from satisfying his thirst, nor to run into the extreme of the *Dieta Aquea* of the Spanish and Italian physicians, and force the patient to take every day eight or nine pints of water*.

When the excitement is considerable, diluting liquids should also be injected per anum. Sydenham made much use of clysters composed of a mild vegetable decoction and sugar, or of milk and water heated to the proper temperature; and so powerful did he find these means in allaying excitement, that he cautions against the immoderate use of them, lest the excitement be brought too low.

Dilution is also the chief means of diminishing the stimulus of the food. The food of a patient in synocha, when he is inclined to take any, should consist of mild decoctions, barley water, or water gruel, or water thickened with sago, &c. Fresh acidulous fruits also should make a principal part of the diet. These belong to the head of refrigerants, although from their refreshing effects, and nutritious quality, they are useful in all kinds of fevers.

2. The use of neutral salts, which possess more of the refrigerant quality, is confined to those cases in which the excitement is above the healthy degree. I have already had occasion to speak of them in considering the treatment of intermitting fever†.

When the foregoing means fail sufficiently to diminish the excitement, we must have recourse to blood-letting.

As the increased excitement of the heart and blood vessels supports that of every other part of the system, it is not sur-

* See an account of the *Dieta Aquea*, in the 36th volume of the *Philosophical Transactions*.

† "Some metallic salts," Dr. Cullen observes, "have been employed as refrigerants in fevers, and particularly the sugar of lead. But the refrigerant powers of this are not well ascertained, and its deleterious qualities are too well known to admit of its being freely used."

prising that blood-letting has been found the most effectual remedy in synocha.

Our view in the commencement of fever, however, is not to reduce the action of the heart and larger vessels to the natural standard. This would be to obviate the means afforded by the nature of the circulation for removing the cause of the disease. It is only our object to lessen excitement when it goes beyond the degree most favourable to this end.

If the means employed be so injudicious, as to reduce the excitement of the heart and larger vessels more than is necessary to insure its requisite continuance, the patient will sustain a double injury. The stimulus necessary to the excitement of the capillaries will be too much lessened, and the debility of the heart and larger vessels hurried on, so that the fever will soon begin to assume its worst form. As blood-letting is the most powerful means of diminishing excitement, it is consequently the most apt to induce debility; and caution is particularly necessary in the synocha, which if not cut short at an early period, is constantly succeeded by a disease of debility. It is important therefore carefully to consider the various circumstances which demand attention in the employment of this remedy in fever.

It is not always sufficient in the treatment of this disease, to study the symptoms of the case for which we prescribe. If the fever be epidemic, we must acquire a knowledge of its general course, that we may know what symptoms to expect; for our plans in the treatment of fever are often influenced as much by what the state of our patient will be, as by what it is. If much debility is expected, we must be cautious in recommending evacuations. An attention to the prevailing epidemic, therefore, may be mentioned, as the first circumstance to be attended to in considering the propriety of blood-letting in fevers.

We must attend to the nature of the cause, which produced the fever. It appears from what was said of the causes of fever, that an atmosphere loaded with putrid effluvia is one of the most common, and that a fever thus produced is afterwards communicated by its peculiar contagion. All fevers, it was observed, arising from putrid effluvia or contagion, whatever be the state of the patient at the time he is attacked, or the nature of the symptoms at an

early period, will soon assume the form of typhus. In such cases, therefore, blood-letting must be employed with caution, even although the excitement at the commencement be considerable.

When, on the contrary, the fever has arisen from cold, from strong passions, violent exercise, &c. although we know, that if it be protracted for many days, the symptoms of synocha will be succeeded by those of typhus; yet we have reason to believe, that the synocha will form the principal part of the disease, and that if the excitement be prevented from running high at the commencement, the debility towards the termination will probably be inconsiderable. In these fevers, therefore, a freer use of the lancet is proper.

The season, climate, and even situation, are not to be overlooked in the employment of blood-letting.

On this part of the subject, some observations were made in speaking of intermittents. It is most to be dreaded in those circumstances in which the fever is most inclined suddenly to assume the form of typhus; both because the symptoms of debility are then generally more considerable than where the change is more gradual; and because the danger is often great when the typhus supervenes soon after blood-letting. I have already had occasion to observe that the changes of fevers are more sudden in sultry, than in cold and temperate climates; and in large cities than in the country; in autumn than in spring. It unfortunately happens in the first of those cases, that the symptoms which seem most to demand blood-letting often prevail to a great degree in the commencement of fever. Here much depends on the practitioner carefully weighing all the circumstances which ought to influence his judgment; and above all, the tendency of the fever, and of the particular epidemic in which he practises.

The age and habit of the patient is also to be attended to. Young people, it has already been observed, and people in the vigour of life, bear evacuations of all kinds better than those of a more advanced age. The same may be said of people of a full habit, compared with such as are naturally infirm or reduced by disease or other causes. It may be proper to remark that infants generally bear very ill profuse evacuations, particularly much loss of blood.

If the patient has been subject to inflammatory diseases, these are apt to be renewed on slight occasions; and conse-

quently symptoms indicating their approach must often be removed by more vigorous means, than are necessary in those who have not been subject to such diseases. If the patient has been in the habit of losing blood, it is often proper to employ this remedy where it would not otherwise have been necessary. Habitual blood-letting produces habitual plethora, which constantly demands a repetition of the same remedy.

It thus appears that no general rule can be laid down respecting the degree of excitement in fevers which demands blood-letting; the determination of this question, unless the excitement be extreme, depending almost as much on the preceding circumstances as on the symptoms of the disease.

If the face be flushed, the pulse full and strong, and the heat considerable, it is usually to a greater or less extent employed with advantage, unless the nature of the fever or the situation of the patient particularly counterindicates it.

Let these however be what they may, we must keep in view, that great excitement is itself a highly debilitating cause, and often debilitates more than a well-timed blood-letting which relieves it.

Blood-letting should always be more sparingly employed in proportion to the degree of excitement in idiopathic fever than in the Phlegmasiæ, not only because general excitement is never so immediately dangerous as the inflammation of a vital organ, and all fevers, from whatever cause they arise, may from powerfully debilitating causes assume the more alarming forms of typhus; but because general excitement is relieved by a smaller loss of blood than inflammation. Even when visceral inflammation supervenes on idiopathic fever, we must let blood more cautiously than where the former disease exists alone; and in the determinations of blood to particular parts so apt to occur in fevers, which more frequently consist in distension of the larger vessels of the part than actual inflammation, that is distension of the capillaries; unless the general excitement is very considerable, it is better to attempt their removal by local than general blood-letting. If there be any exception to this rule it respects congestion in the head, because from the nature of the circulation congestion there is more intimately connected with a state of general excitement, than in other parts of the body.

What was said respecting the period of the disease proper for blood-letting, in speaking of intermitting, is nearly applicable to continued fevers. As soon as the symptoms of synocha begin to decline, the proper period for blood-letting is past. Even Huxham, prejudiced as, we must allow, he and most of his contemporaries were in favour of this remedy, admits that "bleeding, unless in the beginning, seldom did service."

In determining the propriety of repeating the blood-letting, we must attend to the effects it has produced. If the symptoms of excitement are much relieved, the pulse being considerably less strong and full, and the temperature much reduced, there is no occasion for repeating it. If the strength seems much lessened, if the disease begins to assume the form of typhus, which sometimes very suddenly happens after an ill-timed or excessive blood-letting, its repetition would be attended with the worst effects. If, on the other hand, the symptoms continue unabated for ten or twelve hours, the operation must be repeated to at least the same extent. Lastly, if the symptoms still continue, but with a considerable abatement, it will be proper to repeat the blood-letting as soon as they begin to suffer an exacerbation, which often happens, till the operation has been performed several times.

We must also attend to the appearance of the blood drawn, in determining the propriety of repeating the blood-letting.

There are three morbid states of the blood which particularly demand attention in fevers.

1. Where there is much inflammatory diathesis, the red globules in part subsiding before the coagulum is formed leave the upper part of it of a buff colour, to which the term buffy coat has been applied. In different cases it is thicker or thinner, according as the blood has remained fluid for a longer or shorter time. The thicker the buffy coat, the firmer the coagulum, and the more it contracts, causing it to assume a cup-like form, the greater in general is the inflammatory diathesis. The buffy coat, however, does not universally indicate the presence of this diathesis, nor does it universally appear when the diathesis is present. It is sometimes absent even in cases of actual inflammation, and now and then appears with a loose coagulum in typhus.

It may also appear thicker or thinner, or its appearance may be wholly prevented, by the circumstances of the blood-letting. If the blood flows slowly, and is permitted to trickle down the arm, the coagulation will begin before it reaches the vessel, and consequently the red globules, if they subside at all, will subside more slowly. If the blood is received into a broad shallow vessel, it will coagulate more quickly, than if received into a narrow deep vessel, and the buffy coat consequently will be thinner. These circumstances, therefore, are to be attended to in forming our judgment from it.

2. The blood is sometimes of a thin consistence. It contains too few red globules, and the proportion of water is too great. Such is the state of the blood in the typhus mitior, and many other diseases of debility.

3. The last kind of blood is found in the vessels of those labouring under typhus gravior and scurvy. It has a dissolved appearance, does not coagulate so readily as healthy blood, the serum is of a redder colour than natural, and the crassamentum of a very loose consistence*.

If the blood drawn in fever be of the first kind, we are encouraged to repeat the blood-letting, should the symptoms seem to require it.

If, on the contrary, it be of the second, and still more of the last kind, we shall generally have committed an error in recommending venesection, which, especially if repeated, might prove fatal.

It sometimes, though rarely, happens in the early stages of fever, that the excitement, instead of being diminished, increases after blood-letting; a circumstance which might disconcert a practitioner not aware of it. The quantity of blood, particularly in plethoric habits, seems sometimes to oppress the powers supporting circulation, so that it is not moved with the rapidity which is necessary to occasion the symptoms of great excitement. In such cases, it often requires much consideration and experience to ascertain the propriety of blood-letting. This is to be done chiefly by attending to the stage of the fever, the habit of the patient, and, above all, the nature of the epidemic. Wherever the propriety of letting blood is doubtful in fever,

* See a quotation from Dr. Fordyce's third Dissertation on Fever, in the chapter on the symptoms of continued fever.

the effects of a very small blood-letting will often point out how far we may go.

It appears from what was said of the *modus operandi* of blood-letting, that it is the more effectual, the more suddenly the blood is abstracted. On this account it was once the practice to let blood from both arms at the same time. It is enough, however, to make the orifice pretty large, a circumstance not always sufficiently attended to.

For the same reason that we abstract the blood suddenly, namely, that the action of the powers supporting circulation may be diminished with as little loss of blood as possible; some have recommended, in those cases where much is to be feared from a considerable loss of blood, to keep the patient more or less in the erect posture during the blood-letting, in order to induce a degree of syncope by a small loss of blood. The effects of this mode of blood-letting, however, are transitory, and the horizontal posture is usually preferred, that we may not be prevented taking away the proper quantity of blood.

In general blood-letting, that is, when our only view in letting blood is to relieve a state of general excitement, it is of little consequence from what part the blood is taken, provided it be taken from the upper part of the body, which is preferable for a reason given when we were considering the *modus operandi* of blood-letting. The most convenient place, therefore, the arm, is generally chosen. But when there is present any local affection demanding blood-letting, if the blood be abstracted from the part affected or its neighbourhood, the purpose both of general and local blood-letting is answered. Thus when the determination to the head is very great, it is better to take blood from the temporal artery, or the jugular vein, if this vessel can be readily made to swell, than from the arm.

When both blood-letting and the exhibition of an emetic are required, the blood-letting should precede the emetic. Sydenham says he could mention several cases where, for want of this precaution, vomiting produced a rupture of some of the vessels of the encephalon. Blood-letting should also precede blisters, when both are necessary. The irritation of the latter is less hurtful when the excitement is diminished*.

I cannot help thinking that the principle which I have en-

To the state of increased excitement, whatever be the mode of treatment, if the fever lasts above a few days,

deavoured to enforce, is the only one on which the practice of blood-letting in idiopathic fevers can with safety be founded. Till within the last fifty years, it was an opinion almost universally received that the cure of typhus, that is fever in which the excitement is little if at all above the healthy degree, as well as synocha should be attempted by venesection. Blood-letting, indeed, has been employed in typhus from a very early period of medicine. Galen particularly recommends it. Celsus looked upon it as one of the most valuable remedies in pestilential fevers. And Prosper Alpinus informs us, that the Egyptians let blood in all putrid disorders. We know with what freedom Sydenham used the lancet. "Ac proinde," he observes of the continued fevers of 1669, 71, and 72, which were for the most part of the nature of typhus, "eadem ipsa methodo tum quoad venæsectionem, tum repetitas purgationes, febrem hanc aggressus sum; quam in dysenteriae curatione supra fusius diximus." See also his practice in the epidemics of the year 1665 and 66, during which time the plague infested London.

In the petechial fever, Hoffman observes, blood-letting is generally necessary if the patient is plethoric, and has been accustomed to this evacuation.

"And here first let me note," says Huxham, that though malignant and pestilential fevers at the very onset greatly sink the spirits, and cause surprising and sudden weakness, especially when from contagion, yet bleeding, to some degree, is commonly requisite, nay necessary in the strong and plethoric, not only to lessen the moles movenda, and give a freer play to the oscillating vessels; but also to prevent any inflammatory obstructions, which may form in the very beginning, and likewise to moderate the friction and heat, which are often very considerable in the first days of the disease; and which more and more exalt the salts and sulphurs of the blood, increasing the acrimony and putrescent state of the humours, and greatly favour the action of the morbid matter.

Every body, says Hassenohrl, lets blood in petechial fever, repeating the operation as often as the necessity of the case seems to require, or or as the particular tenets of the physician incline him to do. In these fevers, he continues, the blood often shows the buffy coat, but in some, from the very beginning, it is fluid and dissolved. "Ex his quoque conficitur," he adds, "inanem esse metum illorum, qui in febribus, sic dictis malignis, manum semper a venæsectione temperandam esse contendunt; ne scilicet debilitatem, in principio morbi jam presentem, augeant; cum enim hæc debilitas, incipientibus morbis, frequentissime ortum suum debeat sanguini spisso immeabili phlogistico; clare elucescit phlebotomiæ administrationem in febribus continuis, nullis circumscribi limitibus nisi conditione ægri, numero et vehementia symptomatum."

The same opinion has been adopted to a greater or less extent by Dr. Mead, Eller, Sir John Pringle, Dr. Grant, Dr. Donald Monro, &c.

It may be useful, as there seems at present some risk of blood-letting being again indiscriminately employed in fever, to show, that even from

always succeeds that of debility. The action of the heart and larger vessels now falls below, as in the first stage of

the works of the above writers, sufficient proofs of the baneful effects of such an employment of it may be collected. There are hardly any of these writers who did not occasionally witness the bad effects of blood-letting in typhus. Thus Sydenham remarks, "*Quoties mihi cum ægris res est, quorum sanguis vel per se imbecilior existit, (uti fere in pueris) vel justa spirituum copia destituitur, ut in declivior ætate, atque etiam in juvenibus, diuturno aliquo morbo confectis, a venæsectione manum tempero.*" Hoffman confesses, that in many cases of fever it is very difficult to determine whether or not we ought to have recourse to blood-letting. The candour of Huxham supplies us with ample proof of the impropriety of his own practice. "The first blood," he observes, "in malignant fevers, frequently appears florid, what is drawn twenty-four hours after is commonly livid, black, and too thin, a third quantity livid, dissolved, and sanious; this is frequently the case in malignant fevers. I have sometimes observed," he continues, "the crisis of the blood so broken as to deposit a black powder like soot at the bottom, the superior part being a livid gore, or a kind of a dark green and exceedingly soft jelly. Besides, the pulse in these cases sinks oftentimes surprisingly after a second bleeding, nay, sometimes after the first, and this I have more than once noted to my great concern and astonishment, and that even where I thought I had sufficient indications from the pulse to draw blood a second time."

In his Essay on the Ulcerous Sore-throat, the same author observes, "I have very often met with this buffy or sily appearance of the blood in the beginning of malignant fevers, and yet blood drawn two or three days after, from the very same person, hath been quite loose, dissolved, and sanious as it were; too many instances of this lately occurred to me among the French captives here, *who died by dozens of a pestilential fever. In this fever the French surgeons bled every day, or every second day, and I several times saw the blood of some of the officers a mere sanious gore on the third or fourth blood-letting.*"

Huxham was led at length to see the impropriety of blood-letting in most cases of typhus, and he confesses that in those fevers which arise from contagion it is generally followed by bad consequences. He offers the reason of this in the following manner: "The contagion being diffused through the whole mass of blood, you will little lessen it by drawing off a small quantity of this fluid." On this passage Dr. Moore* observes, "The reason here assigned for bleeding not being indicated, is unquestionably very ingenious; but the reason which makes the strongest impression on my mind for not bleeding in this fever, is simply because it seems generally to do harm."

It is remarked by Sir John Pringle, that many have recovered from the jail fever without blood-letting, but very few who had lost much blood. Dr. Monro, who says he was often obliged to give cordials to support the strength after blood-letting, is among the latest of the foregoing writers. He endeavours to support his practice, less by his own

fever it rises above the healthy degree. If we cannot permanently increase it, the debility of the capillaries increasing with that of the central parts of the vital system, the powers of life are at length lost in the latter, and death gradually extends to every part of the system

We endeavour to increase the power of the sanguiferous system,

1. By an attention to diet, as far as the state of the digestive organs will admit of it;

2 By the application of cold, as far as the temperature of the skin warrants it; and,

3. By the use of strengthening medicines.

experience, than the authority of Hassenohrl, who again supports his by opinions, such as those just quoted from his works, respecting the supposed vicidity of the blood and the means of correcting it.

On reading the observations just quoted, we are inclined to ask, what were the advantages expected from blood-letting in these fevers, that such consequences should have been risked? To this question we have no answer but that which the favourite hypothesis of the time afforded, which taught, in opposition to every day's experience, that the cause of fever may be, as it were, drained off by blood-letting.

It is true, indeed, that a few instances may be collected, in which blood-letting seemed to be serviceable in typhus. The most remarkable instance I have met with, is an epidemic, a short account of which Dr. Donald Monro gives from Riverius; but nobody acquainted with the nature of fever will regard solitary instances of this kind, as capable of influencing the conclusion, which general observation warrants. Singularities are constantly observed in particular epidemics, from which no inference can be drawn respecting fever in general.

There are many reasons for believing that the epidemic described by Riverius was attended with some abdominal inflammation. Visceral inflammations often exist, as dissection has shown, without being indicated by the usual symptoms. This is particularly apt to happen in fevers. It happened frequently, for instance, in the fever of Grenada, described by Dr. Chisholm; and in that of Philadelphia, described by Dr. Rush, and may account for the practice which was found most successful in them. Quarin, De Haen, Bartholine*, Van Swieten, Sir J. Pringle, Silviu de la Boe† and other writers mention similar instances.

It has been maintained in a well known ingenious and learned work on Fever‡, that this disease always consists in an inflammatory state of the brain. Could this opinion be supported, the practice of blood-letting in typhus might be defended on rational principles. I have, in the *Edinburgh Medical and Surgical Journal*||, pointed out the reasons which appear to me conclusive against this opinion.

* Barthol. Hist. Anat. Rar. Hist. 56.

† Prax. Med. Append. Tract. X.

‡ An Inquiry into the Seat and Nature of Fever, by Dr. Clutterbuck.

|| Vol. IV. page 20.

1. In the more severe cases of typhus, the powers of digestion are wholly suspended, and the only effect of food, if the patient could be made to take it, would be to oppress the stomach. In the typhus mitior these powers continue, though much impaired, and some attention to diet is proper.

The food should be mild, nourishing, easy of digestion, and given frequently and in small quantity. It should consist chiefly of fresh fruit, the farinaceous vegetables, and bread. No kind of animal food or even broth is proper while a tendency to exacerbations continues*.

The diet here should not, as in synocha, consist chiefly of liquids, which are debilitating, and, without the admixture of some solid matter, are very imperfectly digested. I have found from repeated trials, that even the strongest beef tea given alone, and when the stomach is perfectly healthy, will neither afford requisite nourishment, nor allay the calls of hunger, in whatever quantity it may be taken. But if mixed with any solid matter, although of a nature much less nutritious, it becomes sufficiently so.

It is of great consequence when the debility is considerable, not to permit the stomach to remain long empty. If its state does not admit of any kind of food, some liquid more or less stimulating should be frequently given; but I shall not enter on the use of wine as an article of diet, as I am about to treat of it at length as a medicine.

2. The application of cold at the various periods of fever has already been considered.

3. We come now to that part of the treatment of fever, the knowledge of which appears the most defective, the best writers differing so much respecting some of the means employed in it, as to lay down diametrically opposite rules of practice. While all seem agreed with respect to the propriety of using the medicines, strictly termed tonic in typhus, they differ widely respecting those to which the name of stimulant has been more exclusively applied. The chief of these are opium and wine.

* "Even after the disease," Dr. Fordyce observes, "has been terminated by a crisis, animal food in a solid state should be rejected, there being no cause which has produced relapses, as far as the author's experience has gone, so frequently as using solid animal food too soon."

I have already had occasion to make some observations on the use of opium in fever, as a means of allaying irritation and procuring sleep. It has also been employed in typhus for the purpose of increasing the action of the heart and blood vessels. Some have recommended it for this purpose in very large doses, and there is reason to believe that it would have been more generally used with this view, were it not that we have in wine, means of producing the same effect, in many respects less objectionable; and physicians seem now to be every day more and more confining the use of opium in fevers to the purposes of which I have already treated. But many equally object to increasing the action of the heart and blood vessels in the second stage of fever by wine.

It is but lately that wine has been given with freedom in any kind of fever. Sydenham and his contemporaries made but little use of it. Since his time the practice of giving it in typhus has been gradually gaining ground; but the reader will find by consulting the works of Hoffman, Boerhaave, Van Swieten, Huxham, Mead, De Haen, Hassenohrl, Eller, Pringle, Monro, &c. that the best writers, till within the last 30 or 40 years, speak of its employment with great caution.

Dr. Cullen is among the first who recommended it in large quantity. Dr. Brown and his followers advised a still freer use of it, and it has not been uncommon for two bottles of the stronger, and three or even four of the lighter wines to be drank in twenty-four hours, by those labouring under certain species of fever.

The prejudices of the earlier writers appear to have contributed to this, surely excessive use of wine; for later physicians, finding that it might in many cases be given to much greater extent than they advise, not only with safety, but advantage, imagine that the caution of their predecessors was wholly unfounded; and seem to regard it as a specific in all fevers, in which the excitement falls below the healthy degree. The ill success which often attends the injudicious use of wine in fever, has, on the other hand, led some physicians of eminence altogether to doubt its beneficial tendency in this disease, and they have nearly banished it from their practice.

Such is the present state of medical opinion on a point

of the first importance. After reading all that has been written on the subject, the physician finds himself left to his own observation to determine, whether he is to place his chief reliance on wine in the treatment of typhus, or to shun it as always injurious in this disease.

The following remarks are the result of pretty extensive experience, and if not of accurate, at least of anxiously attentive observation. During the last twenty years I have not only seen many patients, who were from the commencement of the disease under my own care, and consequently afforded me opportunities of observing the effects of the plan which appeared to me the best; but from the practitioners of the smaller towns, whose attention is necessarily divided among all the branches of the profession, occasionally requesting the assistance of the physician in the more serious medical cases, I have had an opportunity of comparing the effects of different modes of practice.

As far as I can judge from what I have seen of the use of wine in fever, the difference of opinion which prevails on this subject, has in a great degree arisen from physicians having attempted to apply their rules, either for or against it, to all cases indiscriminately. Whereas, it would appear that the use of wine in typhus must be almost as much regulated by circumstances, as that of blood-letting in synocha. Two general observations, however, appear to me to be warranted, that more or less wine is beneficial in all severe cases of typhus, and that there are few in which large quantities are not injurious.

When we see a patient labouring under symptoms of extreme debility, and find them almost uniformly relieved by a large quantity of wine, it is difficult at first view to persuade ourselves that it can be pernicious. But an attentive observer will look beyond its immediate effects, and will often see sufficient reason to doubt the safety of carrying this practice very far. He will find that the temporary excitement he thus procures, is frequently succeeded by a greater degree of debility, than that which the stimulus had removed; and if he perseveres in the practice under such circumstances, the pulse upon the whole will gradually become more frequent and feeble till it ceases altogether.

Physicians have also been led to an excessive use of wine in typhus by the comparatively small effects it produces. That a pint of wine in typhus does not produce a greater

effect than a glass in health is adduced as an argument, for the pint in the one case, being as innocent as the glass in the other; but it is to be recollected that wine in typhus only produces less excitement than in health, in proportion as the remaining excitability is less; and consequently, that a degree of excitement which would occasion little or no inconvenience in health, may produce a fatal exhaustion in typhus. Here there is no excitability to spare, and one of the first principles of the treatment seems to be as much as possible to prevent its exhaustion. A moderate and uniform exhibition of stimuli seems often necessary, that the action of the central parts of the sanguiferous system may not fall too low to support that of the extreme parts. All excitement beyond this appears to have no other effect but that of exhausting the vigour which yet remains.

The proper quantity of wine is to be determined by an attention to the following circumstances:

The degree of the debility, and the nature of the symptoms.

The stage of the fever, and the time it has lasted.

The nature of the cause which produced it.

The age and constitution of the patient.

His habits of living, and former diseases.

The climate, season, and particular situation in which the disease appears.

The effects of the wine.

When the debility is inconsiderable, I believe the quantity of wine used in fevers should be very small, and it should be given diluted. In proportion as the debility is greater, we may cautiously increase the quantity, recollecting, however, that it is not our object suddenly to correct the symptoms of debility, much less to occasion any considerable degree of excitement, but to afford such support to the vital organs as shall tend to prevent an increase of debility; and in more severe cases, to relieve the symptoms of immediate danger. Those cases of typhus which are accompanied with petechiæ, and a tendency to gangrene, seem to call most for the use of wine; and those in which the skin is soft and inclined to be damp bear it best.

If very large quantities of wine are ever proper in fever, it appears to be when extreme debility comes on very rapidly. In the same degree of debility coming on more slowly, and consequently at a later period of the disease,

there is less prospect of advantage from them. If the second stage of fever has lasted for some time with little increase of debility, wine should be used with great caution.

There is every reason to believe that fevers from contagion bear wine better than those from other causes, especially if the patient is still exposed to a highly contagious atmosphere.

The dose of wine must in some degree be regulated by the patient's age and constitution. In old age and weak habits, the symptoms requiring the use of wine are of course most apt to appear, and the same degree of debility indicates a freer use of it, because in them debility is most apt to increase rapidly, and produce symptoms of danger.

The more the patient has been accustomed to a free use of fermented liquors, the less will be the effect of the same quantity of wine in fever. Those who have been long accustomed to a very simple diet, making little use either of fermented liquors or animal food, are very sensible to the stimulus of wine in this disease. Such as have been subject to former attacks of typhus, or other diseases of debility, are more liable to the symptoms requiring it, than those whose previous diseases have been of an inflammatory nature.

The climate, season, and even the particular situation in which the disease appears, should influence the use of wine in typhus. As in sultry climates the changes in fevers are rapid, they often demand more powerful stimulants than are usually proper in the fevers of temperate climates. In the latter, the tendency to debility is greater in autumn than in spring, and the moderate use of wine, therefore, more generally necessary; and cases of that extreme debility which seem to call for a freer use of it, more frequently occur. In certain situations of the same country diseases tend more to debility, than in others. In towns which lie low, and in which the inhabitants are crowded, fevers are found to require the use of wine more than in higher situations, and in the country. This difference is strikingly exemplified, even in different parts of Worcestershire. In Worcester and Kidderminster, for example, it is necessary to make a freer use of wine in fevers, than on or near the Malvern and Broadway Hills.

The effects of the wine must be carefully watched. If it

quickly, and to any considerable degree, raise the pulse, we may be assured that we are giving too much. If we find that its effects are transitory; if soon after the cordial effects of each dose, sinking and debility return, we shall seldom gain much ground by its use, and by increasing the dose we shall generally accelerate the fatal termination. The proper practice under these circumstances is to lessen the dose, and give it more frequently. When, on the other hand, the wine, without appearing to produce any very remarkable degree of excitement at the time it is taken, seems more permanently to relieve the symptoms of debility, we may with confidence expect advantage from it. But we must be cautious how we venture to increase the quantity which has this effect. When our patient is upon the whole improving, this should satisfy us. If we attempt to accelerate his recovery by increasing the wine we shall often do harm.

Various other fermented liquors have been used as substitutes for wine; the best of these appear to be cider and perry. These are neither so oppressive to the stomach as malt liquor, nor do they afford so hurtful a stimulus as distilled spirits, which, diluted or defended in whatever way, as I have observed from many trials, never produce the invigorating effects of the fermented liquors which have not been distilled.

The vitriolic and nitrous ethers have been much recommended in typhus. To their free use nearly the same observations apply as to that of distilled spirits. They are often used with advantage in small doses, when the patient is harrassed with restlessness and convulsive twitchings, of which I shall presently speak more particularly.

It is not many years since it was a common practice to employ blisters as a stimulus in typhus, and many of the older practitioners still employ them with this view. Of their use in fevers I have already had occasion to speak. Their general stimulant effect appears to be trifling, and perhaps hardly ever compensates for the irritation and trouble they occasion. Dr. Cullen justly observes, that the general stimulating effects of blisters must be inconsiderable, since they are found of so much service in cases of local inflammation.

To the head of tonics belong the various astringents, bitters, and aromatics, and the mineral and vegetable acids*.

Of these medicines, the most celebrated is the bark. It differs from fermented liquors in its stimulus being less powerful but more permanent, and in its being not at all nutritious. It is even probable, from some observations related in speaking of intermitting fever, that it is either not received into the mass of blood, or although in part received, its effects are chiefly to be attributed to its action on the stomach and intestines. On the muscular fibre the bark seems to exert but little power; its immediate action appears to be on the nerves, through which its invigorating effects are diffused to other parts of the system.

Most of the authors I have had occasion to mention used the bark in fevers with more freedom than wine†.

We found in treating of intermittents, that wherever the inflammatory diathesis is considerable, blood-letting is necessary previous to the exhibition of the bark. Some practitioners, losing sight of the circumstances which gave rise to this practice, seem to have regarded venesection previous to the exhibition of the bark as necessary in all cases of fever. In consequence of which it has sometimes been very improperly employed. Dr. Cullen justly remarks, in his *Materia Medica*, that wherever blood-letting is proper in continued fever, the bark is always prejudicial.

But the prejudice that chiefly opposed the use of the bark in this fever, and which also originated from the practice found most successful in agues, was that it would not succeed unless there were evident remissions‡. This observation is just if it be confined to those fevers in which

* Iron has seldom been employed in fevers except towards their decline, when symptoms of dyspepsia sometimes supervene.

† De Haen gave an ounce of the extract daily in malignant fevers; and, in the first volume of his *Ratio Medendi*, relates cases to prove its efficacy. Huxham gave it in decoction with aromatics and a small quantity of distilled spirits; and Hassenohrl is one of its strongest advocates. "Supervacaneum quidem est aliquid addere quod egregiam corticis Peruviani virtutem in febribus admodum malignis demonstret." —Hassenohrl's *Historia Febris Petechialis*.

‡ Dr. Grant's *Treatise on Fevers* and other works which I have had occasion to mention.

the symptoms of synocha prevail; but in typhus the continued form of the disease does not forbid its use. I had occasion to observe, in speaking of the treatment in agues, that, although where the excitement is considerable, the bark is only to be exhibited in the absence of fever, and that where there is an evident disposition to local inflammation, its exhibition is to be delayed altogether, till this tendency is removed; yet in other cases, particularly where the debility is considerable, the incompleteness of the remissions only indicates the necessity of using the bark more freely: and it may now be observed, that under the latter circumstances, although the fever be of the continued form, the bark may be given, though, generally, in smaller doses. It is true indeed, that where there are no remissions we do not expect it to stop the fever; but it tends to obviate the symptoms of debility and shorten the disease.

Not only while the synocha prevails is the bark hurtful, but even for some time after the change from the synocha to the typhus, I have found the lighter bitters, the calumba, the serpentaria, the cascarilla or gentian preferable. At this period the bark is apt to recall the symptoms of synocha. But after the typhus is completely formed, that is, after the pulse remains weak during the exacerbations, more or less bark, particularly in the form of infusion, is generally useful; and when symptoms of malignity, and particularly that tendency to gangrene so frequent in the worst forms of typhus, appear, the largest quantity the stomach will bear is necessary. Here, as in intermitting fever, it is most effectual when given in substance.

It is always proper to combine with the bark, in whatever form it is given, some of the mineral acids. They may be given much earlier than either the bark or wine. As soon as the symptoms of synocha begin to abate, they should be mixed with the drink; and as the typhus comes on, given very freely. Till lately the sulphuric acid has been chiefly employed; most physicians now prefer the muriatic. The nitric acid has also been much used. I have already had occasion to speak of acescent fruit and other vegetable acids as beneficial at all periods and in all kinds of fever. In many eastern countries the natives trust the cure of malignant fevers chiefly to what we should call an excessive use of lemon juice.

Peppermint, cloves, cardamomums, and other aromatics

are occasionally added to the bark and other bitters, to increase their stimulating quality, and render them more grateful to the stomach.

A new stimulus has been introduced into the treatment of typhus by West India practitioners, and from the trials which have been made with it, there is reason to believe that it will prove a valuable medicine, though probably better adapted to warm than temperate climates. Dr. Wright, in his report respecting the yellow fever of the West Indies, in the 2d vol. of *Annals of Medicine*, observes, "We did not, however, despair; we gave capsicum pills with the most marked success, and even where melæna or the black vomit had taken place, the capsicum has snatched the patient from the most imminent danger." Others have made similar observations. The benefit derived from the capsicum in the cynanche maligna suggested its exhibition in typhus, and affords as strong an argument in favour of the practice as analogy can supply.

There is a class of medicines, whose stimulus seems suited to that state of debility, which is attended with spontaneous contractions of the muscles of voluntary motion, occasioning subsultus tendinum, and other involuntary motions; the chief of these are ether, opium, musk, camphire, castor, and ammonia. All of which have been regarded as powerful medicines in typhus.

Of ether and opium I have already had occasion to speak; and if we estimate the value of the others by the general opinion of practitioners, we shall find them fall much short of the encomiums which some have bestowed on them. Of these, camphire, on which Huxham placed much reliance, is the most useful in fevers; in small doses it often has a considerable effect in allaying restlessness and anxiety, and does not interfere with the exhibition of more powerful medicines. The *mistura camphoræ* is often a good vehicle for other medicines.

Camphire* combined with opium forms perhaps the most powerful medicine we possess in obstinate vomiting, which, both on account of its debilitating effects, and because

* Dr. Lysons gave large doses of camphire with nitre at the commencement of fevers, and, when they succeeded in exciting the action of the skin, they seemed frequently to be of service.

it prevents the exhibition of medicines, is always an alarming symptom*.

The ammonia and musk have been chiefly recommended when the low delirium, characteristic of typhus, has supervened; and in such cases they often afford relief, but their effects are transitory.

In extreme typhus, the circulation being comparatively slow, the increased frequency not compensating for the greater feebleness of the systole of the heart and arteries, the blood passes less frequently through the lungs, and consequently is less subjected to the action of the oxygenous part of the atmosphere than in health. Hence probably its darker colour. The effects of the less frequent passage of the blood through the lungs would probably, as far as respects the change occasioned by the oxygenous part of the atmosphere, be counteracted by supplying the patient with air containing a larger quantity of oxygen, in proportion as the circulation is less rapid. What effect correcting the venous state of the blood in typhus might have, it is difficult to say.

If we contemplate the change which has been taking place in the treatment of fevers during the last fifty years, we shall find, that physicians have been gradually diminishing the number of their medicines, placing their reliance only on the more active. In proportion as it has been rendered less complicated, it has become more efficacious.

The principles of the treatment of continued fever which have been laid before the reader, as far as I am capable of judging, are those alone which experience warrants; but all fevers, for reasons which are given in the preface, are liable to be accompanied by determinations of blood to particular parts occasioning inflammation, or congestion of the larger vessels of those parts. The progress and event of the fever are often much influenced by these determinations. Their treatment consists in lessening the morbid accumulation in the part, and rousing its vessels to due action, by local blood-letting and blistering, and, when we have it in our power, by promoting and correcting its secretions. This

* Saline draughts given in the state of effervescence, or a mixture of the sulphuric acid, conserve of roses, and peppermint water strained, also frequently allay this symptom.

subject cannot be fully understood without a knowledge of symptomatic fevers, of which I shall soon have occasion to treat, for these local affections are to be regarded as secondary diseases supervening on and supporting the original disease.

CHAPTER V.

Of the VARIETIES of CONTINUED FEVER.

CONTINUED fever, or, as it has been termed, Synochus, is, according to the arrangement I adopt, divided into six varieties; the Synochus Simplex, unaccompanied by any eruption, the Synochus Petechialis, the Synochus Miliaris, the Synochus Aphthosus, the Synochus Erysipelatosus, and the Synochus Vesicularis.

The synochus simplex has been considered. I am now to point out the circumstances in which the other varieties differ from it.

SECT. I.

Of the Petechial Fever.

The Synochus Petechialis may be defined,

Synochus, incerto morbi die, plerumque post varia debilitatis signa, apparent maculae parvae, rubrae, circulares, minime eminentes, per cutem, praecipue colli et pectoris, sparsae.

There is little to be added to what has already been said of this variety of synochus. Petechiae* seldom appear in the first, very frequently in the second, stage of synochus. They are most apt to appear where there is a tendency to the hemorrhagies characteristic of this stage.

This eruption sometimes accompanies other diseases, particularly scurvy, and is sometimes idiopathic. We still, however, find it accompanied with a tendency to the worst forms of hemorrhagy.

All that is known of its causes is, that whatever debilitates, disposes to it. It nevertheless sometimes appears

* See the Section on the Symptoms of Typhus.

when the excitement is considerable*; and, on the other hand, we often meet with extreme debility in fevers, as well as other diseases, unattended by petechiæ.

As petechiæ generally denote debility, their appearance in typhus indicates a strict attention to the invigorating plan; and antiphlogistic measures should be employed with caution when they show themselves in synocha.

When petechiæ appear as an idiopathic affection, the same tonic and astringent medicines are indicated; the bark, port wine, sulphuric acid, and alum are the best. It will be necessary to consider the other varieties of synochus at greater length.

SECT. II.

Of the Miliary Fever.

The Miliary Fever is defined by Dr. Cullen,

“Synochus cum anxietate, frequenti suspirio, sudore
“olido, et punctionibus cutis. Incerto morbi die, erumpunt
“papulæ rubræ, exiguæ, discretæ, per totam cutem,
“præter faciem, crebræ, quarum apices, post unum vel
“alterum diem, pustulas minimas, albas, brevi manentes,
“ostendunt.”

It appears, from what was said of this fever in the Introduction, that it is to be regarded only as a variety of synochus, characterized by a particular eruption, and a certain train of symptoms which attends that eruption, whether it appears in fever or other diseases. In laying down the symptoms then of what has been termed Miliary Fever, it will be the most distinct plan, in the first place, to describe the eruption; secondly, to enumerate the symptoms which generally precede or attend it; and lastly, to point out the febrile states in which it is most apt to appear.

1. Of the Symptoms of the Miliary Fever.

Of the Miliary Eruption.

This eruption is sometimes preceded by a roughness of the skin, resembling that produced by cold. It consists of

* See Eller de Cognosc. et Cur. Morb. Dr. Grant's Treatise on the Fevers most common in London, &c.

a number of small red pustules, about the size of millet seeds, from which they are termed miliary. They often lose their redness, and appear of the ordinary colour of the skin. Their prominence is so inconsiderable that it can scarcely be seen; to the touch it is always sufficiently evident. For the most part they are distinct, now and then in clusters. After they have remained for ten or twelve hours, or longer, a small vesicle appears on the top of each, which is at first of a whey colour, but soon after becomes white*.

Such is the appearance of the white miliary eruption, and the red only differs from it in the pustules retaining their red colour, and the matter formed in them being yellow.

In two or three days the vesicles break, if they have not been rubbed off, and in either case are succeeded by small crusts, which fall off in scales.

The miliary eruption generally first appears about the neck and breast, gradually spreading to the trunk and extremities, but rarely appearing on the face. The white and red eruptions for the most part appear separately; sometimes they are intermixed. In both, the matter formed in the vesicles has an offensive smell, and, it is said, a very acrid taste.

The miliary, like other symptomatic eruptions, often appears repeatedly in the course of the disease, and it is not uncommon for one crop immediately to succeed another for many days; new pustules appearing while the former advance to maturation and decline.

We are assisted in forming the prognosis in Synochus Miliaris, by the appearances of the eruption. The red generally indicates a milder disease than the white; and it is frequently observed, that the greater the inflammation that attends the eruption, the better is the prognosis†. Quarin‡, however, remarks, that both kinds of miliary eruption appearing at the same time, indicates a worse disease than either singly. The same may be said of a very numerous eruption compared with a scanty one. The eruption being steady is more favourable than its frequently disappearing

* The matter of the pustules at first appearing of a whey colour and afterwards white has given rise to a very improper division of the white miliary eruption into pellucid and white. See the 388th paragraph of Burserius's Institut. Med. Pract. where the reader may also see some other divisions of the miliary eruption which are equally useless.

† Mead's Monita et Præcepta Medica.

‡ De Febris.

and coming out again* ; and it is better that the places covered with the eruption should appear swelled and stretched, than sunk and flaccid.

The prominence of this eruption sufficiently distinguishes it from petechiæ. The circumstances which distinguish it from other eruptions will be pointed out as we proceed in describing them†.

Of the Symptoms which precede or attend the Miliary Eruption.

It is not uncommon for the fever, a short time before the miliary eruption shews itself, to suffer an evident exacerbation, which appears chiefly in an increase of temperature and restlessness. The eruption is generally preceded by depression of spirits, and a sense of tightness about the præcordia, the breathing becoming laborious, and being interrupted with sighing or coughing‡.

With the increase of temperature, there is frequently a sense of pricking or itching in the skin, which is also sometimes felt in the bowels§, and is now and then accompanied with a degree of numbness in the extremities, particularly in the fingers||; for sometime before the eruption comes out, the patient is generally bathed in a profuse sweat of a sour, rank odour, during which the pulse is often contracted.

It is sometimes preceded by pains of the head or internal ear, or tinnitus aurium, and now and then by delirium; sometimes by pains in the back, limbs, and loins¶, or a peculiar sense of pungent heat referred to the back. Sometimes the belly becomes swelled and tense; at other times there is a swelling and redness of the face**, the eyes appearing inflamed or watery††. The internal fauces also are frequently inflamed, and there is now and then a considerable flow of saliva. In many cases the appearance of the miliary eruption is preceded by aphthæ, (there is often, we shall find, an evident connection between these eruptions), and sometimes, though very rarely, by an epileptic fit‡‡.

* Burserius.

† The white miliary eruption has been termed purpura alba; the red, purpura rubra.

‡ Quarin.

§ Vogel.

|| Allionius. Vogel.

¶ Quarin. Vogel.

** Burserius.

†† Quarin.

‡‡ Burserius.

Upon the whole, dejection of spirits and anxiety, with unusually fetid sweats, are the most common forerunners of the miliary eruption.

Most of the foregoing symptoms are relieved on its appearance. The sweating, however, if means are not used to check it, for the most part continues, and then fresh crops of the eruption will probably continue to come out for many days.

The more severe the preceding symptoms, and particularly the greater the debility and depression of spirits, the more unfavourable is the prognosis. If the sweat is moderate, and the respiration free, the prognosis is generally good. Itching, instead of the sense of pricking, on the coming out of the eruption, has been regarded as unfavourable*.

The miliary eruption sometimes appears unattended by fever. Even in this case it is often preceded by restlessness, sickness, anxiety, and a sense of sinking; and accompanied by sweating, or a watery discharge from the bowels or kidneys, and sometimes by salivation†.

The red miliary eruption, the rash as it is vulgarly termed, more frequently appears unaccompanied by fever than the white. "The miliary glands of the skin," Huxham remarks, "appear very turgid, and mimic a rash upon profuse sweating, even in the most healthy."

Of the Febrile States in which the Miliary Eruption most frequently appears.

This eruption is most apt to shew itself when debility prevails. That species of synochus, therefore, of which typhus forms the principal part, is most frequently accompanied with it; and in the works of those who treat of the miliary fever as a distinct disease, and consequently endeavour to point out its characteristic symptoms, those are enumerated which have been mentioned as attending this species of synochus.

The cold stage, it has been observed, is generally very evident, often attended with considerable languor and depression of spirits, sometimes with syncope. The pulse, during the chills, is for the most part very small and weak;

* Burserius.

† Hoffman.

after the heat is generally diffused, it becomes stronger and fuller; but never, it is observed, acquires a great degree of strength, and generally in a few days becomes small, soft, and depressed. The various symptoms denoting much debility, such as tremors, cramps, subsultus tendinum, delirium, &c. enumerated among the symptoms of typhus, have been regarded as characteristic of this fever. When we consider the nature of the fever, the irritation of the eruption, and the profuse sweats which attend it, it will not appear surprising that these symptoms very frequently accompany the Synochus Miliaris.

Such is the disease which has been termed the Miliary Fever. In what does it differ from other cases of typhus, except in the eruption and certain symptoms connected with it, which, as will be evident in considering its causes, are accidental appearances, that may often be prevented by a proper mode of treatment?

Some allege that the miliary eruption generally shews itself on a certain day of the fever, demonstrating an essential connection between the fever and eruption. Allionius says that it appears on the third or fourth day; Huxham says it appears on the seventh, ninth, or eleventh; and other days are mentioned by other writers; from which it is sufficiently evident, and practitioners, indeed, now admit, that it may appear on any day; it is not common, however, for it to appear before the third or fourth day, probably because the debility is seldom considerable before this period.

The foregoing observations apply chiefly to the white miliary eruption, the form in which it generally appears in typhus. The red, I have had occasion to observe, is a slighter affection, and often appears in synocha. Even here, however, it is generally attended with oppression and sinking of the spirits.

The symptoms connected with the miliary eruption for the most part suffer a remission on its appearance, and in some instances there is also an abatement of the febrile symptoms*; in general, however, the eruption, and the

* Quarin observes, that it is chiefly in catarrhal and rheumatic fevers that the miliary eruption brings relief. Sweats, however induced, more frequently bring relief in these than in most other febrile diseases. But as Planchon (in his Dissertation sur la Fievre Miliare) justly remarks, when this eruption does relieve the fever, the favourable change in the pains, &c. is not to be depended on, the symptoms often returning with equal and sometimes greater violence.

sweats and other symptoms that attend it, only increase the debility, and we shall find that they are always, if possible, to be prevented. An increase of the symptoms of debility, on the coming out of the eruption, affords an unfavourable prognosis; but the prognosis is still worse if such symptoms shew themselves, or suffer a considerable exacerbation on its sudden disappearance. When in this case, excessive anxiety and dejection, obstinate vomiting, delirium or convulsions supervene, the danger is very great.

Dropsical swellings of the legs and sometimes of the belly are apt to supervene on miliary fevers, and are regarded by some as part of the disease; they seem, however, merely the consequence of debility. For the most part as the patient gains strength, the swellings disappear without the assistance of medicine, especially if they are merely anasarcaous. In some cases they are suddenly removed by a spontaneous flow of sweat.

From the great debility which prevails in the synochus miliaris, it is liable to be followed by the various consequences of protracted fevers. See the observations of Vogel, Burserius and others, on the consequences of the miliary fever.

2. Of the Causes of the Miliary Fever.

A fever, says Allionius*, which may be considered a new disease from the miliary eruption which attends it, in which, if the eruption subsides, the patient falls into convulsions and soon expires, appeared at Leipsic about the middle of the last century. And the generality of writers agree with Allionius, that the miliary fever which appeared at this place in the years 1652, 1653, and 1654, is the first fever of this kind of which we have any account.

This eruption first shewed itself in the fever which frequently attacks women after delivery, termed puerperal; but soon spread, and appeared in various fevers, attacking persons of every age and sex. "Ita ut," says Allionius, "pueros cum juvenibus, adultos cum senibus, viros cum foeminis, aggrediretur."

Many, however, doubt of the miliary fever having appeared at this period for the first time†. Burserius thinks

* See his *Tractatio de Miliarium Origine, &c.*

† "It seems to me very improbable," Dr. Cullen observes, "that

that the miliary eruption has been confounded with petechiæ by some of the older writers; and Mr. White, in his *Treatise on Pregnant and Lying-in Women*, observes, that it is highly probable that the miliary fever has occurred to practitioners ever since the days of Hippocrates. The reader will find, in Planchon's *Treatise sur la Fievre Miliare*, quotations from Hippocrates and *Ætius*, to prove that the miliary fever was known to these authors. This dispute is of little moment.

In speaking of the causes of synochus miliaris, we must take the same view of the disease as in enumerating its symptoms, endeavouring to trace the causes, not of the fever, but of the eruption which attends it.

There is no symptom which more constantly attends the miliary eruption than sweating, and the causes of both are often the same; thus it frequently happens in the same epidemic, that in those treated with the cool regimen there is neither sweat nor eruption; while in others, treated with the hot regimen, sweats are forced out, and the eruption soon makes its appearance. Sweating, indeed, is so frequently accompanied with this eruption in febrile diseases, that Dr. Cullen regards it merely as a disease of the skin, produced by heat and forced sweats*, and little connected with the general affection of the system; this opinion he thinks is confirmed by the eruption never appearing on the face, by its appearing chiefly on those parts which are most covered, and by its being possible to bring it out on particular parts by external applications.

It is certain, however, that in some fevers, as in the puerperal, it is more frequent than in others.

Dr. Cullen remarks, that "of persons sweating under

" this should have been really a new disease when it was first considered as such; there appear to me very clear traces of it in authors who wrote long before that period, and if there were not, we know that the descriptions of the ancients were inaccurate and imperfect, particularly with respect to cutaneous affections; whilst we know also very well that those affections which usually are symptomatic were commonly neglected or confounded together under a general appellation."

* Even in the writings of foreign authors, who generally contend for the miliaria being an exanthema, and particularly in those of Vogel and Quarin, there is sufficient proof of the miliary eruption being generally the consequence of forcing out sweats by warmth and stimulating medicines.

“ febrile diseases, those are especially liable to the miliary eruption who have been previously weakened by large evacuations, particularly of blood.” Quarin and others make the same observation; thus it probably is that lying-in women are more frequently attacked by it than others. Those also who have laboured under frequent and copious menstruation, or a long continued fluor albus, are frequent subjects of it. It has often been remarked, that it is apt to appear in fevers arising from wounds, where the loss of blood has been considerable.

Every debilitating cause, as well as loss of blood, predisposes to it. In lying-in women, it often makes its appearance before delivery. The interruption as well as excess of any habitual discharge, even habitual costiveness, is ranked among its causes. A bad diet, from a deficiency either in quantity or quality, or intemperance, predisposes to it; to this cause, and also to excessive venery, it is attributed both by Hoffman and Planchon: even the debility produced by a damp atmosphere seems sufficient to give the predisposition. Quarin says, it is often epidemic in marshy countries.

Persons of a lax habit of body and sanguine temperament are most subject to it; children more than adults; old people than such as are in the vigour of life; women more than men; and those who have formerly laboured under the disease are more subject to it than others.

Though the other causes of the miliary fever, Hoffman observes, have always existed, the disease itself has made its appearance only of late years, since the introduction of tea and coffee, and it is chiefly among the drinkers of these that miliary fevers are frequent. A variety of observations point out a striking connection between the appearance of the miliary eruption and the state of the *primæ viæ*. Van Swieten, Quarin, Planchon, Zimmerman, and others have observed, that it is occasioned by an accumulation of irritating matter in the stomach. On the offending matter being discharged, the eruption has been known immediately to disappear. We shall find other eruptions, particularly the erysipelatous, equally connected with the state of the *primæ viæ*.

All these, and other debilitating powers, should be regarded, perhaps, chiefly as predisposing causes, while the hot regimen is to be looked upon as the principal exciting

cause of this eruption. At least, we shall not often err by forming this opinion, since it is found, that whatever the state of the patient may be, the miliary eruption is very generally prevented by cool drink, and exposure to cool air. To this, however, there are some exceptions*.

Moist variable weather is most favourable to its appearance. It is most frequent in spring, and more frequent in autumn than in winter or summer; winter is least favourable to its appearance.

The reader will find a variety of causes of miliary fever enumerated by authors, particularly by Burserius in the 2d vol. of his *Institut. Med. Pract.* But these are rather the causes of the fevers in which this eruption most frequently appears than of the eruption itself; such authors regarding the miliary fever as an idiopathic disease.

Some dispute exists concerning the contagious nature of the miliary fever, some asserting that it is, others that it is not contagious. The dispute could only have arisen from its being regarded as an idiopathic disease. When it is known that the miliary eruption is an accidental appearance in all kinds of fever, the cause of this difference in opinion, and the means of reconciling it, are sufficiently apparent.

3. Of the Treatment of the Miliary Fever.

As what has been termed the miliary fever is nothing more than the miliary eruption with the peculiar symptoms that always attend it, supervening on continued fever, and as the treatment of continued fever has already been considered, we have only at present to point out how far its treatment is influenced by the appearance of this eruption.

It appears from what has been said, that when profuse sweating supervenes in continued fever, without relieving the symptoms, especially where the debility is considerable, we have reason to fear that its continuance, among other

* In 1758, Quarin observes, this eruption was epidemic. Almost all that were confined to bed were seized with it, although the primæ viæ were cleared, the patients kept cool, and all heating medicines avoided. Van Swieten and others observe, that the miliary eruption is sometimes epidemic, independently of any particular mode of treatment; and both Stork* and Planchon† mention instances where it occurred after every precaution had been used.

* *Anni Medica.*

† *Sur la Fiev. Mil.*

bad effects, will induce the miliary eruption, with the anxiety, oppression, &c. that generally attend it. Concerning the propriety of checking such sweats there can be no doubt. A dread of this practice, especially where there is particular reason to expect the miliary eruption, is expressed in the writings of a variety of authors. It seems, however, to have arisen, less from observing its bad effects, than from certain opinions respecting the eruption which, according to these writers, is the means employed by nature to throw out the morbid matter, from which they suppose the fever to arise. The effects of the practice, indeed, fully warrant the assertion just made.

The most effectual means of checking sweat is the application of cold, and in many cases it is the best. But the employment of it requires some caution.

If the fever be typhus, in which, however, the increase of temperature is considerable and steady, the application of cold may be free. The same may be said of synocha, if we have no reason to dread a tendency to local inflammation. But in the synocha, sweats rarely occur without relieving the symptoms. The application of cold requires much caution in the exquisitely formed typhus, where the temperature is little, if at all, above the natural degree. Here we must trust chiefly to the other means of invigorating the system, which have been pointed out. Astringents are particularly indicated; the bark, sulphuric acid and alum.

When the propriety of applying cold to check the sweating is determined on, it should be done gradually. The air of the bed-room should be cooled, part of the bed-clothes removed, and cold drink allowed.

We ought at the same time to employ gentle cathartics. An equal prejudice has prevailed against this practice, and for similar reasons it is equally groundless. It appears from the foregoing observations respecting the connection between the state of the primæ viæ and the miliary eruption, that wherever we have reason to suspect the presence of irritating matter in these cavities, much is to be expected from removing it. We should inquire, therefore, whether the patient feels a sense of weight about the stomach, whether the breath be offensive, whether he is troubled with head-ach, eructations, or nausea, swelling of the belly, or griping pains.

When the stomach is oppressed, Quarin recommends diluents, and if these fail, an emetic. Much dilution, however, is evidently improper where we wish to avoid sweats*; and emetics as doubly hurtful, by promoting perspiration and increasing debility, should be avoided, except where the eruption is evidently caused by the contents of the stomach.

When it happens, that notwithstanding our endeavours, the sweat continues, and the miliary eruption appears, or when the eruption has been induced by improper treatment, what mode of practice is to be adopted†?

From the observations of some writers we might be inclined to infer, that however uniformly safe the application of cold previous to the appearance of the eruption, it is a more doubtful practice while the eruption is present. Cases are recorded in which it did harm‡.

But in these, the application of cold was unguarded, and the state of the patient such that sudden exposure to cold might have induced the same train of symptoms, had there been no eruption. Unless the temperature is steadily above the healthy degree, any sudden or considerable exposure to cold is always dangerous.

Even those who have seen the eruption repelled by cold warn us against the more dangerous extreme of heat; for

• Hoffman cautions against the use of warm diluting liquors, unless the eruption has been repelled.

† “It has been an unhappy opinion with most physicians,” says Dr. Cullen, “that eruptive diseases were ready to be hurt by cold, and that it was, therefore, necessary to cover up the body very closely, so as thereby to increase the external heat. We now know that it is a mistaken opinion, that increasing the external heat of the body is generally mischievous, and that several eruptions not only admit but require the admission of cool air. We are now persuaded, that the practice which formerly prevailed in the case of miliary eruptions of covering up the body close, and both by external means and internal remedies encouraging the sweating which accompanies this eruption, was highly pernicious, and commonly fatal. I am, therefore, of opinion, even when a miliary eruption has appeared, that in all cases where the sweating is not manifestly critical, we should employ all the several means of stopping it that are mentioned above, and I have sometimes had occasion to observe, that even the administration of cool air was safe and useful.”

‡ The reader will find cases in which this eruption was repelled, and an alarming train of symptoms induced by exposure to cold, mentioned by Hoffman and others.

while an unguarded application of cold now and then proves hurtful, keeping the patient warm never fails to be so.

While the old practitioners oppressed the patient with bed-clothes, they were not aware that the eruption may be repelled by whatever debilitates, and that much heat may have this effect, as well as imprudent exposure to cold. There is reason to believe, indeed, that the latter cause often produced the effect in consequence of the previous application of the former. The retrocession of the eruption rarely happens when the cold regimen has been employed from the beginning of the disease*.

The various symptoms of debility which attend the retrocession, and which have been erroneously regarded as wholly arising from it, in many cases precede and appear to produce it†. It is in the typhus gravior where the debility is great, that the retrocession is most common, and attended with the worst symptoms. See what is said of the doctrine of repelled eruption in the next section.

Hoffman and Allionius forbid the use of acids in the miliary fever, for which the former has been justly censured by Planchon and others. It is the worst of prejudices, says Quarin, which has instilled itself into the minds of some practitioners, that because the sweat in miliary fevers is acid, absorbents should be employed, and acids of every kind avoided.

It seems to be the same hypothesis that led to the exhibition of alkalis in the miliary fever‡. The ammonia is that which has been most employed, and is often serviceable when it does not increase the perspiration; but its good effects are to be attributed to its cordial not its alkaline property.

* Delirium, subsultus tendinum, dyspnœa, anxiety, convulsions, and often death, says Burserius, is the consequence of repelling the miliary eruption, and this may be done, he adds, by too much heat or too free an exposure to cold, by keeping the patient too long in the erect posture, by violent affections of the mind, particularly by anger, terror, or grief. There is no eruption, according to Burserius, which is so readily repelled as the miliary. The same remark is made by Quarin and others. The latter thinks that the retrocession is the more dangerous the more copious the eruption.

† See the observations of Planchon and others. Subsultus tendinum, syncope, convulsions, delirium, &c. Planchon observes, often shew themselves a short time before the eruption recedes.

‡ See this part of the subject considered at length by Burserius.

With regard to saffron, elder-flowers, milfoil, and many other such medicines, much extolled in miliary fever, they seem to be of little or no use, and as they tend to excite disgust and oppress the stomach, ought to be avoided.

When the miliary eruption brings no relief to the febrile symptoms, it may be regarded as a new disease, which combines its influence with that first established to reduce the strength. Its appearance in typhus, therefore, is an additional argument for a strict adherence to the tonic plan; the irritation of the miliary eruption, indeed, and the debilitating sweats which attend it, will even at an early period of fever induce symptoms of typhus. Opium, from its tendency to promote perspiration, should, as far as the symptoms admit of it, be avoided. Tralles, in his work on opium, alleges that the miliary eruption may often be induced by the use of this medicine.

As the appearance of the miliary eruption in continued fever renders the tonic plan more necessary, it follows that it renders the opposite plan more precarious. The bad effects of blood-letting in the miliary fever have often been observed; and it is ranked by most writers among the principal causes of retrocession.

We are not, however, to adopt the prejudices of those who forbid blood-letting in all cases where the miliary eruption appears. It is determined by experience, says Burserius, that if while the miliary eruption is present, an inflammation of the viscera be feared, or if the fever be very vehement, a large blood-letting may be employed without repelling the eruption. Quarin and others make similar observations.

In considering the treatment of the synochus miliaris, I have taken no notice of blisters, which have been warmly recommended in this fever, as there is nothing to be added on this part of the subject to what was said in speaking of the treatment in the synochus simplex. It appears from what was then said, that their cordial property, for which they seem chiefly to have been recommended in the miliary fever, is very inconsiderable.

The remedies which have been employed, when a retrocession of the eruption, attended by various symptoms of debility, happens, are the same as those recommended in similar circumstances in other eruptive fevers, and which we shall soon have occasion to consider more at length.

In the disease before us, musk and camphire are particularly recommended where convulsions supervene; opium, blisters, frictions of the skin, and tonic medicines in all cases. But our principal view should be to bring out and support a sweat, and if the retrocession be followed by any considerable evacuation, we must be careful not to check it too suddenly*.

Different means, it is evident, will be proper in different cases, according to the cause of the retrocession. See what is said above of the causes of the retrocession.

SECT. III.

Of the Aphthous Fever.

The Aphthous Fever is defined by Dr. Cullen,

“Synochus. Lingua tumidiuscula, linguæ et faucium
“color purpurascens; escharæ in faucibus, et ad linguæ
“margines, primum comparentes, os internum totum de-
“mum occupantes, albidæ, aliquando discretæ, sæpe co-
“alescentes, abrasæ cito renascentes, et incerto tempore
“manentes.”

This definition, we shall find, does not include all the affections which have been known by the name of aphthæ; but it describes with sufficient accuracy that to which, by general consent of physicians, the term is now confined.

It appears from what was said in the introduction, that the aphthous fever is to be regarded in the same light as the miliary, being nothing more than the common synochus accompanied with an eruption of aphthæ, and the peculiar symptoms that attend it.

In detailing the symptoms of the synochus aphthosus, I shall pursue the same method as in the synochus miliaris; in the first place giving an account of the eruption, then enumerating the symptoms which precede or attend it, and lastly pointing out the febrile states in which it most frequently appears.

* If a sudden and copious evacuation follows the retrocession of the eruption, Burserius observes, such as much sweating or copious diarrhœa, the bad effects are prevented.

1. Of the Symptoms of the Aphthous Fever.

Of the Aphthous Eruption.

The aphthæ infantum* is the same eruption which occasionally appears in synochus; and whether it attacks the infant or the adult, and whether it appears with or without fever, it is attended with the same train of symptoms. As a symptom of synochus it has not demanded so much attention as when it appears as an idiopathic affection, which it seldom does in adults. In the writings of those who treat of the aphthæ infantum, therefore, we find the best account of it. I shall describe the idiopathic affection as it appears in children, and then point out the symptoms which attend this eruption when it shews itself in synochus.

The local affection of the fauces is often the first symptom of the aphthæ infantum; certain symptoms, however, sometimes precede it even in the youngest children. From appearing in health they very suddenly shew signs of uneasiness; they either refuse the breast, or if they receive the nipple, do not suck; they appear restless and anxious, cry, sleep less than usual, and the sleep they have is disturbed. They become pale and emaciated, and are often troubled with hiccup, and diarrhœa, in which the stools are acrid and fetid. Curdled milk is sometimes past by stool, and bile is vomited†. The pulse, especially if the child is not very young, is sometimes considerably affected, becoming more frequent than in health, the temperature is increased, and a sleepiness sometimes approaching to coma supervenes. In general, however, in children, the affection of the mouth and fauces is the first symptom, they become redder than natural, the tongue swells and becomes rough, and the nurse perceives an increase of temperature in the child's mouth. Sometimes the mouth becomes pale instead of red, which generally presages a worse form of the disease.

Soon after these appearances, the aphthæ begin to shew

* The thrush.

† Arnenmann's *Commentatio de Aphthis*.

themselves in the internal fauces, and about the edges of the tongue*.

They are small whitish eschars, appearing in the fauces, and about the tongue or lips, sometimes few and distinct, at other times numerous and confluent. Their number and degree of confluence are particularly to be attended to, as the prognosis rests much upon them.

In determining the number of aphthæ we may sometimes be deceived, since they are often numerous on the deeper seated parts, while they are but thinly scattered on the tongue and other parts of the mouth†. A person acquainted with the nature of the disease, however, can hardly be mistaken, for wherever the aphthæ are numerous in internal parts, sickness, hiccup, oppression, and generally pain referred to the stomach, with much debility, point out the danger, which, when these symptoms occur, is always urgent, whatever be the state of the fauces. The presence of this variety of the disease, it is evident, is not so easily ascertained in children as in adults. But whatever be the attending symptoms, when the crust, mentioned by Boerhaave, appears to ascend from the œsophagus, it is probable that the more internal parts are considerably affected, and the prognosis, therefore, is unfavourable. Nor is the case more favourable when the whole mouth appears covered with a crust, and becomes dry and even rigid, the process which ought to throw off this crust being absent or extremely languid. If this state continues long, the power of swallowing is lost, and the danger becomes very urgent. When the crust spreads to the fauces, it sometimes occasions suffocation.

* “*Pustulæ sunt albicantes,*” says Ketelaer*, who saw as many cases of this disease as perhaps any other physician, “*summis ac internis oris, et interdum vicinis respirationis partibus insidentes.*” The true aphthæ are described in nearly the same manner by most of the authors who practised in those countries where the disease is common. Armstrong compares their first appearance to that of broken curds. Even on their first coming out, aphthæ sometimes so run together that they look like a white compact crust, covering a great part of the internal fauces, and as it were, arising from the œsophagus†.

† See Van Swieten’s *Commentaria in Aph. Boerhavi.*

* Ketelaer’s *Treatise de Aphthis Nostratibus.*

† *Aph. Boerhaav.* 984. It is in this case that the symptoms above-mentioned most frequently precede the appearance of aphthæ; they often arise from the disease first attacking the œsophagus.

The colour of the aphthæ has occasioned some dispute, which seems to have arisen from the same aphthæ changing their colour, and becoming darker the longer they adhere; for there seem to be no well authenticated cases in which the aphthæ on their first appearance were of a dark brown or black colour, as some writers have alleged. Boerhaave indeed observes, that the colour of aphthæ is various, being either of a pellucid or shining white, like pearls, or of an opaque white or yellow colour, livid, or even black*. But he speaks not of the difference of aphthæ on their coming out, but of the appearance of the same aphthæ at different periods; for his commentator Van Swieten, Arnemann, Ketelaer, Armstrong, and others, who had extensive opportunities of seeing this disease, declare that they never saw aphthæ dark red, brown, or black on their first appearance†. We therefore see the propriety of Dr. Cullen's making whiteness one of the distinguishing marks of this eruption. Aphthæ, on their first appearance, however, sometimes assume a light brown or ash colour. Arnemann terms them "*flavæ vel fuscæ cineritiæ*."

The white pellucid aphthæ, like pearls, are always the safest‡, and when they are few in number the disease is scarcely attended with any danger. When aphthæ appear from the first of a brownish colour, the prognosis is bad. Van Swieten says, that he has uniformly found such cases fatal. The prognosis is between these extremes, when the aphthæ appear at first of a pearl colour but in considerable number, and soon begin to assume a brownish hue; when they become black the danger is very urgent; they are then to be regarded as small gangrenous sloughs, which often reduce the whole internal fauces to a state of mortification.

It has just been observed that it is only after the aphthæ have remained for a considerable time that they become brown or black; hence the time they adhere becomes a point of consequence in forming the prognosis; but when they begin to fall, we shall often be deceived if we look for

* Aph. 985.

† "*Non enim verisimile est,*" Ketelaer observes, "*ut in rebus sibi adeo vicinis, et cognatis, fors tantum polleat, cum albæ plus millies nobis oblatae sint, ut rubrarum, nigrarumve, ne umbræ quidem unquam apparuerint.*"

‡ When they appear of an opaque white, like lard, they are less favourable.

the immediate termination of the disease, since it frequently happens that a fresh crop succeeds that which has fallen or been rubbed off.

If this crop appears more numerous and crowded together than the first, the prognosis is worse than when the aphthæ appear fewer and more distinct. But, upon the whole, one crop falling off and another appearing, affords a more favourable prognosis, than the same crop continuing.

Aphthæ sometimes fall off in the space of ten or twelve hours, at other times they remain attached for many days; nor do they fall from the whole fauces at the same time, nor always first from any one part, but in this respect they are as variable as in their duration.

Although when the disease continues for a considerable time, repeated crops of aphthæ afford a more favourable prognosis than the same crop remaining throughout the disease; yet the prognosis is still better, when the aphthæ fall early, as in the former case, and are not succeeded by a fresh crop, or only by a very scanty one: it is, therefore, a matter of much consequence in forming the prognosis to be able to foresee whether or not a fresh crop of aphthæ is about to come out; and this in some measure may be learnt from the appearance of the places which the former occupied.

If they be clean, red, and moist, the aphthæ either do not re-appear, or only re-appear in a small number; but if they appear foul and parched, we may certainly expect a renewal of the eruption; and in such cases, the separation and reproduction of the aphthæ often take place a great number of times before the final solution of the disease. Both Ketslaer and Van Swieten observed this process repeated to the sixth, seventh, or eighth time. Upon the whole, however frequently the aphthæ return, those which fall off the soonest are the safest.

There are two seemingly opposite states, which are perhaps equally dangerous. The one, when the new crop supervenes before the old crop is thrown off; this not only gives rise to a great number of aphthæ adhering at the same time, but also shows that they have little tendency to separate; the other, and no less dangerous case, when the first crop falls off, and from the appearance of the fauces we are led to expect another, which, however, does not come out,

or, at least, is delayed for some days. If, under these circumstances, much anxiety, oppression, and other marks of debility, or a degree of coma, supervene, the danger is very great. The re-appearance of the aphthæ is generally attended with relief.

In the most favourable cases then, the aphthæ appear of a white pearly colour, fall off early, leaving the places they occupied clean, red, and moist; and upon the separation taking place, all the symptoms begin to abate, and in a short time wholly disappear. On the other hand, the more the aphthæ assume a brownish tint, the longer they continue to adhere; the more foul and parched the places which they occupied appear, the sooner the first crop is succeeded by another; or the greater the symptoms of debility, or coma, the danger is the more urgent.

When they adhere very long, the parts beneath are sometimes affected with gangrene, which has been known to spread to the palate bones and other neighbouring parts*.

We have hitherto considered the course of aphthæ in the fauces, where it may be seen, but this disease sometimes extends to the more internal parts, and seems to run the same course in them†.

The symptoms which, in infants, teach us that the disease is extending along the alimentary canal, are, an appearance of much anxiety, oppression, and debility, vomiting, hiccup‡, what Armstrong calls watery gripes§, and convulsions. What places the matter beyond a doubt is finding aphthæ, about the time they are observed to separate in the fauces, thrown up from the stomach, or passed by stool. The quantity thrown out in both ways is often astonishing||.

* Aph. Boerhaavii, Aph. 989.

† “*Latius quandoque propagantur aphthæ,*” Lieutaud (*Synopsis Med. Pract.*) observes, “*quæ œsophagum, ventriculum et intestina*” “*haud sine presenti vitæ discrimine nonnunquam invadunt.*” The same observations have been made by all who have been conversant with this disease.

‡ Hiccup attends aphthæ in the œsophagus or stomach. See Van Swieten’s Commentary on the 659 Aph. of Boerhaave.

§ This is one of the most fatal symptoms, as we shall see more particularly in considering the treatment in this disease, which must, if possible, be so regulated as to prevent its appearance.

|| “*Aphthas quando jam maturuerunt et excernuntur,*” says Ketslaer, “*tanta copia aliquos dies per os et per alvum nonnunquam rejici,*

They have also been found in the trachea and bronchia*. They are known to have spread to them by the dyspnœa, and by their being thrown up by coughing. This is always attended with great danger, the aphthæ often accumulating in these passages, and occasioning suffocation.

When the aphthæ of the mouth fall off, a salivation sometimes ensues, in part at least caused by the extreme sensibility which frequently remains after the aphthæ fall, the whole internal fauces appearing as if the cuticle had been abraded.

About the same time also, a diarrhœa frequently supervenes, which may either be produced by the affection of the stomach and the intestines, if the disease has extended to them, or by the acrid matter secreted in the mouth being swallowed. These symptoms coming on towards the termination of the disease, when the patient is much debilitated, sometimes prove fatal after the attendants, and even the physicians, believe the danger to be nearly passed.

When such discharges are moderate, they have been looked upon as salutary. This opinion appears to have been as much an inference from hypothesis as from observation; it being a favourite maxim with the older physicians, that the dregs of the fever, as they were termed, should be carried off by catharsis or venesection. The patient indeed often recovers about the time the salivation and diarrhœa appear. But at this period the aphthæ fall, and the disease generally remits whether they occur or not. A moderate diarrhœa at the time the aphthæ fall, however, is often useful, especially when the disease has spread to the stomach and bowels.

The taste in general is nearly lost, and deglutition is often prevented while the aphthous incrustation remains†. After it is separated, on the contrary, the taste is so acute,

“ ut aliquot pelves vel matulæ congestas eas vix capiant.” Vogel makes a similar observation. This is almost incredible, and denotes the worst form of the disease. Were there nothing to destroy the patient but the debility which so profuse an evacuation must occasion, he could not long support it. The more aphthæ spread downwards the worse is the prognosis.

* Lieutaud's Synopsis Med. Pract. and other works on this disease.

† Aphthæ, Vogel observes, often occasion suffocation merely by the swelling of the fauces which attends them.

and the whole internal fauces so sensible, that the mildest food gives pain, and the patient is now, although from a different cause, often as incapable of swallowing as before.

The aphthæ indeed frequently leave the parts so sensible, that they bleed on the slightest occasion; hence it is that bloody saliva and bloody stools frequently attend this disease. Boerhaave justly observes, that if we recollect that the seat of aphthæ is in the stomach and intestines, as well as in the fauces, we shall not be surprised at the variety of symptoms which attend, or follow them, denoting inflammation, excoriation, or gangrene in the alimentary canal.

The aphthæ infantum are sometimes complicated with other diseases, most frequently with worms.

Idiopathic aphthæ rarely occur in adults. Ketelaer indeed declares that such cases are very common; but it was observed in the Introduction that Boerhaave had seen but two cases of this kind; that neither Van Swieten nor Cullen had seen one, and Arnemann very few. When aphthæ appear as an idiopathic affection in adults, both the symptoms and treatment are the same as in the aphthæ infantum.

Of the Symptoms preceding and accompanying Aphthæ.

Although the diseases in which the miliary eruption occurs are no less various than those occasionally attended by aphthæ, yet it appears from what was said of the former eruption, that in whatever disease it appears, a certain train of symptoms generally attends it. The same is true of aphthæ, although the accompanying symptoms in this instance less uniformly attend.

When aphthæ begin in internal parts (which is sometimes the case in symptomatic as well as idiopathic aphthæ) their appearance in the fauces is necessarily preceded by the various symptoms denoting their presence in other parts of the alimentary canal. In this case the aphthæ appear to ascend from the œsophagus, as above described.

Anxiety, oppression, and debility, however, often precede the appearance of aphthæ, when they are about to make their first attack on the fauces, and like most other erup-

tions, they are now and then preceded by a degree of coma, less frequently by delirium.

But such symptoms frequently occur in fevers where no aphthæ are about to appear, and aphthæ sometimes appear without being preceded by these, or indeed any other symptoms, which can be supposed particularly connected with them.

If, however, the foregoing symptoms occur in fever, while at the same time the fauces appear unusually red or pale, there is reason to expect an eruption of aphthæ.

Of the Febrile States in which Aphthæ most frequently appear.

In some fevers there is a remarkable tendency to dysenteric affections. The symptoms of dysentery are elsewhere to be considered; it is sufficient at present to observe, that in fevers attended by much griping and mucous and bloody stools, the appearance of aphthæ is more frequent than in most others.

The first mention of aphthæ which occurs in the works of Sydenham is in his account of the dysenteric fever of the years 1669, 1670, 1671, and 1672. The aphthæ generally supervened in those cases in which the fever proved obstinate, and chiefly, he observes, where the hot regimen had been pursued, and diarrhœas checked by the unseasonable use of astringents. Arnemann makes the same observations.

Sydenham further observes of this fever, that it was seldom or never attended with sweats, while in fevers which appeared at the same time, unaccompanied by aphthæ, the sweats were often profuse. This remark has been confirmed by many succeeding observations. Ketelaer even goes so far as to maintain, that it is the deficiency of perspiration that renders aphthæ more frequent in cold than in warm climates; and in support of this opinion observes, that he has found aphthæ rendered milder by a copious flow of sweat or urine, and that every thing tending to check these discharges increases the disease.

Aphthæ, notwithstanding, are apt to appear in the mi-

liary fever, where there is generally much sweating*. Such is the similarity between some of the symptoms attending aphthæ, and the miliary eruption, that many believe these eruptions to arise from the same cause†, and that when the one is prevented, the other, the general state of the symptoms remaining the same, is a necessary consequence‡.

We are well assured, however, that the miliary eruption may be prevented without inducing aphthæ. It will appear more clearly from what will be said of the causes of aphthæ, that irritation of the primæ viæ and skin tends, from a well-known sympathy which subsists between the different parts of the alimentary canal, and between every part of it and the skin, to give rise to this affection of the fauces. In this way we may account for aphthæ being so common in dysenteric fevers, and in those where the skin is unusually parched, or covered with so irritating an eruption as the miliary. It is also to be recollected that the miliary, like the apthous eruption, seems often to arise from irritation of the primæ viæ.

Aphthæ are also apt to show themselves where the debility is considerable; and particularly where those symptoms, which have been termed putrescent, make their appearance§.

Upon the whole, the characteristic marks of the fevers in which aphthæ most frequently appear are morbid affections of the skin and bowels, and much debility.

There are many other diseases occasionally attended with this eruption. Among the principal of these are worms and dysentery, further denoting the tendency of aphthæ to accompany affections of the alimentary canal ||; and scurvy,

* Sydenham seldom met with aphthæ in fevers, except in the one just mentioned, remarkable for its dysenteric tendency; and in that which was mentioned when speaking of the synochus miliaris, in which he frequently observed both eruptions. See also M'Bride's Introduction to the Theory and Practice of Medicine.

† "Materiem aphthosam et miliarem eandem esse judicabam." Stoll's Ratio Medendi.

‡ Van Swiet. comment.

§ Arnemann.

|| Boerhaave remarks, that aphthæ are apt to accompany all visceral inflammations.

phthisis pulmonalis, and the last stage of all kinds of dropsy, further denoting their tendency to appear in debilitated states of the system.

Such are the aphthæ properly so called, the symptoms which attend them, and the fevers in which they are most apt to appear. The term aphthæ, however, has been used to express diseases very different from that we have been considering. Most of these are local affections of little consequence.

The indefinite use of the term aphthæ is chiefly met with in the works of the ancients, "Nam quæ a priscis
"medicinæ conditoribus aphthæ describuntur, adeo a
"nostris diversæ sunt, ut toto cœlo distent*." Many doubt whether the true aphthæ were at all known to the ancients, and think that we have borrowed a term from them for the name of a disease, which was unknown in the times and countries in which they practised†. In the works of Hippocrates, Aretæus, and Galen, we not only find, mentioned under this term, affections of the mouth different from aphthæ (small sores, for instance, on the inside of the cheeks and about the lips‡), but also similar eruptions in other parts of the body, particularly in the genitals. A pustulary eruption of these parts, independent of any venereal affection, is not uncommon, and seems frequently the consequence of cold, of which I have known several instances.

The reader will find an account of other eruptions termed aphthæ by the ancients in the works of Fernelius§, and in those of Sennertus in his chapter entitled *De Oris Inflammationibus et Ulceribus*.

* Ketelaer de Aphthis Nostratibus.

† Sennertus asserts, on the authority of Aretæus, that aphthæ were common in Syria and Egypt; but the disease mentioned by Aretæus is not the same with that now termed aphthæ.

‡ Van Swieten describes a thrush of a peculiar kind, which he thinks the same with one of the species of aphthæ mentioned by Aretæus. It was epidemic in Holland in the 18th year of the present century, appearing in small ulcers about the lips, cheeks, and gums, and when neglected on account of the little uneasiness it gave at first, quickly eroding the parts it occupied, and forming putrid sores. This, like the true aphthæ, was most apt to attack children, and when it appeared in adults was generally milder.

§ Fernelii *Universa Medicina*.

2. Of the Causes of the Aphthous Fever.

In the southern parts of Europe aphthæ are hardly known—an additional reason for supposing that the ancients were unacquainted with them; while in Holland and other northern countries there are few diseases more frequent. Van Swieten observes, that while he practised in his native country (Holland), there were few symptoms which more frequently occurred to him in acute diseases, whereas at Vienna he had not met with a single instance of aphthæ in the space of five years.

Aphthæ are most frequent in low marshy situations, and in spring and autumn, particularly in the latter when it is unusually moist, and follows a warm and moist summer. In short, cold and moisture are among the principal causes of this disease. In Zealand, which lies lower than the surface of the sea, which is prevented from overflowing it by raised banks, aphthæ are so frequent, that Ketelaer calls them the endemic distemper of the island.

Although aphthæ appear in people of all ages, infants and old people are most subject to them. In many parts of Holland, it is unusual for a child to escape aphthæ during the first month; but they are generally of so favourable a kind, that medical assistance is not necessary. In old people, in whom they appear during fevers, they are for the most part of a bad kind, and often prove fatal.

Although cold and moisture have a principal share in producing the disease, the operation of other causes seems necessary, since the majority of children in most countries, however cold and damp, escape it.

One of the chief is derangement of the primæ viæ. Aphthæ, we have seen, are frequently preceded by symptoms indicating such derangement, and in the treatment we shall find that the state of the primæ viæ, more than any other cause, influences the course of this disease.

It does not appear that in most cases derangement of these passages by its local irritation first produces aphthæ in the stomach and bowels, which afterwards spread to the fauces; but from the sympathy of parts, it occasions their eruption in the fauces.

The various causes of derangement in the alimentary canal then are to be regarded as occasional causes of aphthæ, and it appears to be in this way that worms and

aphthæ are so frequently combined. Bad milk is a frequent cause of this disease: Lieutaud observes, that a drunken nurse often occasions aphthæ in the infant; and the same may be said of whatever else disturbs the nurse's health, anxiety, violent passions, &c.

Some suppose that bad milk may operate in producing aphthæ, merely by irritating the fauces; and it would be difficult to ascertain that aphthæ proceed from the action of the milk on the stomach and intestines alone, although there are many reasons for believing that this is the case. There can be little doubt, however, that more powerful irritations of the fauces are sometimes the exciting cause of aphthæ*. By the irritation of the primæ viæ, also, we may account for an increased secretion of bile occasioning this disease. Fernellius considers this as one of its most frequent causes. It has not, however, been generally so regarded; an immoderate secretion of bile being rare in those countries where aphthæ prevail.

Such are the chief circumstances which have been determined respecting the causes of the aphthæ infantum; yet in many cases they do not seem to proceed from any of those which have been mentioned; and in a still greater number of instances, those causes are applied, without producing the disease.

Still less is known respecting the causes which give rise to aphthæ in adults. The presence of the different diseases in which they occur may doubtless be looked upon as the predisposing causes, and in considering in what kinds of fevers they most frequently appear, we found certain circumstances, besides affections of the primæ viæ, namely, unusual deficiency of perspiration, the presence of the miliary eruption, and debility, favourable to their appearance.

3. Of the Treatment of the Aphthous Fever.

The treatment of aphthæ may be divided into two parts. In the first, we shall consider the treatment of idiopathic aphthæ; and in the second, that of aphthæ supervening on fever. As for those cases in which aphthæ supervene on dropsy and other diseases, unaccompanied by fever, their treatment is in no respect different from that of idiopathic

* See the Works of Sennertus, Dr. Home's Principia Medicinæ, &c.

aphthæ, except as far as the treatment of the primary disease renders it so.

We are in the first place then to consider the treatment of idiopathic aphthæ.

The first thing to be done is to remove the remote causes, if they still continue applied. It appears from the foregoing observations, that we have often reason to suspect the disease to arise from bad milk. The state of this should, therefore, be examined, and if it be found that no attention to diet renders it mild and sweet, it is necessary to change the nurse.

Wherever we suspect the disease to have arisen from the ingesta, we must begin the treatment by clearing the primæ viæ. Both emetics and cathartics are recommended by those who have been most conversant with the disease.

The exhibition of the latter requires caution. They have sometimes induced a fatal hypercatharsis. Children, indeed, even where no cathartic has been given, are very frequently carried off by diarrhœa.

This must not, however, deter us from employing gentle laxatives at the commencement. It is, in fact, one of the best means of preventing profuse purging; for the irritating matter, when permitted to accumulate in the alimentary canal, is often the means of inducing it. Those were the worst and most dangerous cases, Ketelaer, from very extensive experience observes, in which cathartics were not employed in the beginning.

Thus far then the practice seems well ascertained: a gentle cathartic is proper in all cases at the commencement, particularly where there is reason to suspect irritating matter in the alimentary canal. Nor should the disease appearing in the mildest form induce us to neglect this caution.

If there be symptoms of acidity in the primæ viæ, absorbents are proper. Magnesia forming with the acid generated in the bowels a cathartic salt, answers a double purpose. Dr. Aery, in the second volume of the Medical Museum, says, that he has almost entirely laid aside other remedies in this disease, confining himself to magnesia in small doses; and with this practice for many years he had lost only one in thirty. Dr. Underwood also trusts chiefly to absorbents in mild cases*.

* Dr. Underwood on the Diseases of Children.

Should the purging induced show a tendency to become excessive, which is always attended with danger, a gentle anodyne is proper after the offending matter is evacuated.

It sometimes, though rarely, happens, that symptoms denoting a tendency to visceral inflammations show themselves. It is then better to permit the purging to continue till the symptoms are relieved, and at all events not to check it by opiates. Children are much less subject than adults to such inflammations. The chief danger in the aphthæ infantum arises from debility.

When there is no inflammatory tendency, opiates may be used to procure sleep, proper means being employed to prevent constipation.

But the practice which is proper at the commencement of the disease is by no means suited to the advanced stage of it. If the disease has been properly treated from the beginning, there cannot at this period be any occasion for cathartics. But even in those instances in which proper evacuations have been omitted till the disease is far advanced, and the stomach and bowels are loaded with irritating matter, we are not warranted to recommend them. They have often induced a fatal hypercatharsis. The fæces may be evacuated by clysters, but it seems dangerous to go further.

Arnemann proposes to give cathartics in small doses till the desired effect is produced, in order to guard against hypercatharsis; but most writers are of opinion that neither this nor any other precaution can render their exhibition safe at the height of the disease. Ketelaer, whose opinion must have great weight, makes some excellent observations on the use of cathartics. "*Eædem rationes etiam contra purgationem eam militant, quæ cacochymia propria et accommodata, ab universo corpore et ulterioribus viis, noxios quosque humores trahit. Ea hic funestissima est, et intra paucas horas hypercatharsi finem vitæ plerumque facit.*" But there is another kind of purging, he adds, if so it can be called, which may be employed with propriety, as it only evacuates the fæces, that induced by clysters. These, he continues, are excellently suited to this disease, in which costiveness is frequent; they not only empty the intestines, thus removing a noxious irritation, but they often relieve oppression, and, what is of equal consequence, restore the other excretions, particularly those of the skin and kidneys, and tend to loosen the aphthæ.

The indiscriminate use even of clysters in this disease, however, as indeed Ketelaer in other passages admits, seems often dangerous: they have the same tendency with cathartics, though in a less degree, and should never perhaps be employed at this period, when the body is moderately open; unless the disease be mild, and the inflammatory tendency evident. Hypercatharsis is chiefly to be dreaded when the disease has spread to the stomach and bowels.

Reflecting on what has been said, we readily perceive the effects to be wished for, and those to be dreaded from clysters. By an attention to these, we determine what their composition ought to be. The first thing we have in view is to evacuate the fæces with as little irritation as possible, they must therefore be mild; they should consist chiefly of water gruel, or some other mucilaginous decoction. Some have recommended the addition of a cathartic, but this should only be had recourse to when milder clysters are found ineffectual. We have also in view to relax the excretories. On this account the quantity injected should be considerable. When the aphthæ spread to the great intestines, clysters serve a further use, in lubricating and softening the parts to which they are immediately applied, and thus disposing the aphthæ to fall. In short, they produce effects similar to those of gargles in the fauces, and should, therefore, in these cases be gently detergent as well as mucilaginous. When such clysters are found to produce but little evacuation, which is often the case, they may be frequently repeated.

That I may give at one view what is to be said of the employment of cathartics in the aphthæ infantum, which forms a principal part of the treatment, it may be observed that there is a period which succeeds that I am speaking of, in which their exhibition again becomes proper.

We must, says Arnemann, be careful not to exhibit purgatives while the aphthous crust still adheres to the intestines, and their surface is raw and excoriated; but they are necessary in the beginning of the disease, and in its decline, when the aphthæ begin to fall, and are passed by stool. They are then serviceable by expelling the fallen aphthæ, which, when allowed to remain, soon begin to corrupt, and produce a new train of morbid symptoms.

But even after the aphthæ begin to fall, the danger of hy-

percatharsis is by no means passed, and sometimes scarcely at all lessened. We must not, as soon as a few aphthæ are thrown out by stool or vomiting, order a cathartic; but wait in order to learn whether the separation of the aphthæ be really the solution of the disease, or merely partial and succeeded by a fresh crop, which is known by the symptoms suffering no abatement. In this case nothing more than an emollient clyster is to be recommended.

When, on the other hand, the symptoms abate, and particularly when the aphthæ of the fauces fall, leaving the parts they occupied clean and moist, a cathartic is not only safe but necessary. If irritating matter in the primæ viæ is capable of producing the disease, where it has not previously existed, it may certainly be the means of renewing it.

However flattering the state of the patient, hypercatharsis even at this period may be induced by a rough medicine, the intestines being often left in a very irritable state. Rhubarb has been much celebrated as a cathartic in this disease.

Such are the circumstances to be attended to in the employment of cathartics in idiopathic aphthæ, without an attention to which, the practitioner must often be guilty of fatal errors.

At the commencement emetics are given for the same reason as cathartics, to assist in evacuating the morbid contents of the alimentary canal; but on many accounts are often more beneficial: their operation tends less to weaken, and is particularly easy in young children. Besides, the cause of the disease seems often lodged in the stomach rather than the intestines. A pain in the stomach and vomiting more frequently precede the appearance of aphthæ than a griping or diarrhœa. The stomach is an organ of greater sensibility than the intestines, and its affections produce greater and more sudden effects on distant parts. If aphthæ be ever produced by acrid matter applied to the fauces, it is chiefly from the stomach that it comes. In short, the stomach is that part of the primæ viæ which seems most connected with the state of the disease. "*Emetica infantibus præscripta,*" says Arnemann, "*omnibus medicamentis reliquis palmam præripere videntur, quando morbi fomes in ventriculo adhuc latet, et anxietas, singultus, ructus male olentes vel vomitiones ipsæ adsunt.*"

Nor are they, he adds, to be preferred to cathartics only because they seem better calculated for removing the cause of the disease, but also because they are found to weaken much less. They seem serviceable too, he might have added, by promoting perspiration; and it is probably in this way that they often relieve the disease, where the stomach is not loaded.

If, however, the first emetic does not bring relief, it is not probable that its repetition will be attended with much benefit.

Emetics in the more advanced stages are either unnecessary as in mild cases, or they may do harm where the aphthous incrustations have spread to the œsophagus and stomach, by producing hemorrhagy, excoriation, or inflammation.

Dr. Armstrong and Ketelaer recommend antimonial preparations both as emetics and cathartics in this disease. The propriety of antimonial cathartics may be questioned.

Disputes have arisen respecting the propriety of blood-letting in the aphthæ infantum. Some asserting that all periods are equally proper for the employment of this remedy, should inflammatory symptoms appear; others deeming it so dangerous to let blood after the appearance of aphthæ, that there is scarcely any symptom which will induce them to have recourse to it.

From the nature of the disease the question seems *a priori* easily decided, and the judgment we are thus led to form is sanctioned by experience. Whatever other effect venesection produces, it always impairs the strength. The question then is, are there any symptoms of the aphthæ infantum which we would endeavour to remove at this risk? In perhaps ninety-nine of a hundred cases there are not. The excitement is never such as to threaten danger, and visceral inflammation seldom occurs in this form of the disease. When it does, blood-letting may be employed at any period; but the more cautiously, the later the period. Such being the practice warranted by experience, assertions which pre-conceived opinions have extorted, even from the best writers, deserve little attention*.

* “ Omnem igitur, præsentibus aphthis,” says Ketelaer, “ incisionem venæ huc usque damnamus, atque proscribimus.” But in an-

The diet in aphthæ requires some attention. When fever is present, it must be regulated by an attention to the febrile symptoms. If the excitement be considerable, it must be light and diluent; if too low, as happens in the majority of cases, the diet must be more nourishing; but in all it should be mild and mucilaginous. In most cases it is proper, in the advanced stages, to give cordials* composed of a little wine and aromatics, sweetened.

If the patient be at the breast and can suck, good milk of course must form the principal part of the diet. Where deglutition is wholly prevented, mild nutritious clysters are often serviceable.

It only now remains to make some observations on the local remedies employed in the aphthæ infantum; and these, in the mildest cases, where the aphthæ spread no farther than the fauces, with the exception of gentle aperients, are all that are necessary.

In infants, the applications made to the internal fauces must either be such as may be swallowed, or they must be applied in very small quantity, by means of a hair-pencil, or a bit of rag at the end of a stick. The former are not only useful by their effects in the fauces, but serve a similar purpose in the stomach and intestines, when the aphthous eruption has spread to them. They are generally composed of mild mucilaginous and gently stimulating decoctions. The decoction of turnips, or turnip-radishes, or their expressed juice mixed with water, and sweetened with honey, may be given in the quantity of a dram or two every hour. The common people in Holland use small beer or ale sweetened with sugar. Van Swieten recommends veal broth, boiled with rice and bruised turnips, which has the advantage of being nutritious.

When the rectum is affected, the clysters should consist of such decoctions.

The ingredients left, after the preparation of some of these decoctions, are often applied to the external fauces

other place the same author admits, that plentiful blood-letting is necessary when an internal inflammation supervenes at any period of the disease, and gives a case in which it saved the patient's life.

* For the use of the bark in this disease, see what is said of it in speaking of local remedies. It will then be necessary to mention it, and it will save repetition to throw together the few observations to be made on it.

by way of cataplasm, and tend to relieve the internal parts.

More stimulating remedies seem in many cases to produce better effects. Dr. Armstrong found a solution of sulphate of zinc, in the proportion of about half a scruple, or rather more, to eight ounces, very successful; and about a dram of this solution, he observes, now and then swallowed, is of service, by cleansing the stomach and bowels. He generally applied it, however, by means of a bit of rag, three or four times in the twenty-four hours.

There has been much difference of opinion concerning the use of refrigerant and astringent gargles in aphthous affections. Practitioners having observed, that in certain cases an alarming train of symptoms sometimes attends the sudden retrocession of aphthæ, have disapproved of such gargles. Ketelaer reprobates them in the strongest terms.

This appears to be reasoning not only *a priori*, but reasoning also on very bad grounds. As this mode of reasoning, however, has been very generally adopted in this and similar cases, it may not be improper to take this opportunity of making some observations on it.

In almost all eruptive fevers it now and then happens that the eruption suddenly disappears, a train of symptoms supervening, which, if effectual means for restoring the eruption are not speedily employed, often terminates fatally. It has been inferred, that the train of symptoms which attends the retrocession is its consequence; and that the same effect will follow if we repel, or even retard, the eruption, whatever be the means employed for this purpose.

This mode of reasoning is similar to, and equally fallacious with, that employed respecting the solution of fevers by crises. In this case it was remarked above, that the inference is invalidated by reflecting, that the critical symptoms and the solution of the disease may be the effect of a common cause. So in that before us; although dangerous symptoms are sometimes observed to supervene on the eruption's spontaneously disappearing, it is by no means an inference from this, that the train of unfavourable symptoms is occasioned by the retrocession of the eruption; both may be the effects of a common cause, the disappearance of the eruption being only one of the unfavourable symptoms, and having no share in producing the others. And that

this is generally the case appears highly probable, when we know that the accompanying symptoms often appear before the retrocession; that it is in debilitated states of the system, and after debilitating causes have been applied, that the retrocession generally happens; and that debility often produces the same train of symptoms in cases where there is no eruption.

That such symptoms will not follow the retrocession or retardation of the eruption, except the body be somehow or other peculiarly predisposed to them, appears from numberless facts, which seem at first accidentally to have obtruded themselves on the attention of physicians. Thus we know that retrocession in the small pox or miliary fever has been accompanied by the same symptoms which attend the retrocession of aphthæ. In a thousand cases, however, the most vigorous means for repelling the eruption in these diseases are every day employed, and they are actually impeded and kept back, and yet no bad consequences, but on the contrary, the best effects, ensue.

It is true indeed, that when the eruption is recalled, the unfavourable symptoms generally disappear; but what are the means of recalling the eruption? those which obviate the debility that occasioned its retrocession; and we have reason to believe, that the relief obtained is not in general the consequence, but the cause of its re-appearance.

In considering the propriety then of astringent gargles in aphthæ, let us appeal from the doctrine of retrocession to simple fact.

Have astringent gargles been employed in this disease, and what have been their effects? They were employed in cases of aphthæ as early as the days of Sydenham; for this author used the bark in fevers, while aphthæ were present, and found that the fever yielded and the separation of the aphthæ was promoted by it. Such was the dread of astringent applications while aphthæ were present, that, even in typhus long after the benefit derived from the bark in this fever was ascertained, the appearance of aphthæ was deemed a sufficient reason for avoiding it, till Sydenham and some other practitioners ventured to employ it. I was encouraged to give the bark in debilitated aphthous patients, says Van Swieten, in whom the incrustation often became very thick. It was given in decoction, because the powder is not easily swallowed when the fauces are covered

with aphthæ. I did not give the bark in those cases without some fears that by its astringency it might do harm; of two evils, however, the best that could be done was to choose the least. I therefore continued to give the bark, interposing between the doses emollient decoctions, to correct any hurtful tendency it might have. I had not, he adds, continued this practice long, before I was astonished to find that the aphthæ terminated favourably in those patients who took the bark, sooner than in those who did not, although the latter were not only stronger but had also less fever.

So well convinced physicians now are of the safety of bark in aphthæ, that they not only use it occasionally as a gargle, but give it internally in large doses, even where there is no fever, if the symptoms of debility are alarming*.

The same objections have been urged against the use of acids, tending, it was supposed from their refrigerant power, to repel the eruption, and particularly against the sulphuric acid, on account of its astringency. Some practitioners, however, have been bold enough to employ them, and have established the propriety of doing so†. The muriatic acid, properly diluted, has been found particularly useful.

Such is the treatment of the aphthæ infantum, and from what has been said may be readily collected that of every other form of the disease.

With regard to the treatment of symptomatic aphthæ, it seems to be much more simple than many have imagined. It is not difficult to perceive how hurtful many of the prejudices just mentioned must prove, if permitted to influence our practice in every disease in which this eruption occurs.

When indeed aphthæ prove critical in fevers, which rarely happens, it would be improper to employ any means which might tend to impede the eruption. The use of

* See the observations of Boerhaave, Van Swieten, Ketelaer, Vogel in his *Prælectiones de Cog. et Curand. Morbis*, &c.

† For a variety of applications to the internal fauces, see Vogel and others on Aphthous Fever. For relieving the pain of the excoriated fauces, Burserius recommends a mixture of the yolk of eggs, cream, and syrup of poppies; when the salivation is considerable, a decoction of agrimony with honey; when it is obstinate and profuse, gentle astringents.

astrigent gargles, even in this case, has not, as far as I know, been found injurious. From analogy, however, we should be inclined to avoid them. It is improper, we know, to check other critical discharges, those for instance by sweat or stool.

It only remains to make a few observations on certain symptoms, the treatment of which does not fall under the general plan of cure.

Those which chiefly demand attention are profuse diarrhœa or hypercatharsis, and the symptoms which attend retrocession. It often happens indeed that in neither of these we can be of any service. In the latter we must trust chiefly to tonic medicines, the warm bath, and blistering the fauces. The eruption seems to recede in consequence of debility, and when this is obviated, it often re-appears. Bark and astringent wines are the remedies chiefly to be depended on. Thus the means which have been supposed capable of occasioning retrocession are often not only the best means of preventing it, but also of obviating the danger which attends it. Gently stimulating applications to the internal fauces are sometimes of service in recalling the eruption.

With regard to hypercatharsis, we must endeavour to check it by opiates and astringents. Of the latter, gum kino and the extract of logwood are the best for this purpose. Where there are symptoms of acidity, the *mistura cretacea* should be joined with these medicines; but caution is requisite in checking even hypercatharsis, and the diarrhœa which occurs in the decline of the disease and throws out the fallen aphthæ, we have seen, if not profuse, is salutary.

SECT. IV.

Of the Vesicular Fever.

Concerning the characteristic symptoms of this fever there has been some dispute. It is defined by Dr. Cullen,

“Typhus contagiosa, primo, secundo, tertio, morbi die, in variis partibus vesiculæ avellanæ magnitudine, per plures dies manentes, tandem ichorem tenuem effundentes.”

Dr. Cullen never saw the disease but once, and some of those who have seen it more frequently have proposed considerable alterations in his definition. Dr. Dickson* observes, that he doubts much whether this disease should be considered as contagious. He saw six cases, in none of which it was received by contagion, nor communicated to those who attended the sick.

He also objects to that part of the definition in which it is said that the eruption appears on the first, second, or third day, as he observed it appear on other days. † *Perplures dies manentes*, he also thinks exceptionable, as he never found the vesicles remain for many days.

The fluid of the vesicles, instead of being a thin ichor, as mentioned by Dr. Cullen, was a bland, inodorous, and insipid fluid; and lastly he observes, instead of being poured out, it was generally absorbed. He therefore proposes the following instead of Dr. Cullen's definition.

“ A fever accompanied with the successive eruption from
“ different parts of the body, internal ‡ as well as external,
“ of vesicles about the size of an almond, which become
“ turgid with a faintly yellowish serum, and in three or
“ four days subside.

This definition is certainly preferable to that given by Dr. Cullen, not because the disease never appears in the form described by him, but because it is necessary to have a definition including every form of it.

Dr. Cullen's definition applies perhaps to the generality of cases. On the Continent, where the disease is more frequent than in these kingdoms, it seems generally to assume the appearance described by him. The blisters in particular are generally filled with an acrid serum, which is discharged, not absorbed§.

Mr. Blagden, in a letter to Dr. Simmons, relates cases of pemphigus which fell under his care, and very accurately correspond to Dr. Cullen's definition.

* See his paper on Pemphigus (the name by which this fever is generally known), in the Transactions of the Royal Irish Academy, in 1787.

† Sauvages remarks that the vesicular eruption sometimes appears on the fourth day.

‡ We shall find this eruption is not confined to the skin.

§ See the observations of Burserius and other foreign writers on this disease.

There is another letter on the same subject addressed to Dr. Simmons by Mr. Christie, whose observations agree better with those of Dr. Dickson. He thinks the disease ought to be divided into two species, pemphigus simplex, and pemphigus complicatus.

1. Of the Symptoms of the Vesicular Fever.

Of the Vesicular Eruption.

This eruption appears in the form of small pellucid blisters, similar to those produced by burning. They are of different sizes, sometimes as large as walnuts, more frequently about the size of almonds, and often much less, surrounded by more or less inflammation. They appear on the face*, neck, trunk, arms, and now and then over the whole body†, and sometimes run into each other.

It has just been observed that external parts are not the only seat of this eruption. The mouth and fauces, where it now and then makes its first appearance, are particularly apt to be attacked by it‡.

In some instances the disease spreads along the whole alimentary canal§.

* Burserius observes, that they are particularly apt to appear on the face and nose.

† See a paper by Dr. Stewart, in the Med. Commentaries. When they have appeared on the scalp, the hair generally falls from the places they occupied.

‡ This happened in a case related by Dr. Dickson, in which, on the third day of the fever, the patient complained of a smarting itching, and, as she termed it, tingling of her tongue and inside of her mouth. Her tongue was of a florid red colour, dry and clean. On the day following there appeared upon it a large pellucid vesicle filled with a yellowish serum, a smaller one of the same kind appearing on the inside of the cheek.

§ "No person," Dr. Dickson remarks, "has noticed an extraordinary peculiarity in this disease, that the vesicles have taken possession of the internal parts of the body, and proceeded in succession from the mouth downward through the whole tract of the alimentary canal, some rising while others decayed." He first observed this in the case of a woman treated by Dr. Gregory in the Edinburgh Infirmary. In this instance, the menses had been interrupted for a year and a half, during which period the patient had been twice before sub-

The following symptoms indicate that it is taking this course. Great difficulty of swallowing, the vesicles in the mouth, when there are any there, at the same time beginning to shrivel and crack, the eruption being apt, in spreading to neighbouring parts, to leave those it first attacked. From these symptoms, especially if accompanied with hiccup, we infer that vesicles are coming out in the œsophagus.

When they have spread to the stomach the patient complains of the pain referred to that organ, and nausea; whatever is taken is vomited, and often mixed with blood.

Similar symptoms attend their presence in the intestines, a general sense of soreness is felt in the abdomen, and the stools are often bloody.

After the blisters have remained for an uncertain time, from one to several days, they either break, discharging in some cases a yellowish bland, in others, a sharp ichorous fluid*; or they begin to shrink, and in a short time disappear. And this, perhaps, is the most favourable termination; when they break they sometimes leave troublesome ulcers†. The vesicles which first appear soonest subside.

From perusing the cases of pemphigus, which have been accurately described, we should be inclined to think that the eruption is most apt to attack internal parts when the matter of the vesicles on the surface is absorbed; from one or two instances, however, no general conclusion can be drawn. It is said, that in a pemphigus which raged in Switzerland, in which the eruption often attacked the fauces, these parts were always most affected when the skin was least so; but there is reason to believe that the vesicular fever has sometimes been confounded with the scarlatina.

Pemphigus resembles the small pox, in frequently leaving pits in the skin; and in the parts which the vesicles oc-

jected to the same disease, and each time it followed a vomiting of blood. The other case in which Dr. Dickson met with this eruption spreading along the alimentary canal, he relates very minutely. Here the first appearance of the eruption was in the mouth.

* It sometimes happens in the same case, that the fluid in some of the vesicles is ichorous, in others bland. See the Observations of Dr. Stewart, above alluded to.

† Mr. Blagden observes of one of his patients, in whom the vesicles broke, that the sores were not completely healed in less than two months. For the most part they heal readily.

cupied remaining for a considerable time afterwards of a dark colour*.

The time during which new vesicles continue to come out is as uncertain as their duration. According to Dr. Cullen's definition, no fresh vesicles appear after the third day, but this we have seen by no means applies universally†.

Swellings and abscesses of the parotid, inguinal, and axillary glands, have frequently accompanied this eruption; and as in other cases of continued fever, accompanied by these swellings, the safety of the patient seems often to depend on the matter formed in them being discharged.

The vesicular eruption seldom brings relief. But the prognosis in this variety of fever is in some respects influenced by its seat and appearance. When the vesicles are not numerous, and only appear on external parts, they demand little attention; when they are numerous, when they attack the alimentary canal and are attended with a small hard pulse, the danger is considerable.

When the ulcers left by the vesicles, although external, appear livid, showing a tendency to gangrene, which seldom happens except in well marked typhus, the danger is very great. Even in idiopathic cases of this eruption, where there is no fever, gangrene has been known to supervene. There is then considerable danger‡. In general where there is no fever, it is unattended by danger.

Of the Symptoms preceding and attending the Vesicular Eruption.

In some cases, like the foregoing eruptions, it is preceded by anxiety and depression, but more generally by no peculiar symptoms§.

A degree of coma, it was observed, frequently precedes

* Dr. Winterbottom's Paper, in the third volume of the Medical Facts and Observations, and Mr. Blagden's Letter.

† In chronic cases, as I have myself witnessed, they often continue to come out for a great length of time. See a case related by Mr. Christie.

‡ Burserius relates a case of this kind which terminated fatally.

§ It appears, from what was said of one of Dr. Dickson's patients, that when the eruption is about to appear in the mouth, it is sometimes preceded by a peculiar sensation and change of colour in the parts which it is about to occupy.

the appearance of the miliary and aphthous eruption, and this we shall find is a frequent forerunner of most of the eruptions we shall have occasion to consider. It has not been observed, however, particularly frequent in the vesicular fever.

Nor is this eruption generally accompanied with any peculiar symptoms, besides those already enumerated, which the eruption itself occasions.

Of the Febrile States in which the Vesicular Eruption most frequently appears.

Like other symptomatic eruptions, it is most apt to show itself in those fevers in which the typhus prevails. The symptoms of the cold stage are generally well marked, attended with head-ach, sickness, and oppression; the pulse is frequent, seldom strong or full, and delirium is a common symptom.

It appears from what was said of the definition of the synochus vesicularis, that there is no particular period of the fever at which the eruption shows itself. It now and then appears in other diseases*.

There is reason to believe, that in several epidemics which raged in different parts of the Continent, the vesicular eruption attended cynanche maligna, but the accounts of them are far from being distinct. This eruption has sometimes accompanied irregular forms of small pox. See Sydenham's account of the small pox of 1670, 1671, and 1672.

I have frequently seen the vesicular eruption unaccompanied by fever of any kind†. Burserius speaks of this eruption without fever as a frequent occurrence where he practised.

2. Of the Causes of the Vesicular Fever.

The vesicular fever was unknown to the Greek, Roman, and Arabian writers.

* See an account of the Cynanche Maligna in the Acta Helvetica, by Dr. Langhans.

† See papers by Dr. Winterbottom, and Mr. Gaitskell, in the 4th vol. of the Mem. of the Med. Soc. of London.

Some indeed assert that mention of it is to be found in the writings of Hippocrates and Galen; but this seems to be a mistake. Sauvages considers it as described by Bontius, in his *Medicina Indorum*; but Dr. Dickson asserts, that, except one case related by Carolus Piso, he can find no distinct account of it in any author before the days of Morton, who took notice of this disease towards the end of the last century*, but without describing it particularly.

Sauvages met with it himself in the hospitals of Montpellier, near the beginning of the present century, and gives the following account of it. "*Pemphigus, febris, est acuta exanthematica bullis seu ampullis pellucidis avellanæ magnitudine, per corpus enascentibus, insignita.*" Since his time it has been described by various authors; most of what they say of it, however, consists in the narration of particular cases, if we except some, for the most part indistinct, accounts of it, as it appeared in the form of an epidemic on different parts of the Continent.

As little has been determined concerning the causes of the vesicular eruption as those of perhaps any other disease. There is one instance in which it occurred three times in the same patient, during a long interruption of the menses, and another in which it occurred twice, each time attacking the patient on a visit to a cold climate†. It appears from such cases, as well as one related by Dr. Hall, in Dr. Duncan's *Annals of Medicine*, that the disease is apt to attack the same person more than once, and that it probably, like some other symptomatic eruptions, particularly the erysipelatous and miliary, leaves behind it a predisposition to future attacks.

As with respect to the other eruptive synochi, some disputes have arisen concerning the contagious nature of vesicular fever. Most foreign writers regard it as contagious, and some of the cases mentioned by British practitioners seem to support this opinion.

On the contrary, many under this disease have been admitted into public hospitals without communicating it to their fellow patients; and in most of the cases of pemphigus

* Burserius even doubts whether the disease mentioned by Morton be the pemphigus; of this, however, there can be little doubt. See what is said in the Introduction.

† See the observations of Dr. Winterbottom and Mr. Christie.

that have occurred in Britain, it has appeared in a single person, and spread no farther. In none of those mentioned by Dr. Dickson, Dr. Stewart, Dr. Winterbottom, and Mr. Christie, did it appear contagious, nor was it so in the case which Dr. Cullen saw. Dr. Hall inoculated with the matter of the vesicles without producing the disease*.

It has been proposed to divide pemphigus into two kinds, the one contagious, the other not. The reader will find an attempt of this kind in the 106th paragraph of Burserius's *Institutiones Med. Pract.* The contagious pemphigus, he observes, is always accompanied with much fever, and symptoms of malignity; whereas in that which is not contagious, the fever is either moderate or absent. For several reasons, however, which will readily suggest themselves from what has been said, this division seems to be inadmissible. It is more than probable, that it has in part arisen from confounding the cynanche maligna with the synochus vesicularis.

The truth seems to be, that the vesicular, like other symptomatic eruptions, appears both in fevers which are and are not contagious; and it is probable, that like these also it will sometimes be propagated with the fever and sometimes not; but it does not appear, as in the case of the miliary eruption, what the circumstances are which favour its appearance.

3. Of the Treatment of the Vesicular Fever.

The same prejudices which have for many centuries influenced the treatment of other fevers have extended to that of pemphigus. "In Switzerland," says M'Bride†, "the physicians began the cure with one or two large bleedings, then blistered the head, laid cataplasms on the neck, and endeavoured to raise sweats by sudorific medicines."

As the pemphigus was considered a disease essentially different from common fever, particular modes of practice have been tried, and specifics looked for. "In Bohemia," Dr. M'Bride continues, "the only medicine which did

* See *Observations on the Pemphigus Major of Sauvages*, by Dr. R. Hall, in Dr. Duncan's *Annals of Medicine* for the year 1799.

† See his *Introduction to the Theory and Practice of Medicine*.

“service was the acetum bezoardicum, and this is said to have cured all who took it, while those who trusted to other things died.” It seems more surprising that Dr. M'Bride should credit this assertion, than that Thierry, the practitioner who makes it, should either himself have been deceived, or wished to deceive others.

The result of all that has been written on the treatment of pemphigus, as far as I am capable of judging, seems to be, that it is the same as in simple synochus, with the addition of local remedies for the eruption, which in general seems very little to modify the fever.

With regard to the local remedies, the larger vesicles are generally opened*, and kept clean; when any have appeared in the mouth and formed ulcers there, demulcent and detergent gargles are employed. When the ulcers are obstinate, they come under the care of the surgeon, and therefore are not to be treated of here.

If there is reason to think that the eruption has spread to the alimentary canal, copious draughts of some mucilaginous decoction are proper; and when the irritation is considerable and prevents sleep, if the symptoms of the fever admit of it, opiates should be given.

SECT. V.

Of the Erysipelatous Fever.

The Erysipelas † is defined by Dr. Cullen,

“Synocha duorum vel trium dierum, plerumque cum somnolentia, sæpe cum delirio. In aliqua cutis parte, sæpius in facie, phlogosis erythema ‡.”

* The propriety of opening them is doubtful.

† Erysipelas is the name given to this disease by the Greeks; by the Romans it was termed ignis sacer, or merely ignis, by which appellation it is known in many parts of the Continent; but none of these terms have been used in a very definite sense. Sennertus calls it rosa; authors, however, have not adopted this name. By the vulgar of this country it is called the rose or St. Anthony's fire; foreign writers generally confine the latter appellation to Dr. Cullen's second species of it, which is also termed zona or zoster; and the erysipelas of the face has been called sideratio.

‡ Phlogosis Dr. Cullen defines, “Pyrexia, partis externæ rubor, calor, et tensio dolens.”

It was observed in the Introduction, that although I have arranged the erysipelas as a variety of synochus, because, like the foregoing diseases, it has been arranged among the exanthemata, yet if the view there taken of it be just, and that it is so will I think appear more fully in considering its symptoms, causes, and mode of treatment, it should be regarded as a combination of two diseases of synochus, and Dr. Cullen's second species of phlogosis, the erythema, and consequently should have no place in a system of nosology. We shall here find the eruption forming a much more important part of the disease than in the preceding varieties of synochus, and modifying the general plan of treatment as well as the symptoms of the fever.

1. Symptoms of the Erysipelatous Fever.

Of the Erysipelatous Eruption.

This eruption appears in the form of a red blotch or stain, which spreads with more or less rapidity. The redness sometimes disappears on pressure; sometimes it does not, showing that the inflammation has spread deeper.

It is generally attended with a sense of burning and a pungent pain, but for the most part without tension or pulsation; and the inflamed skin is not raised above that which surrounds it. The parts beneath, however, as well as those in the neighbourhood, are generally affected with some degree of swelling, which often remains after the redness has disappeared or removed to some adjacent part; for this eruption is apt to leave, or become less considerable on, the parts it first occupied, when it spreads to others. But in this respect there is much variety.

After the redness has continued for an uncertain time, blisters of various sizes sometimes rise on the skin, generally containing a thin, sometimes limpid, sometimes yellowish fluid. In some cases the fluid is viscid*, and instead of running out as generally happens, when the blister is broken adheres to and dries upon the skin.

The erythema in his 2d species of phlogosis, which is defined, "Phlogosis colore rubicundo, pressione evanescente; ambitu inæquali serpente; tumore vix evidente, in cuticulæ squamulas, in phlyctænas vel vesiculas, abeunte; dolore urente."

* Tissot's Avis au Peuple.

In unfavourable cases these blisters sometimes degenerate into obstinate ulcers, which now and then become gangrenous. This, however, is rare, for although it is not uncommon for the surface of the skin, in the blistered places, to appear livid or even blackish; yet the tendency to gangrene seldom spreads deep, and generally disappears with the other symptoms.

The red colour changes to yellow as the eruption goes off, and the parts which were not occupied by the blisters often suffer a desquamation. If the colour of the eruption change from a red to a purple or blackish hue, the prognosis is bad.

When it has spread deeper than usual, suppuration sometimes takes place, and it sometimes renews ulcers which have been long healed*.

The duration of the eruption is very uncertain. In mild cases it often gradually disappears, or is carried off by spontaneous sweating, in a day or two. In others it continues without beginning to decline for twelve or fourteen days, or longer.

It has obtained different appellations according to the appearance of the eruption, *erysipelas benignum*, *inalignum*, *gangrenosum*, *tuberculosum*, *scabrum*, *vesiculosum*, *pustulare*, &c.†

The eruption differs considerably according to the different parts it attacks. In the mildest cases it appears on the extremities; often on the feet, and then if the febrile symptoms are moderate, if the eruption does not spread rapidly, and is only attended with a degree of itchiness or burning, or slight pain resembling the stinging of nettles, there is little tension, and it will probably be of short duration.

In other cases, it soon extends along the leg, the skin over the tibia becoming highly inflamed, stretched, and glossy, attended with sharp pains, increased by the slightest touch, often shooting along the course of the muscles, with much swelling of the limb, which sometimes leaves behind it an obstinate œdema. When it attacks the trunk, it is a more severe disease. In the breasts of women, it is often attended with much pain, the breasts swell, become hard,

* See the 6th number of Dessault's Chirurgical Journal.

† Burserius's Institut. Med. Pract.

and sometimes suppurate. The pain is also severe when it attacks the arm-pits. In these and other glandular parts it often leaves the glands in a state of induration*.

Upon the whole, the erysipelalous eruption much less frequently attacks the trunk than the extremities. There are two varieties of it, however, which appear on the trunk, and deserve to be particularly mentioned.

The first may be termed the erysipelas infantum. This attacks children soon after birth, begins about the umbilicus, and often spreads over the whole abdomen†. It is not very uncommon indeed for children to be born with the face or belly, particularly the parts about the umbilicus, uniformly red and swelled. It is more common, however, for the erysipelas to appear a few days after birth, and it sometimes makes its first attacks upon the genitals. The inflamed skin is hard, and very painful to the touch.

This species of erysipelas is most apt to terminate in gangrene. The belly often becomes uniformly tense, and sphacelated spots make their appearance‡. Any appearance of gangrene in it affords a bad prognosis.

Suppuration also, though more rarely, occurs in the erysipelas infantum; and it appears from dissections mentioned by Dr. Underwood, that the inflammation sometimes spreads to the abdominal viscera.

The other variety of erysipelas of the trunk, which deserves particular notice, is Dr. Cullen's second species, the erysipelas phlyctænodes§.

This disease, it was observed in the Introduction, is not very properly ranked as a variety of erysipelas, the appearance of the eruption differing considerably from that above

* Erysipelas in glandular parts, Schroeder observes, especially if cold astringent and spirituous applications have been made to it, sometimes leaves behind it schirrus of the part. See Schroeder de Febre Erysipelatosa, in his Opuscula Medica.

† See an account of this species of erysipelas in two papers, one by Dr. Bromfield, and another by Dr. Garthshore, in the 2d vol. of the Medical Communications, and also in Hoffman's Practice of Medicine, and in Dr. Underwood's Treatise on the Diseases of Children.

‡ Dr. Bromfield relates a case of this species of erysipelas in the extremities, in which the gangrene spread so deep that several joints of the fingers were lost.

§ It is this species of erysipelas which has been termed zona or zoster. In English it is called the shingles. See the 2d vol. of Burserius's Instit. Med. Pract. Schroeder de Feb. Erysip. in his Opusc. Med. and Vogel Prælect. Acad. de Cog. et Cur. Morb.

described. Instead of appearing an uniformly inflamed surface, it consists of a number of little pustules*, which in a short time have vesicles formed on them. It generally surrounds the trunk, and appears like a red belt thrown round the body a little above the umbilicus, from which it has gotten the name of zona. It is not always, however, confined to this part; sometimes it spreads round the neck and shoulders.

This is generally regarded as more dangerous than other forms of erysipelas affecting the trunk and extremities. And Schroeder indeed, though surely without reason, regards it as the most fatal of all the varieties of this disease. It is certainly by no means so in this country†.

When the erysipelatus eruption attacks the face and head, it is most dangerous. It has the same appearance as on other parts of the body.

A red spot appears on some part of the face, generally of no great extent, which spreads till it sometimes covers, not only the whole face, but the scalp also, now and then descending a considerable way down the neck, and occasioning what Tissot calls, "*Esquinancie tres facheuse*."

As in other cases, it often leaves the part it first attacked, when it spreads to neighbouring parts.

The face and frequently the whole head swell‡, and the tumid eyelids sometimes suppurate.

The duration of the eruption on the face, as on other parts of the body, is various. It generally lasts eight or ten days, sometimes longer§. The uncertainty of the duration of symptomatic eruptions is one of the circumstances in which they differ from the exanthematic.

The greater danger of erysipelas of the face arises chiefly from the inflammation being apt to spread to the brain. There is reason, indeed, to believe, from symptoms that will presently be mentioned, that the inflammation sometimes attacks the brain at the same time, or even before it appears on the face.

* When narrowly inspected, however, the erysipelas on other parts of the body sometimes has more or less of the same appearance.

† Dr. J. C. Smith's observations on Inflammation in the Lond. Med. Communications, vol. 2.

‡ See Sydenham de Feb. Erysipel.

§ Dessault, in his Surgical Journal, mentions a case in which it lasted 23 days.

This form of erysipelas sometimes spreads to the fauces and along the alimentary canal, which is also a very alarming accident. Sometimes, though more rarely, it spreads to the nares, trachea, and thence to the lungs, producing all the symptoms peculiar to inflammation of these parts*.

The inflammation sometimes removes suddenly to distant parts; what physicians have termed *Metastasis* takes place. Leaving the skin, it seizes on some of the viscera. The viscus most commonly affected is the brain; but for the most part, as Dr. Cullen remarks, the brain is not affected by metastasis, but merely by a spreading of the inflammation.

In metastasis of this disease, the inflammation also now and then attacks the intestines, liver, uterus, and bladder. In treating of symptomatic fevers, I shall have occasion to make some observations on attempts which have been made to distinguish erysipelalous inflammation of internal parts, from what is called phlegmonous. In the latter, the inflammation extends deeper, and differs otherwise from the erysipelalous, particularly in being more apt to terminate by suppuration.

Sometimes erysipelas is not confined to any particular part of the skin, but spreads equally over the face, trunk, and extremities†. This, which is very rare, most frequently happens in the erysipelas infantum.

In certain countries this disease seems most disposed to attack particular parts of the body; thus Sauvages observes, that in Germany, the erysipelas generally seizes on the groin, thighs, and arm-pits; in England and in France, it more frequently attacks the face.

It appears from what has been said, that the prognosis is particularly influenced by the seat of the inflammation; in the extremities it is safer than in the trunk, in the trunk than in the face, and *cet. par.* the more extensive the inflammation the greater the danger.

Suppuration in general is to be regarded as unfavourable. It frequently, especially in the face, leaves troublesome ulcers, and is seldom of a favourable kind‡. Quarin, however, on the authority of Strack, mentions an epidemic

* The *Opuscula Med.* of Schroeder.

† Vogel, Schroeder.

‡ See an account of the Epidemic Erysipelas, by Tissot and others.

erysipelas, in which those only recovered in whom suppuration took place. We have reason to fear suppuration, when the inflammation spreads deeper than usual; which is known by the redness not disappearing on pressure, the pains being deep seated, and the swelling considerable and hard.

It was observed above, that a degree of gangrene often appears on the blistered parts; and that if the habit of body be good, and particularly if the eruption still retains the florid appearance in other parts, it is generally superficial; but if the patient be debilitated, especially if he be advanced in life*, and the eruption in general assume a purple or livid hue, the mortification often spreads deep, and the danger is very great†.

Of the Symptoms which precede or attend the Erysipelatous Eruption.

The erysipelatous eruption is often preceded by the same symptoms which precede the other eruptions we have been considering; and like these also, it sometimes appears without being preceded by any peculiar symptoms.

The oppression and anxiety are often considerable, and frequently attended with other symptoms denoting derangement of the primæ viæ; a bitter taste in the mouth, foul tongue, pain of the stomach, eructations, dyspnœa, head-ach, confusion of thought, vertigo, nausea, and even vomiting and purging, frequently of bile. Most of the foregoing eruptions we have found connected with the state of the primæ viæ; this connection is not more remarkable in any than the erysipelatous‡.

It is very frequently preceded by a degree of coma, especially when it is about to appear on the face, and sometimes, though but seldom, with delirium. It is from the state of the brain in erysipelas of the face that we chiefly collect the prognosis. When neither delirium nor coma precede the eruption, nor supervene after its appearance, there is, for the most part, little danger. But when it is preceded by a considerable degree of either, and still

* See the observations of Platerus, on what he terms *Macula Lata*.

† Vogel de Cog. et Cur. Morb.

‡ See the observations of Schroeder, Tissot, Burserius, Dr. Smith and others on this disease.

more when they rather increase than abate after its appearance, there is reason to believe that the inflammation has spread to the brain, and the danger is great.

When they are considerable from the beginning of the disease, it indicates that the inflammation first seized on the internal parts, and then, in a nosological point of view, the disease must be regarded in the same light as when the external inflammation is the first symptom; that is, it must be regarded simply as a case of phlegmasia; and we shall find that the treatment which experience has established is the same as in other phlegmasiæ.

The affection of the brain, in general, is not relieved by the appearance of the inflammation externally, the coma often increasing as the inflammation extends; so that as this inflammation, when it makes its first attack on the face, sometimes spreads to the brain without leaving the face; when it makes its first attack on the brain, it is apt in like manner to spread to the face without leaving the part it first occupied, which always affords an unfavourable prognosis.

From what was said of the tendency of erysipelas to attack other internal parts, it will readily be perceived, that the symptoms which occasionally attend this eruption must be very various.

Of the Febrile States in which the Erysipelatous Eruption is most apt to appear.

The erysipelatous eruption differs from the eruptions we have been considering, and agrees with inflammations, in appearing more frequently in synocha than in typhus. On this account it generally appears early in fevers; so that, although we find authors differing about the time of its appearance, it seems to be generally admitted that it does not often appear later than the fourth or fifth day; but within this period, the time of its appearance is as uncertain as that of any other eruption which has been mentioned.

Like the appearance of other inflammations, it generally increases the febrile symptoms*, the pulse becomes harder,

* In some rare cases, however, the erysipelatous eruption has proved critical. The reader will find cases mentioned by Van Swieten and

the nostrils, fauces, and skin more parched, and the breathing more laborious; and when the fever has begun to assume the form of typhus before the eruption shows itself, if the patient's strength is not much reduced, it resumes that of synocha, the strength and the fulness of the pulse increasing. Other inflammations supervening on the typhus mitior, often have the same effect. All the preceding eruptions, on the contrary, tend to increase the symptoms of debility.

The more the febrile symptoms increase on the appearance of the eruption, the more unfavourable is the prognosis.

Such is the general cause of erysipelas, and the circumstances which influence the prognosis. But Van Swieten justly observes, that we must always be prepared for sudden changes in this disease; and that cases apparently unaccompanied by danger have often, all at once, undergone such a change, that death was hourly expected, the inflammation having attacked the membranes of the brain. These observations I have seen strikingly confirmed.

It has been observed above, that the erysipelatous eruption often makes the fever resume the character of synocha after the typhus had commenced; this, however, is only where the symptoms of typhus are not strongly marked. When this eruption appears in the typhus gravior, instead of changing the nature of the fever, the eruption, as I have frequently witnessed, partakes of its nature, showing a strong tendency to gangrene, and increasing the debility. The disease is then, what has been termed by foreign authors, *febris erysipelatosæ malignæ* or *pestilens*; in its exquisite form it is seldom met with in this country. In different parts of the Continent it has sometimes been epidemic, as at Thoulouse, in the year 1716, where it appeared in so dreadful a form, that it was compared to the plague, and proved little less fatal. This epidemic is analogous to those mentioned by De Haen*, Bartholine†, Professor Silvius de la Boc‡, and others, in which an inflammation of the stomach and duodenum accompanied the fever.

others, in which the fever ceased on the appearance of this eruption. In these cases, of course, the inflammation is too slight to occasion fever.

* Ratio Medendi.

† Hist. Anaton. Rar. hist. 56.

‡ Prax. Med. Append. tract. x.

The erysipelatous eruption is apt to appear in other diseases. Among the chief of these may be enumerated dropsy, jaundice, wounds, particularly those of the cranium*, injuring the membranes of the brain, fractures, or considerable abscesses in any part of the body. Erysipelas from wounds often affords a bad prognosis. Erysipelas also frequently attends schirrus, and cancerous, or other considerable ulcers. It also frequently accompanies diseases, occasioning derangement of the primæ viæ, particularly worms, and is often one of the effects of poisons.

Various divisions of this disease have been adopted by Celsus, Fernelius, Hoffman and others, to which I have already had occasion to allude, founded on the appearances of the eruption; according as the inflammation is more or less superficial, as vesicles do or do not form, or leave ulcers behind them; and the ulcers being superficial or deep, well conditioned or otherwise, have also afforded other useless divisions†.

2. Causes of the Erysipelatous Fever.

In the causes, as in the symptoms of erysipelas, we still find it partaking of the nature of the phlegmasiæ; with these it agrees, and differs from symptomatic eruptions, in having been known from the earliest times. The young, and those in the vigour of life, are most disposed to this disease, especially those of a sanguine and choleric temperament, and of a phlethoric habit; and it is most apt to attack those who have formerly laboured under it.

One of the most frequent of the exciting causes, particularly in those who have formerly laboured under it, is cold, especially if alternated with heat, as in variable weather. It is sometimes the consequence of excessive heat, too full a diet, particularly the abuse of fermented liquors, the suppression of any habitual discharge, as the drying up of an issue, suddenly checking hemorrhoids, ab-

* Gun-hot wounds are particularly apt to produce erysipelas, and all wounds, Dr. Smith observes, which are attended with much laceration.

† See the 3d chap. of the 4th book of the Pathology of Fernelius, and Schroeder's Opusc. Med. See also a division of erysipelas equally objectionable, in Burserius's Institut. Med. Pract.

staining from habitual blood-letting, or any other cause of plethora*. It is sometimes occasioned and frequently re-produced by local irritation, whether chymical or mechanical.

In some of its other causes the erysipelas bears a stronger analogy to symptomatic eruptions. It has been observed of all these, that they seem frequently to arise from derangement of the primæ viæ†. We shall find, however, that the phlegmasiæ, even when affecting distant parts, more frequently arise from this cause than has usually been supposed‡.

The redundancy of bile in the stomach and intestines so frequently accompanying erysipelas, gave rise to the hypothesis of its being occasioned by a bilious state of the fluids—a doctrine§ long maintained, and adopted by so late an author as Quarin. But irritation of the primæ viæ from

* Schroeder mentions several instances of erysipelas recurring at the time the menstrual discharge should have appeared. This is not very unusual.

† Purging, says Tissot, is in general necessary in erysipelas, to evacuate the corrupting bile from the primæ viæ, which is the most frequent cause of this disease. Such is the connexion of this disease with the primæ viæ, Schroeder observes, that we often wholly remove it by removing the irritating matter, which is generally bilious, from the stomach and intestines. Schroeder has been at the pains to collect a number of authorities with a view to prove that this disease frequently arises from the presence of irritating matter in the alimentary canal; the fact, indeed, is generally admitted. We are referred to the works of Hippocrates, Galen, Ballonius, Hoffman, Lieutaud, Tissot, Baglivius, Bianchus, Friend, Richa, Mead, Brocklesby, Zimmerman, Molinari, and others of less note, to which Quarin, Vogel, Burserius, Dessault, and other late writers may be added. Dessault, in his *Surgical Journal*, relates several striking cases of erysipelas arising from, or supported by, derangement of the primæ viæ.

‡ It will appear from a variety of observations, that inflammations of the viscera, of the thorax in particular, are apt to arise from various affections of the abdominal viscera. See an Account of the Pleuritis Verminosa, in the 43d, 44th, and 45th Sections of the 21st Epistle of Morgagni. See also an Account of Dissections by Wendt in his *Treatise de Pleuritide* in Sandifort's *Thesaurus*, an Account of the Pleuritis Biliosa in Bianchus's *Historia Hepatica*, and in the fifth volume of the *Edinburgh Medical Essays*, and several papers in the second volume of Haller's *Disputationes ad Morb. Hist. et Cur.* pertinent. on the *Pneumonia Putrida* which seems often influenced, if not caused by affections of the primæ viæ.

§ See this doctrine considered at length in Bureau's *Treatise on Erysipelas*.

other causes also produces erysipelas, and other eruptions, we have seen, not suspected to depend on a bilious state of the fluids, arise from this cause.

It is perhaps by affecting the state of the *primæ viæ*, that the passions of the mind, particularly rage, terror, and vexation, frequently excite erysipelas, and that pregnancy disposes to it.

Erysipelas seems also now and then to arise from affections of the other abdominal viscera, particularly those of the liver. The erysipelas infantum in particular has been observed to arise from this cause.

It is not contagious, but like symptomatic eruptions, as well as certain phlegmasiæ, often attends the prevailing epidemic. It has already been observed, that such epidemics seldom occur in Britain. Dr. Bromfield, in his *Surgical Cases and Observations*, mentions an erysipelas of the head, which was epidemic for two years, in which it was necessary to employ cordials and Peruvian bark, evacuations generally proving fatal. Instances of epidemic erysipelas are to be found in the works of Sydenham, Bursarius, Tissot, and others.

It is remarkable that erysipelas sometimes returns periodically, making its attack once or twice in the year, or oftener: when this happens to old people, and those of a bad habit, it gradually exhausts the strength*. It has been remarked as of the gout, that those who are subject to erysipelas are often exempt from other diseases.

3. Of the Treatment of the Erysipelatous Fever.

From what has been said of the symptoms and causes of erysipelas it appears, that in those cases where the affection of the skin has been present from the beginning, or where the disease has been attended from the first with coma or delirium, it is to be regarded as a phlegmasia; and universal experience has ascertained, that the treatment in these cases is the same as in the other phlegmasiæ.

We are at present to inquire how far the appearance of

* Hoffman relates several cases of this kind. In one of these, the return of erysipelas was prevented by an issue and low diet, two of the most powerful means, we shall find, of preventing the recurrence of the phlegmasiæ. Vogel and Schroeder mention cases of the same kind.

the erysipelatous eruption, in the progress of synochus, influences the treatment of this fever.

The appearance of the erysipelatous eruption in the first stage of synochus, that is, while the inflammatory symptoms prevail, occasions but little change in the mode of treatment, except that as the inflammatory affection of the skin increases the symptoms, the means of reducing the excitement must be employed with greater assiduity.

They are also safer than in other species of synochus. It has been observed, that if the typhus has commenced before the appearance of this eruption, the symptoms of synocha are often recalled by it. They are not only recalled, but maintained, for the typhus which supervenes towards the end of an erysipelatous fever is less considerable, in proportion to the preceding symptoms, than in other varieties of synochus; the erysipelatous fever in this respect also approaching to the nature of the phlegmasiæ. Sydenham did not scruple to employ blood-letting in erysipelas, almost as freely as in any of these diseases.

How the evacuations are to be regulated by the state of the local affection will appear more fully in treating of the phlegmasiæ. All that need be said at present is, that the more severe the local affection, that is, the greater the swelling, heat, pain, and the further the inflammation extends, especially if its seat be the head or trunk, and the greater the coma or delirium, the more powerful must the antiphlogistic measures be, provided the pulse continues full and strong. It is always hard when the local affection is considerable.

We must not, however, employ evacuations as freely in the case before us as when erysipelas appears as a simple phlegmasia, particularly if the fever has arisen from contagion, or shown a tendency to typhus. Besides the erysipelatous, like other eruptions which appear in continued fever, has been known suddenly to recede, an alarming train of symptoms, of which debility is the characteristic feature, supervening. This is a rare occurrence; as in similar cases, however, it is most apt to happen where debilitating causes have been applied. It is also to be remembered, that when retrocession takes place, the patient is seldom out of danger till the eruption is recalled, which is done with the greater difficulty the more he is debilitated.

The advantages of blood-letting over other evacuations for moderating excitement have been pointed out; but erysipelas being often increased, if not caused by derangement of the primæ viæ, evacuations by the bowels sometimes have a greater effect in allaying this inflammation than blood-letting. We shall find, in considering the phlegmasiæ, that in all inflammatory affections of the head, purging is particularly useful; in erysipelas of the head, therefore, it is doubly indicated.

Schroeder justly observes, that catharsis should always precede blood-letting in the erysipelas. It is, however, to be kept in view, that if the local affection proceeds from the state of the primæ viæ, the beneficial effects of purging will very quickly be observed, so that if it does not soon produce a favourable change, we should not persevere in employing it to a greater extent than would have been proper had no erysipelas supervened. Frequent purging, says Quarin, especially where the habit is debilitated and the pulse frequent and small, renders the erysipelas more alarming; but even where the pulse is strong and hard, if the first exhibition of cathartics is not attended with beneficial effects, it is better, for the reasons given in speaking of the *modus operandi* of blood-letting, to reduce the excitement by this remedy than by repeated purging. And with regard to the opinion, that venesection is apt to occasion a retrocession of the eruption, or a *metastasis* to internal parts, the observations made above on similar objections to it in other eruptive synochi are applicable here*.

If the erysipelatous eruption appears at an early period of the fever, vomiting should precede catharsis, except in erysipelas of the head, in all cases of which an emetic is at least a doubtful remedy.

While we endeavour to evacuate the morbid contents of the alimentary canal, we should at the same time endeavour to correct what may still remain, by the use of acids or antacids, according as bile or acid prevails.

The *semicupium* and *sinapisms* applied to the feet have

* When the eruption recedes, blisters and cordials, with diaphoretics, have been found the best means of restoring it. See the observations of a variety of authors, particularly those of Hoffman, M'Bride and Schroeder.

been particularly recommended in erysipelas of the head attended with coma; but these, and other parts of the treatment, belong to the phlegmasiæ.

It has been observed, that the erysipelatous eruption sometimes shows itself after the typhus is formed, or even far advanced. The combination is then, we have seen, of a very different nature.

As the appearance of the erysipelatous eruption in synocha renders the antiphlogistic mode of treatment more necessary; so, on the other hand, its appearance in the typhus gravior renders the invigorating plan more so. If it can no longer restore the inflammatory stage of the fever, its character, we have seen, partakes of the prevalent debility. Bark, wine, and the mineral acids, are still the remedies on which we chiefly depend*.

We must be cautious, however, not to give either bark or wine while any degree of the synocha still prevails, by which gangrene may be induced, instead of prevented†. The typhus must be completely formed, and the florid appearance of the inflammation beginning to change, before the bark can be freely exhibited.

* See an Account of the Malignant Erysipelas in the works of foreign writers, Burserius, Quarin, &c.

† See the observations of Dr. Smith, Lond. Med. Com. vol. 2.

BOOK III.

OF THE EXANTHEMATA.

THE class of idiopathic fevers was divided into three orders*, intermitting and remitting fevers, continued fevers, and the exanthemata. The last of these we are now to consider.

It appears from what was said in the Introduction, that the fever in this order of diseases is as truly idiopathic as in either of the foregoing; and in laying down the practice we shall find it treated as such.

Among the orders of idiopathic fevers we readily perceive a striking analogy. Between remitting and continued fevers it is impossible to draw the line of distinction, and the exanthemata, we shall find, bear a strong resemblance to the eruptive fevers we have been considering. The whole forms evidently a natural class of diseases, the arrangement, which has been adopted, pointing out the manner in which its different orders run into each other.

The exanthemata were defined in the Introduction, contagious diseases beginning with an idiopathic fever, at a certain period of which, pustules, often in considerable number, appear on the skin.

This order comprehends six species: Small-pox, Chicken-pox, Measles, Scarlet Fever, Plague, and Nettle-rash.

* See the Introduction.

CHAPTER I.

Of the SMALL-POX.*

THE Small-Pox, or, as it is termed by medical writers, Variola or Febris variolides, is defined by Dr. Cullen,

“Synocha contagiosa, cum vomitu et ex epigastrio presso, dolore. Tertio die incipit, et quinto finitur, eruptio papularum, phlegmonodearum; quæ spatio octo dierum, in suppurationem, et in crustas demum abeunt, sæpe cicatrices depressas sive foveolas in cute relinquentes.”

Such are the distinguishing marks of the disease as it most commonly appears, but we constantly meet with cases to which this definition will not apply. We shall find that the eruption does not uniformly appear on the third day, nor does it always cease on the fifth; and in many cases the matter of the pustules remains so crude, that they can hardly be said to have undergone suppuration. Even the pain of the stomach increased on pressure and vomiting do not constantly attend the eruptive fever. Nay, in certain cases, there has been no eruptive fever at all, the pustules appearing without any previous disease. But the definition just quoted, marking the common cause of the disease, is perhaps the best that can be given.

The small-pox has been long divided into distinct and confluent. The former is defined by Dr. Cullen,

“Variola, pustulis paucis, discretis, circumscriptione circularibus, turgidis, febre, eruptione facta, protinus cessante.”

The distinct small-pox occasionally varies from that described in the foregoing definitions, in the following circumstances.

Sometimes the matter of the pustules, instead of being pu-

* I have in the Preface given my reasons for detailing the symptoms of small-pox at considerable length, notwithstanding there is reason to hope that this disease will be every year becoming less frequent, and at no very great distance of time perhaps will cease to exist.

rulent, is a colourless fluid. This variety is termed *Variola Discreta Crystallina*.

It sometimes happens that small vesicles appear in the interstices of the pustules. This variety has been termed *Variola Discreta Vesicularis*.

Sometimes these vesicles are empty, or the matter of the pustules themselves disappears, leaving them empty; the disease is then termed *Variola Discreta Siliquosa*.

The pustules sometimes remain solid throughout; the solid pustules either appearing alone, or being interspersed with others of a more common appearance. This is a rare form of the disease. It has been termed the Warty Small-pox, or *Variola Verrucosa**.

When the pustules are of the common appearance, but very numerous, yet upon the whole distinct and unattended by any of the symptoms just mentioned, the disease has been called *Variola Adjuncta*; and this may be regarded as the connecting link between the distinct and confluent small-pox.

All these varieties are attended with more danger than the simple distinct kind, where the pustules are few in number, and suppurate favourably. The empty vesicles indeed sometimes appear in very mild cases.

Many more varieties of distinct small-pox are enumerated by authors. Sauvages†, for instance, enumerates twelve species, but most of them are marked by symptoms which cannot be regarded as characterizing different species of the disease.

Dr. Cullen defines the confluent small-pox,

“*Variola, pustulis numerosis, confluentibus, circumscriptione irregularibus, flaccidis, parum elevatis, febre post eruptionem perstante.*”

Although, as expressed in this definition, the number of pustules in the confluent is generally much greater than in the distinct small-pox, yet it sometimes happens that, though numerous, the pustules remain distinct; and, on the other hand, but more rarely, that, though few, they appear in clusters and run together.

* Cleghorn's Diseases of Minorca, Burserius's Institut. Med. Pract. Mead De Variolis, Friend's Epistola de quibusdam Variolarum Generibus, &c.

† The Nosologia Methodica of Sauvages.

The nature of the disease is best known, and consequently its name should be determined, from observing the state of the face, the danger being better estimated by the number and appearance of the pustules there than on any other part of the body. If they be distinct and few in number on the face, even although in some degree confluent elsewhere, the disease is termed the distinct small-pox, and the danger is inconsiderable. If, on the other hand, there be a load of pustules on the face, if they run into each other so that it appears uniformly of a whitish colour, as if, to use Sydenham's expression, it were covered with parchment, whatever appearance the eruption may have on other parts of the body, the disease is termed confluent, and the danger is considerable.

Dr. Sims, in his Account of Epidemical Diseases, even observes, that the danger was not to be estimated so much from the number of small-pox on the whole face as from that on the upper part of the forehead, about the junction of the hairy scalp with the smooth skin. If any were distinct there, and filled properly, little was to be apprehended.

It is evident, from what has been said, that we can draw no line of distinction between the distinct and confluent small-pox. In the worst kinds of the confluent, there are generally some distinct pustules. In cases which deserve the name of distinct, we often observe two or more pustules running together.

The more numerous and confluent the pustules are, the more the appearance of the pustule itself departs from that of the most benign small-pox.

The confluent small-pox varies in the same manner as the distinct; hence the names *variola confluens crystallina*, *vesicularis*, *siliquosa*, *verrucosa*, &c. all which varieties are attended with great danger. Most of the symptoms expressed by these terms are more apt to attend the confluent than the distinct form of the disease.

In the confluent, the pustules sometimes appear almost black from a degree of mortification taking place, and blood being mixed with the matter they contain; hence one variety is termed *Variola Confluens Nigra*.

When blood is effused into the cavities of the pustules without giving them a black appearance, the disease has been termed *Variola Sanguinea*.

When the pustules are here and there collected together in clusters, with few in the intermediate spaces, it has been termed *Variola Confluens Corymbosa*.

When petechiæ appear between the pustules, it is called *Variola Confluens Petechialis*, or *Maligna*.

After laying before the reader the symptoms of the regular small-pox, it will be necessary to take notice of some of its principal varieties, which may properly be termed anomalous.

SECT. I.

Of the Symptoms of the Small-Pox.

The symptoms of this disease are so various, that, to avoid confusion, it will be proper to consider those of the distinct and confluent small-pox separately.

The former has been divided into the simple distinct, and contiguous distinct; the latter into the simple confluent, and putrid confluent; a division of no use. The contiguous are only the worst form of the distinct; and the putrid the worst form of the confluent.

1. Of the Symptoms of the Distinct Small-pox.

Small-pox attacks in a manner similar to the fevers we have been considering.

The patient sometimes, though rarely, complains of sickness for several days before the fever is distinctly formed. The latter generally comes on about mid-day, with the symptoms of a cold stage, frequently attended with a considerable degree of drowsiness.

If the patient is old enough to give an account of his feelings, he complains of languor and listlessness, with the other uneasy sensations that attend the commencement of simple fever, which are soon followed by considerable heat, thirst, and the other symptoms that characterize those fevers in which the synocha prevails.

The skin and fauces are parched, the bowels costive, the urine at first pale, afterwards more scanty and high-coloured, and hemorrhagies are frequent, particularly from the nose. When the small-pox is of the distinct kind,

the fever which precedes the eruption, and on that account is termed the eruptive fever, is always a synocha, and the more moderate the symptoms of excitement, the more favourable is the prognosis.

Such are the symptoms which this fever has in common with many others, but certain symptoms generally attend, by which it may be known before the eruption makes its appearance.

Severe pains of the back, limbs, and loins, coma*, in adults an unusual tendency to sweat†, and a coldness of the extremities in children, have been ranked among its diagnostic symptoms‡. But the most unequivocal are those mentioned by Dr. Cullen in the foregoing definition, the vomiting and pain of the stomach increased on pressure. Even these, however, do not always attend§. The vomiting is frequently bilious||.

A little before the appearance of the eruption, some change in the state of the symptoms generally takes place.

An epileptic fit at this period, if the child has teethed, may always be regarded as the forerunner of the pustules. If it only occurs once or twice, it is hardly to be regarded as unfavourable¶. Instead of the fit, children sometimes have a grinding of the teeth, and convulsive twitchings about the mouth and other parts of the face. The fever at this period frequently suffers an exacerbation, the lips are edged with inflammation, the face flushes, the eyes glare, and cannot endure the light; there is a considerable increase of temperature, the skin and fauces become parched, and coma, when it has not showed itself at an earlier period, frequently supervenes. Cramps in the legs, and a severe pain

* Bang observes, that coma is most apt to supervene in this disease, in the vigour of life. *Acta Societ. Med. Hafn.*

† Sydenham says, he never observed this symptom in children either before or after the appearance of the pustules.

‡ Dr. Walker's *Treatise on the Small-pox*.

§ See the observations of Van Swieten (in his *Commentaries*) and others, on the diagnosis of this fever.

|| It is difficult to say on what foundation Dr. Thomson has asserted that the vomiting is most frequently bilious in women and children. See Dr. Thomson's *Treatise on the Small-pox*.

¶ Epileptic fits have sometimes, though rarely, occurred at a late period of the distinct small-pox. The son of Lord Sunderland, inoculated by Mr. Maitland soon after the introduction of inoculation into England, died of an epileptic fit after the greater part of the pustules were dried off. See Woodville's *History of Inoculation*.

in the back, also sometimes precede the eruption. Few of these symptoms, however, are observable in mild cases; the coma and cramps of the legs generally forebode a copious eruption.

In the distinct small-pox the eruption generally appears towards the end of the third day, or the beginning of the fourth, counting from the commencement of the febrile symptoms. If we class together all kinds of small-pox, we shall perhaps find the third day the mean time of its appearance*. The later the eruption the more favourable is the prognosis.

The pustules, on their coming out, are small red points, appearing first on the face and hairy scalp, then on the neck, and at length over the whole body. The patient is often affected with sneezing as soon as the pustules make their appearance, which continues to recur while they are coming out. The ceasing of this symptom has been regarded as a sign of the eruption being completed.

About the fifth or sixth day, counting from the commencement of the fever, that is, the second or third of the eruption, a little vesicle, which appears depressed in the middle, is seen on the top of each pustule, containing a matter nearly colourless. For two or three days the vesicles increase in breadth, the matter gradually assuming the purulent appearance. About the eighth day of the disease they become spherical, and the pustules are completely formed; being then very itchy, hard, and prominent, and almost terminated by a point.

When the pustules are more numerous, although benign, they neither rise so high nor are so much pointed as when fewer in number.

In the most benign small-pox, from their first appearance they are surrounded with a perfectly circular inflamed margin. When the pustules are more numerous, though still of a favourable kind, the margin is less exactly circular.

* Nothing can be more vague than the manner of ascertaining the period of the eruption. The eruption is said to happen on the second, third, fourth, &c. day, whether it occurs in the morning or evening of these days, and whether the accession of the fever has been in the morning or evening. Great accuracy in this respect, however, would not be of much consequence. It has been proposed to make every day consist of 24 hours in computing the appearance of the eruption. See Dr. Thomson's Treatise on Small-pox.

These margins coalescing in places where the pustules are crowded, give a red colour to the skin lying between them, which is always a favourable appearance.

In the mildest cases, no pustules appear after the end of the first or at farthest second day of the eruption. In cases where they are about to be numerous, they often continue to make their appearance for a day or two longer.

About the eighth day, when the pustules are pretty numerous, the face swells, and is often affected with lancinating pains. The swelling sometimes extends to the whole head, the eyelids seem as if distended with a fluid, and are often so much enlarged as entirely to close the eyes.

When the eyes are much affected from the beginning, the sight is sometimes lost, generally in consequence of one or more pustules forming on the cornea. Pustules are more apt to appear on the sclerotica, where they are less to be dreaded.

When the tumefaction of the face begins to subside, which happens about the tenth or eleventh day, the hands and feet swell, which in the space of some days subside in like manner.

The swelling is inconsiderable in mild cases: at the same time it is not to be overlooked, that when the other symptoms are severe, if it is not in excess, it is to be regarded as favourable.

As the disease advances, the matter of the pustules becomes by degrees more opaque, thick, white, and at length yellow.

When the pustules are very numerous, it is thinner, and not so yellow.

About the eleventh or twelfth day from the commencement of the fever the pustules have gained their full size, which differs a little in different epidemics, but is generally about that of a pea. A dark spot appears on each. From being soft and smooth, they become rough, and throw out a yellow matter. They now begin to shrink, and the matter drying forms a small crust. Sometimes only part is thrown out, which, together with what remains, hardens; and, in a few days, falls off, leaving the skin in the places which it covered of a dark-brown colour, that often continues for a long time after the patient is well. While this takes

place, the swelling of the face and other parts gradually subsides.

But the foregoing process does not go on at the same time on every part of the body. The pustules in those places on which they first appear first arrive at maturation. They generally remain longest on the hands. The sooner the pustules become dry and fall off, the better in general is the prognosis.

It often happens in cases where the pustules have been more numerous on the face, continued for a longer time, and been filled with a matter less thick and benign than usual, that after they fall off, the parts which they cover suffer desquamation, so that small pits are formed, for the pustules do not on falling off leave pits; they are formed by a subsequent process.

It sometimes happens that the matter of the pustules, particularly on the arms and hands, is either absorbed, or, as Dr. Walker alleges, transudes through the cuticle, so that they appear empty vesicles, giving rise to the variety termed *siliquosa*. Dr. Lobb* observes, that he has seen these empty vesicles fill with a well-conditioned matter, which is a favourable symptom. It is not uncommon indeed, when the strength is considerably reduced, for the pustules on every part of the body to appear rather flat; the tumour of their base subsides, and the matter seems in part either to have transuded or been absorbed†, and on the exhibition of any remedy which renews the strength, walking for instance in a cool air, or in certain circumstances using the cold bath, the pustules again swell and become turgid with matter.

On the coming out of the pustules, the fever suffers a remission, and in the mildest cases disappears entirely about the fifth day, at which time the eruption is completed‡. About the sixth or seventh day, when the pustules are numerous, some uneasiness of the throat comes on, with an increased secretion of saliva, the voice at the

* See his Practice of Physic.

† Dr. Walker's Treatise on the Small-pox.

‡ When the tendency to sweating has occurred, it has been observed, notwithstanding the abatement of the fever, to continue nearly to the time of maturation.

same time often becoming hoarse. A considerable degree of any of these symptoms tends to afford an unfavourable prognosis.

As the disease proceeds, the secretion from the mouth and throat often becomes thick, and is not easily spit out, sometimes occasioning such difficulty of swallowing, that liquids taken into the mouth are spit out again, or rejected by the nose. The swelling or parched state of the fauces sometimes considerably affects the breathing, and the pustulary affection of the meatus auditorius externus now and then occasions deafness. These symptoms, however, in the distinct small-pox, are generally of little consequence; and disappear with those which are more essential.

When the pustules are numerous, a return of fever usually happens about the eleventh day, a period we shall find much dreaded in some forms of the disease; but in the distinct small-pox, it is for the most part slight, and disappears in a few days.

In the more severe cases even of this form of the disease, a train of symptoms indicating more danger now and then supervenes at an earlier period, about the seventh or eighth day, and has been called the secondary fever.

After the pulse has returned to its natural frequency, and the danger seems past, symptoms of fever, more or less gradually, in some cases very suddenly, return; and in the space of a few hours the pulse becomes more frequent, and the other febrile symptoms more severe than at any former period.

The secondary fever is attended with less danger in the distinct small-pox than in the confluent. In the former it seldom appears when the pustules are of a benign kind, and almost never when the patient has received the disease by inoculation, and been properly treated.

When the pustules are numerous, they must, in many places, run together. When the greater number run together, the disease we have seen is termed the Confluent Small-pox. The symptoms peculiar to this form of the disease we are now to consider.

2. Of the Symptoms of the Confluent Small-pox.

Although there is much similarity in the eruptive fever of the distinct and confluent small-pox, yet, even from the

commencement, in some respects they differ essentially. The symptoms common to both, the sensation of cold, the anxiety, sickness, vomiting, &c. more uniformly attend, and are experienced to a greater degree in the confluent than in the distinct form of the disease.

The pains of the back and limbs in particular, which are only sometimes troublesome in the distinct small-pox, very generally precede the confluent eruption.

The most striking difference, however, between the eruptive fever of the distinct and confluent forms of the disease, is, that in the distinct it is synocha, never showing a tendency to typhus, while in the confluent, although at the beginning synocha, it generally soon shows this tendency. In the most alarming cases indeed the fever is a typhus almost from the first; petechiæ, and sometimes hemorrhagies of a bad kind, appearing at a very early period.

Epileptic fits often occur during the first days, and have even proved fatal before the eruption appeared; at other times they continue to recur after the eruption is out, and sometimes through the whole course of the disease.

The tendency to sweat is uncommon in this form of small-pox; but a diarrhœa often precedes the eruption, and continues for a day or two after its appearance, which Sydenham declares he never saw happen in the distinct small-pox. If the stools are unusually fetid, the prognosis is bad.

This diarrhœa is generally confined to children; in adults an affection of the fauces, often amounting to a salivation, attends in its stead*. It was observed, that at a later period, even of the distinct small-pox, there is sometimes an increased secretion of thin saliva.

The eruption in the confluent generally appears earlier than in the distinct small-pox; seldom later than about the beginning of the third day, and often on the second; in some cases even before the expiration of the first twenty-four hours; and fresh pustules continue to come out for the space of three or four days. The time of its appearance,

* The salivation sometimes, though rarely, appears in children. Tissot says, he has seen several, scarcely four years of age, seized with salivation, while the bowels remained costive. See Tissot's Treatise on the Small-pox, Apoplexy, and Dropsy.

however, is more uncertain than in the distinct small-pox. It is sometimes delayed by inflammatory symptoms supervening, to the fourth or even to the fifth day. An acute pain of the loins resembling a fit of the gravel, in the side like that of pleurisy, in the limbs resembling rheumatism, or in the stomach accompanied with sickness and vomiting, are mentioned as symptoms which retard its appearance.

On the second day of the fever an erythematic inflammation often appears on the face, and soon spreads over the neck and breast, and in some cases over the whole body. This is the forerunner of the pustules, which begin to emerge from it in the form of small red points, many of which soon coalesce. They sometimes appear in clusters, the intermediate spaces being free from them; at other times many parts, and particularly the face, seem almost covered with them. On their first appearance they sometimes so much resemble the measles, that they can only be distinguished by the accompanying symptoms.

Matter is formed sooner in the confluent than in the distinct small-pox. The pustules are not much raised above the surrounding parts, nor do they retain the circular form, but even in places where they are not confluent become of an irregular shape; nor are they surrounded with an inflamed margin, the spaces between the pustules being pale and flaccid, and the pustules themselves, about the time of maturation, often appear like thin pellicles fixed upon the skin*. On the face, where they are generally most numerous and confluent, they often so run into each other, that almost the whole seems one large vesicle, the surface being perfectly smooth.

The matter becomes whitish, brown, or even black, but never thick and yellow, like that of the distinct small-pox. The lighter coloured the matter the better is the prognosis. When it is black, the danger is very great. The same may be said of those cases where extravasated blood is mixed with the matter, giving it the appearance of a bloody sanies.

It has sometimes been so virulent as not only to destroy many of the soft, but also the bony, parts of the face. The

* This flat appearance of the pustules has been termed Sessile. By some writers the confluent small-pox is termed Variola Sessilis.

palate, fauces, velum pendulum palati and uvula, even the nose and cheek-bones have been wholly destroyed by it, and the jaws so much affected, that the teeth have fallen from their sockets*.

The swelling of the face, which only sometimes occurs in the distinct small-pox, is a constant symptom of the confluent; and in this form of the disease it both appears earlier and rises to a greater height.

About the ninth day of the eruption, that is, the eleventh of the disease, the pustules begin to pour out their matter, which hardens on the surface, forming crusts of a brown or black colour, that do not fall off for many days; and are almost always on the face followed by a desquamation which leaves pits. The more numerous and confluent the pustules are, and the darker their colour, the longer they continue; and the desquamation is sometimes protracted beyond the twentieth day.

It often happens, that although the pustules are crowded on the face, they are few, and even distinct, on every other part. But while the face is loaded with those of the confluent kind, they never on other parts have a benign appearance; they are never circular, raised, nor filled with a well conditioned matter, but in this respect resemble those on the face. In the confluent small-pox, however, the pustules on the trunk and extremities are generally rather larger, and more prominent, than those on the face.

Although the fever often abates on the appearance of the eruption, it never wholly ceases. This remission generally continues till about the sixth or seventh day, that is, till near the time of maturation, when it suffers a remarkable exacerbation, the commencement of the secondary fever, which often appears with more alarming symptoms than any that preceded it. If coma does not supervene, the patient is distressed with head-ach and obstinate watchfulness, often the forerunners of delirium. The inflammatory affection of the fauces, with hoarseness and dyspnoea, increases; in many cases all the worst symptoms of typhus supervene, and the patient is carried off on the eleventh day from the commencement of the disease, including that on which it made its attack. This day the

* See Burserius's Institut. Med. Pract. and other works on this disease.

reader will find frequently mentioned by Sydenham, and other writers, as the most fatal in small-pox.

Such are the appearances of the regular distinct and confluent small-pox. It will be necessary to notice some of the anomalous forms of this disease.

3. Of the Symptoms of Anomalous Small-pox.

It will be sufficient to point out the circumstances in which some of the most remarkable forms of anomalous differ from the regular distinct and confluent small-pox.

One of the most common is that termed crystalline, from the appearance of the pustules.

The crystalline small-pox, like the regular, has been divided into distinct, contiguous, and confluent*. But here there is not the same room for such a division; for although in some instances the pustules are fewer and more distinct than in others, yet the state of the matter, as well as the appearance of the pustules themselves, does not vary much in different cases; and in all, the danger is considerable.

The crystalline small-pox makes its attack, like other forms of the disease, with the common symptoms of fever.

The vomiting, pain at the pit of the stomach increased on pressure, and coldness of the feet and hands, are still the diagnostic symptoms of the eruptive fever.

It is more apt than the regular small-pox to be attended with those symptoms which indicate danger, coma, delirium, prostration of strength, petechiæ, hemorrhagies, &c. the typhus more frequently showing itself at an early period.

The eruption, on its first appearance, frequently looks well, and even continues to do so for a day or two. The pustules are of a good colour and distinct, producing a considerable remission of the febrile symptoms. About the third day of the eruption, however, there generally appears a numerous crop of pustules; which, although often distinct, are of an irregular shape.

After the eruption is finished, a considerable remission of the fever takes place, but never complete apyrexia; and the urine generally remains limpid throughout the disease. The distinguishing symptom is the appearance of the matter,

* Dr. Rogers's Essay on Epidemic Diseases.

which is a colourless fluid that rarely acquires any degree of the purulent appearance.

As in the regular small-pox, there are now and then interspersed among the pustules some which are empty, or clear and dense, having no cavity.

Whatever be the appearance of the pustules on their first coming out, they soon become pale. They are never indeed surrounded with the well-defined florid margin, and the interstices have the flaccid appearance observed in the confluent small-pox.

The period at which the face and head swell is more uncertain than in the regular small-pox, and the swelling, in a day or two after its appearance, is often suddenly translated to the hands or feet; and then it has been observed that no salivation takes place.

If the eruptive fever runs high, it is frequently followed by a confluent eruption; and the danger, which is at all times considerable, is now very great, the fever in general soon becoming a malignant typhus.

In the worst cases, the face and head either do not swell at all, or only in a slight degree; but instead of the swelling, inflammation often appears about the eyelids, lips, throat*, or some neighbouring part; sometimes the inflammation seizes on the encephalon, occasioning violent head-ach and delirium; and traces of inflammation of the brain and its membranes are apparent after death. Even abscesses form in different parts of the head, and matter is sometimes discharged by the ears†. The strong pulse at the temples, while that at the wrist is feeble, mentioned among the symptoms of synochus as denoting a tendency to phrenitis, is a frequent symptom in the crystalline small-pox, and there affords the same inference.

This form of small-pox sometimes proves suddenly fatal before the eruption appears; more frequently, however, death is delayed to the seventh day; sometimes to the fourteenth, seventeenth, or even longer‡.

* Dr. Cleghorn's account of the Diseases of Minorca, and other works on the Anomalous Forms of Small-pox.

† In the irregular forms of small-pox it is not uncommon for abscesses to form in other parts of the body, and recovery seems often to depend on the pus being properly discharged. See the observations of Rosen, in Haller's *Disp. ad Hist. et Cur. Morb. Pert.*

‡ Dr. Walker's Treatise on the Small-pox.

A remarkable form of the anomalous small-pox is that which it sometimes assumes when influenced by the measles appearing at the same time, illustrating an observation made in speaking of contagion, that while a contagious disease rages other diseases partake of its nature.

We have an instance of this form of small-pox in the epidemic described by Sydenham, which raged in London in 1670, 1671, and 1672. It continued after the measles had ceased, gradually becoming milder and more regular till the year 1674, when the measles again became epidemic, and the small-pox as irregular and fatal as before*.

The prevalence of measles, however, does not always either increase the fatality of small-pox or render it irregular†.

It is also very remarkable, that if, while a patient labours under the small-pox, he is seized with the measles, the course of the former is interrupted till the eruption of measles is finished‡.

There is still another form of the small-pox which may certainly be regarded as anomalous, and deserves to be mentioned. It is met with only in children, and seems to be merely the regular confluent small-pox considerably modified by peculiarity of constitution, those only of a debilitated habit being subject to it.

The patient is attacked with languor and oppression,

* Sydenhami Opera, sect. iii. chap. vi. De Variol. Anomal.

† See the 134th and following pages of Dr. Sim's Treatise on Epidemic Disorders.

‡ See the first volume of Dr. Duncan's Medical Commentaries, &c.—In the third volume of the Medical Commentaries, however, cases are related by Dr. Rainey, in which a concurrence of the small-pox and measles took place without the progress of the former being interrupted*. Analogous to the foregoing fact, is one mentioned by Dr. Heberden, in Dr. Kirkpatrick's Analysis of Inoculation, that when the small-pox appeared during an epidemic intermittent, if any labouring under the fever were seized with it, the former ceased till the small-pox had run its usual course, and then went on as before; and another by Dr. Jenner, in the Continuation of his Observations relating to the Cow-pox, that the scarlatina was interrupted by the appearance of this disease.

* Cases of this kind I have known. Several are related in the Medical and Physical Journal. Vogel mentions from Pechlinus a case in which it is said small-pox appeared on one side of the body, and measles at the same time on the other.

that continue for some days without considerably affecting the pulse, which is seldom much more frequent than in health, and the temperature is not above the healthy degree, sometimes below it. As the symptoms advance, the patient loses his appetite, is troubled with nausea and insatiable thirst, becomes drowsy and often comatose. On the third day a few pustules generally come out, but they soon disappear, and the coma increasing, the patient expires in a few days.

There are certain symptoms, or rather modifications of symptoms, which have been enumerated, which deserve the name of anomalous, yet do not constitute a distinct form of the disease. They are apt to occur when its course is disturbed by improper treatment, or other causes; obstinate and profuse sweating, diarrhœa, and salivation, suppression of urine, &c. As it will be necessary to consider the means to be adopted when such symptoms appear, to save repetition, I shall defer any further observations on them till we come to this part of the subject.

After the exsiccation of the pustules, a new crop sometimes comes out; and, on the other hand, the fever, with all its peculiar symptoms, sometimes appears without any eruption at all*. It is asserted by Frank, Burserius, and others, that in the latter case the patient is as secure against a second attack as if the eruption had made its appearance. There are some observations, however, in opposition to this opinion. In the fourth volume of the *Memoirs of the Medical Society of London*, Mr. Kite relates two cases in which inoculation produced the usual suppuration in the part inoculated, and at the usual time the patient sickened, but no variolous eruption followed. Both patients were again inoculated fourteen days after the first inoculation. One of them had the disease in the usual way, and in a mild form; the other remained unaffected.

The small-pox, especially when confluent or irregular, is apt to leave behind it a variety of troublesome consequences. Most of those who survived the irregular small-pox of Minorca, Dr. Cleghorn informs us, remained blind, consumptive, or lame with caries of the bones, ulcers, &c.

* See Sydenham's chapter entitled *Variolæ Regulares*, p. 140.

Sometimes a gangrenous erysipelas of the limbs, or apoplexy, has supervened and proved fatal. The blindness from a pustulary affection of the cornea is not uncommon, more rarely the hearing is destroyed, and the voice is sometimes lost. The palpebræ, the sides of the nares, and even those of the throat*, have grown together.

All kinds of small-pox leave behind them a predisposition to inflammatory diseases, particularly to rheumatism, ophthalmia, and visceral inflammations†.

SECT. II.

Of the Morbid Appearances on Dissection.

In those who have died under a load of pustules, the nares and inside of the cheeks are often found covered with them, and the teeth are besmeared with a thick viscid saliva. Pustules are frequently observed on the upper, very rarely on the under, part of the tongue, which is better moistened with saliva; the palate is often covered with them; they also frequently occupy the more external, very rarely the internal, parts of the meatus auditorius.

The maxillary, frontal, and other sinuses of the face are free from any morbid appearance. The cellular substance of the face, as well as of other parts of the body, especially where the swelling is most considerable, is often distended with a serous fluid as in anasarca.

On removing the cranium the dura mater appears perfectly sound, but the vessels of the brain are more turgid and filled with a darker coloured blood than usual, and a greater quantity of serous fluid is found, particularly towards the base of the brain‡. In other respects the brain is generally sound.

On examining the parts situated in the neck, the œso-

* See Vogel De Cog. et Curand. Morb. and others.

† On this part of the subject the reader may consult the 582d and following pages of the fifth volume of Haller's Disput. ad Hist. et Cur. Morb. Pertinentes, and the third vol. of Frank's Epitome de Curand. Hom. Morb.

‡ "Circa infundibulum, integra illa arachnoideæ vagina quæ nervos tertii paris, aditasque partes concludit, saccum aqua plenum referebat." See Cottunnius de Sede Variolarum, p. 22.

phagus is found free from pustules, even where the pharynx is loaded with them; or if any be observed in it, they are towards the upper part. The state of the larynx and trachea is often very different. These with the bronchiæ as far as their third division are sometimes more or less affected with pustules, from which, and the state of the nares, we readily account for the dyspnœa that frequently attends this disease. It sometimes happens, however, even in the worst forms of it, that the windpipe is wholly free from pustules. Tissot says he has dissected some so covered with them externally that there was scarcely room for one more, without finding any in the larynx or trachea. The trachea is sometimes covered with a whitish crust which is easily separated, and the secretion from the bronchiæ is now and then tinged with blood.

The fluid of the pericardium is also sometimes tinged with blood, and small particles, like coagulated blood broken down, now and then appear floating in it. The surface of the heart has been found rougher than usual, and polipi are sometimes found in its cavities. It is doubtful if any of these appearances be essentially connected with the disease. With respect to the last, it is a common appearance after death*. The lungs are often of a darker colour, and their moisture is more copious than usual. When no inflammatory affection has supervened, they are in other respects sound. The form of the thorax has been observed considerably altered by enlargement of some of the abdominal viscera; this seems to be merely accidental.

The various parts, as the mouth, pharynx, larynx, trachea, &c. which are sometimes covered with pustules, are now and then, in the worst cases, affected with gangrene.

In the abdomen there are few or no morbid appearances peculiar to small-pox. In the stomach there is sometimes found a thick whitish matter, which also frequently besmears the œsophagus, but mucus frequently assumes this appearance when it has lain for some time in these cavities. As in many other cases, the liver has been found enlarged, sometimes soft, at other times hard and gritty, now and

* See Dr. Baillie's observations on this subject, in his Treatise on Morbid Anatomy.

then hydatids have been found in it. Worms, traces of inflammation, &c. have been found in the stomach and intestines.

What principally demands our attention in the abdomen is, that pustules are never found on any of its viscera. Some have asserted the contrary; but it appears probable, from the observations of Cottunnius, that they had mistaken small lymphatic glands for pustules. He dissected forty bodies in the presence of several people, without observing any pustules on the stomach or intestines. Did they spread along the alimentary canal, indeed, there would necessarily be a train of symptoms, never observed in this disease.

It appears then that variolous pustules only attack those cavities of the body to which the air has free access; as the nose, mouth, trachea, the larger branches of the bronchiæ, and the outermost part of the meatus auditorius. It has also been observed in cases of prolapsus ani, that pustules frequently attack that part of the gut which is exposed to the air.

Cottunnius alleges as the cause of this, that moisture prevents their appearance; and in confirmation of his opinion, observes, that if the eyelids be kept moist by wet bread from the first attack of the disease, pustules never appear upon them; and by the same means, he thinks, pustules may be prevented in other parts. This opinion, however, is invalidated by the fœtus in utero being subject to the variolous eruption.

The seat of the pustules is neither the true skin nor the cuticle, but the mucus which lies between them. The author just mentioned made frequent dissections in order to determine this point. "*Quoties pustulam incipientem dissecui, vidi cuticulam elevatam ad pustulæ formam, cutis corpore intacto, et tumoris immuni* *." The seat of the pustules, a question at one time much agitated, is thus very accurately ascertained; but this knowledge has not hitherto improved the treatment of the disease.

* Cottunnius de Sede Var. p. 202.

SECT. III.

Of the Causes of the Small-pox.

This disease has only made its appearance in Europe in modern times. There is no mention of it in the writings of the Greek or Roman physicians; and we are unable to determine how long it has been known in other parts of the world, or where it first made its appearance.

The Arabian writers are the earliest we are acquainted with who mention it. Both Rhazes and Avicenna treat of it. Of these, Rhazes is the oldest. The oldest writer on the small-pox whom he mentions (Ahron) resided at Alexandria, when it was besieged by the Saracens in 640 of the Christian æra. There is no distinct mention of the small-pox earlier than this.

The most prevalent opinion is, that it first appeared in the eastern parts of Asia, having been known in many of these, particularly in China, from very early times. Many circumstances, however, tend to contradict this opinion. There is reason to believe that it raged among the Abyssinians, when they besieged Mecca in the year 569*; from whence it was probably introduced into Egypt by the Saracens, spread with them along the northern parts of Africa, and accompanied them when they came to Europe†.

The opinion that the small-pox was first brought into Europe by the crusaders is unfounded, as Dr. Woodville has met with it, under the name Variolæ, in manuscripts of the Harlean and Cottonian Collections in the British Museum, which bear evidence of having been written before the year 900. There can be little doubt, however, that by means of the crusaders the small-pox was more generally disseminated‡. It is mentioned by British writers as early as the 13th century, but at what time it was introduced into this island is not ascertained. In America it was unknown till carried thither by Europeans.

* See Dr. Woodville's History of Inoculation.

† See Friend's History of Medicine from the days of Galen to the beginning of the 16th century.

‡ In some of the northern parts of Europe, which have little intercourse with the rest, the small-pox was not known, it is said, before the beginning of the last century.

This imperfect history of the small-pox, although there were no other facts on the subject, is sufficient to prove that it arises from a peculiar contagion.

The fatality of the small-pox soon led to the employment of various means to obviate its effects. It is computed that one of six, who receive the small-pox in the natural way, dies; and that about the eighth part, and in some places many more, of the people of a country where the casual small-pox is prevalent, fall a sacrifice to this disease*. Of these means by far the most successful, if we except the introduction of the cow-pox, of which I shall presently have occasion to speak, is inoculation. In the first and second editions of this work I treated of it at considerable length. But as there is now reason to hope that inoculation for cow-pox will soon wholly supersede that for small-pox, I shall not enter on the latter here†.

The circumstance which has chiefly prevented the salutary

* "The celebrated M. De La Condamine computes, that in France "one in ten of all who are born dies of the small-pox. Dr. Rosenstein, who wrote an excellent Treatise on the Diseases of Children, "shows, that every tenth boy and every ninth girl dies of it in Sweden, "according to the accurate reports of the commissioners appointed to "make the inquiry. In London, the births were to the deaths by the "small-pox as six and a fourth to one; in Manchester, as six and a "half to one; in Liverpool, as five and a half to one; in Chester, as "six and two-thirds to one." See the Introduction to Dr. Haygarth's Sketch of a Plan to exterminate the casual Small-pox, &c. At certain times the small-pox proves much more fatal. Of thirty-seven ill of the worst kind of small-pox, attended by Baron Dimsdale in Russia, thirty-five died.

† Those who wish for a knowledge of it may consult some of the following works:—Dr. Alex. Monro, sen. on the Inoculation of the Small-pox, in Scotland; Dr. Thomas Dimsdale on Inoculation, 8vo. Lond. 1781; Dr. J. Kirkpatrick's Analysis of Inoculation of the Small-pox, 8vo. Lond. 1761; Mr. Chandler's Treatise on Inoculation; Camper Sur les Avantages de l'inoculation et la meilleure methode de l'administrer; Sir George Baker's Treatise on the Inoculation of the Small-pox, 8vo. Lond. 1766; Mr. Burgess's Account of the Preparation and Management necessary to Inoculation; Dr. Gale's Dissertation on the Inoculation of Small-pox, in America; Dr. Andrews's Practice of Inoculation, impartially considered; Mr. J. Mudge on the Inoculation of the Small-pox, 12mo. Lond. 1777. In most of the works on small-pox which I have had occasion to mention the reader will find an account of inoculation.

effects of inoculation is, that the inoculated, like the casual small-pox, being contagious, both are generally introduced at the same time. This circumstance banishes all hopes of preventing the casual small-pox by inoculating for this disease. But the labours of Dr. Jenner, which will for ever place him in the first rank of the benefactors of mankind, have supplied us with the means not only of preventing the casual small-pox, but of wholly extirpating the disease. It is painful to think how much they have been counteracted in this country.

The cow-pox has been long known in some parts of England, and even known as a preventive against the small-pox; but Dr. Jenner first called the attention of the public to it, in a treatise entitled "*An Inquiry into the Causes and Effects of the Variolæ Vaccinæ, &c.*" and by a series of accurate and laborious experiments proved its efficacy.

Cows are subject to an affection of the teats, which appears in irregular pustules, surrounded by an erysipelatous inflammation. These, if neglected, often degenerate into troublesome eating sores, the animals seem indisposed, and the secretion of milk is lessened.

Inflamed spots often appear on the hands and wrists of those employed in milking such cows, at first assuming the appearance of small vesications, similar to those produced by scalds. They quickly, however, run to suppuration, the edges of the suppurating parts, which are generally circular, being raised. Tumors appear in the axillæ, and in many cases all the usual symptoms of fever with more or less severity supervene, occasionally attended with pains in the limbs and loins, vomiting, head-ach, and even, though very rarely, with delirium.

These symptoms continue from one to three or four days, and troublesome sores are sometimes left on the hands. The lips, nostrils, eyelids, &c. are also now and then affected with ulceration; but this seems to proceed from the patient touching those parts with the hands, for when eruptions appear in the cow-pox, at a distance from the inoculated part, they are not apt to degenerate into sores.

As the cow-pox certainly does not belong to the exanthemata, nor indeed I may say to febrile diseases, for fever is not essential to it, nor even to its preventive effect with respect to the small-pox, I shall not enter upon any ac-

count of it here; but refer the reader to the works of Dr. Jenner, Dr. Willan, and others.

Of the proofs of the efficacy of cow-pox as a preventive against small-pox, I hope it is now unnecessary to say much; and if it were necessary, the following quotation from the report of the College of Physicians of London would be sufficient. “The security derived from vaccination, if not “absolutely perfect, is as nearly so as can perhaps be expected from any human discovery; for, amongst several “hundred thousand cases, with the results of which the “College have been made acquainted, the number of alleged “failures have been surprisingly small; so much so as to “form, certainly, no reasonable objection to the general “adoption of vaccination; for it appears, *that there are not “nearly so many failures in a given number of vaccinated “persons as there are deaths in an equal number of persons “inoculated for the small-pox.*”

It has been alleged that the preventive power of the cow-pox continues only for a limited time. But a sufficient number of instances have now been adduced by Dr. Jenner, and others, to prove the fallacy of this opinion. Cases have been authenticated in which the contagion of small-pox was resisted by those who had been casually affected with cow-pox, forty, fifty, and even sixty* years before.

But the prejudice which has most retarded the progress of vaccination in this country is the opinion that it injures the constitution, and gives rise to other diseases†. We cannot have a more satisfactory refutation of this prejudice than by again recurring to the report of the College of Physicians. “The testimonies before the College of Physicians are very decided in declaring, that vaccination “does less mischief to the constitution, and less frequently “gives rise to other diseases than the small-pox, either “natural or inoculated. The College feel themselves called “upon to state this strongly, because it has been objected “to vaccination, that it produces new, unheard of, and “monstrous diseases. Of such assertions no proofs have

* See the report of the Medical Faculty of Kiel, upon the Cow-pox, in the Duchies of Schleswig and Holstein.

† Fatal cases have occurred so very rarely, that we are inclined to doubt whether in these death was wholly to be ascribed to this disease. See Dr. Woodville's Reports of a series of Inoculation for the Variolæ Vaccinæ.

“been produced; and after diligent inquiry, the College
“believe them to have been the inventions of designing, or
“the mistakes of ignorant, men.”

No man of common feeling can contemplate without emotion the effects already produced by vaccination—whole nations protected from a pestilence which has for ages been their greatest scourge. In what terms shall we speak of those, if there be any, who would knowingly deprive mankind of such a blessing, and in what terms express our acknowledgments to that individual, to whose exertions we owe it?

SECT. IV.

Of the Treatment of Small-pox.

I shall not, for reasons I have already mentioned, consider the treatment of small-pox at the same length as in the first and second editions of this Treatise. For the sake of perspicuity, I shall divide it into that of the Distinct and that of the Confluent forms of the disease; or rather, I shall in the first place consider the mode of treatment in the former, and afterwards point out the circumstances in which the treatment of the Confluent differs from that of the Distinct. And farther to avoid confusion, I shall refer the reader to the end of this section, for the means to be employed when those symptoms which have been termed anomalous appear, which will prevent interruption in laying down the general plan of cure.

1. Of the Treatment of the Distinct Small-pox.

It was soon observed that the appearance of the eruption in small-pox generally brings relief, and from this circumstance very unwarrantable inferences were drawn, which for a long time influenced the practice in this disease, and, it cannot be denied, greatly increased its fatality.

Because the eruption was generally attended with a remission of the symptoms, it was inferred, that the more copious it was, the more relief it would bring. All means tending to promote it were, therefore, employed, and what-

ever tended to check it carefully avoided. By external warmth and stimulating medicines, physicians endeavoured to support the fever; while evacuations, and every thing else tending to moderate excitement, were forbidden. A very extensive experience has now contradicted these maxims. The mode of reasoning which led to them, the reader will perceive, is the same as that which has been employed respecting the critical symptoms of fever, and the retrocession of eruptions, which I have had occasion to consider at length. So far from the most copious eruption bringing most relief, the symptoms are always mildest when the eruption is most scanty; so that instead of supporting the excitement, that the eruption may be copious; the indication in the eruptive fever, which in the distinct small-pox is always a synocha is to moderate excitement, that it may be as scanty as possible.

All that was said of this indication in speaking of the treatment of synocha is nearly applicable to the case before us. The chief difference is, that in the latter, the means for diminishing excitement should be more powerful in proportion to the excitement. Here such means are not only more safe, but more certain advantage is to be expected from them, the severity of the ensuing disease being more generally proportioned to the degree of excitement which prevails in the beginning.

It is not to be inferred, however, that the use of antiphlogistic measures, and particularly evacuations, cannot be too free. Excitement must never be unnecessarily diminished.

Such are the principles which regulate the treatment of the eruptive fever of the distinct small-pox. Their application will be rendered easy by referring to what was said of the treatment of symple synocha. I shall make a few observations on the most powerful remedies employed in this disease.

It is remarkable that Sydenham made little use of cathartics in the small-pox, at present regarded as indispensable; and very generally recommended venesection, the propriety of which in ninety-nine cases of a hundred is now called in question.

In determining the propriety of blood-letting, we are to inquire what advantage is to be expected from it, which cannot be procured by less debilitating means. The question seems easily answered: if it be admitted, that diminution of

excitement is the only effect to be expected from blood-letting in idiopathic fevers*, there can be no occasion for this remedy while cool air and mild cathartics, by which only the thinner and less important parts of the blood are abstracted, sufficiently diminish the excitement. When the increased excitement resists gentler means, we must have recourse to blood-letting; and here the following remark of Sydenham is fully warranted by experience—"Vulgare illud
 "atque tralatitium argumentum, quo adversus phlebotomiam
 "aliasque evacuationes utuntur, nempe quod non liceat a
 "circumferentia ad centrum movere humores, cum natura
 "in hoc morbo contrarium adfectare videatur, nullarum
 "plane virium est."

When blood-letting is improper before the eruption, it must be still more so after it, when the fever either becomes milder or wholly disappears. Even in the distinct small-pox, indeed, the secondary fever sometimes supervenes. At its commencement it is a synocha, and we must again have recourse to blood-letting if the symptoms resist other means; remembering, however, that now the fever will not be relieved by the appearance of an eruption, but will suddenly assume the form of typhus, if the antiphlogistic plan be carried too far.

Some authors, and those of the highest authority, have recommended blood-letting at the very termination of the disease, or rather after every symptom of it has disappeared†. This practice is now very generally abandoned, unless a new train of symptoms demanding blood-letting supervene. It was not, however, the mere offspring of hypothesis. The small-pox, like some of the other exanthemata, we have seen, often leaves behind it a predisposition to inflammatory diseases; but it is sufficient to have recourse to blood-letting when the presence of these renders it necessary. The reader may consult what was said above, concerning blood-letting during the apyrexia of intermittents, which is applicable to the case before us; in which indeed there is an additional argument for not letting blood till the symptoms requiring it show themselves, namely, that there is much less chance

* See the observations on this subject in the chapter on the Treatment of Continued Fever.

† Sydenham de Variolis. Mead's *Monita et Præcepta Medica cum Notis Wintringhami*, &c.

of their appearance than of the recurrence of the paroxysm of an intermittent.

Local blood-letting, by scarification of the temples, or leeches applied to them, is a valuable remedy where the coma or inflammation of the eyes is considerable.

Although I was only considering the treatment of the eruptive fever, when I had occasion to mention blood-letting, it appeared a more distinct plan to collect in one place the remarks to be made on this remedy than repeatedly to mention it in speaking of the different stages of the disease.

Of all the means employed for moderating excitement in the eruptive fever, none has proved so generally beneficial as the application of cold. Sydenham* was the first who in this country introduced the cool regimen in small-pox; one of his greatest improvements. The injury done by a high temperature, and the advantage of a free admission of cool air, in continued fever, have been pointed out. Both are still more remarkable in small-pox.

The advantage of the cool regimen in this disease has long been known in the East; it is only lately, however, that it has been introduced into Europe, for even the authority of Sydenham could not render it prevalent. It is now practised to a greater extent than he ventured to recommend.

The patient should at no period be confined to the house, whatever be the season, unless the fever be such as confines him to bed. He should lie with few bed-clothes, and on a mattress; his room should be cool†; and a free use of cold drink and frequent changes of cold linen are equally grateful and salutary.

There can be no doubt, however, that the cool regimen, like every other practice, may be carried too far. Dr. Makittrick Adair‡, in a letter to Dr. Duncan, makes some observations on the Suttonian plan of treatment; that is, the very low diet and free exposure to cold; and alleges that it often does harm, especially when carried so far as entirely to prevent the eruption. This, however, rarely happens; and although Dr. Adair's observations certainly

* See his chapters De Variol. Regular. An. 1667, 1668, 1669; and De Variol. Anomal. An. 1670, 1671, 1672.

† See what was said of diminishing the temperature of the patient's bed-room, in the treatment of continued fever.

‡ See the 8th volume of the Medical Commentaries.

demand attention, on comparing them with those of other writers, as well as with what we every day see, it will appear, I think, that he endeavours too much to restrict the employment of the cool regimen.

Many have advised us to continue the exhibition of cathartics and the cool regimen in their full extent after the eruption is finished, and even when the fever has almost or wholly disappeared. But if our view in the employment of these means is to moderate excitement, of what service can they be when the excitement has returned to the healthy degree? and the truth is, that when employed to any considerable extent they are then found to do harm. The opposite extremes of constipation and a heated atmosphere, however, even at this period, are still more prejudicial*.

If, on the other hand, the remission is inconsiderable on the completion of the eruption, the use of cathartics and the cool regimen is as necessary as at earlier periods; and as they are the best means of moderating the eruptive fever, they are also the most effectual for preventing the appearance of the secondary; which is always to be feared under these circumstances.

The use of the cold affusion has been extended to the small-pox, and it is said with great success. Its employment in this disease is regulated by the same rules as in continued fever. In the worst forms of the disease in which the typhus shows itself at an early period, it is a doubtful remedy, as may be inferred from what was said above. In the second volume of the last edition of his work, he relates two cases of confluent small-pox, in one of which the cold, and in the other the tepid, affusion were employed without success.

The Indians, Dr. Rush informs us, plunge themselves into cold water as soon as they perceive the eruption of small-pox; which is found to moderate the disease. Cold bathing in the small-pox has also been practised by Europeans in sultry climates. A person who had spent many years in the East Indies informed me, that when the pustules have a flaccid unfavourable appearance, on the use of the cold bath they become in the space of a few minutes both prominent and well filled.

* A very striking instance of the injury done by an unguarded relaxation of the cold regimen is related by Mr. Perkins, in the 3d vol. of the Medical Observations and Inquiries.

Although the eruptive fever in the distinct small-pox is always a synocha; if the fever has continued after the eruption, and especially if the secondary fever has supervened, a greater or less degree of typhus always shows itself; and then the treatment is the same as in typhus from other causes.

2. Of the Treatment of Confluent Small-pox.

The more alarming the eruptive fever, the more assiduous must be our attention to every part of the cool regimen. On this head there is little to be added to what has already been said.

It cannot be denied that an alarming train of symptoms has sometimes been induced by sudden and imprudent exposure to cold. The eruption recedes, the patient falls into syncope* or convulsions which sometimes terminate fatally; and it is in the confluent forms of the disease that this accident is most to be apprehended; and there, it appears from the observations of authors, chiefly at the time of maturation. It will be found, however, on reviewing the history of such cases, that previous to the exposure to cold, the patient had generally been debilitated by the hot regimen, or other improper modes of practice. When the disease has been properly treated from the commencement, retrocession is very rare; and even where the hot regimen has been employed, unless the application of cold be very incautious, it is generally attended with the best effects†. The employment of the cool regimen, like that of the cold effusion, must of course be regulated by the temperature of the patient, and the state of the skin, otherwise great mischief may be done.

There is but one form of small-pox in which the good effects of the cool regimen have been called in question. Dr. Rogers, of Cork, who had extensive opportunities of treating the crystalline small-pox, declares that he has not there found it produce its usual good effects.

No part of the treatment of confluent small-pox demands more attention than the employment of cathartics. Practitioners were first led to recommend catharsis in confluent

* See the observations of Dr. Dimsdale, and others.

† See the observations of Sydenham, and Sir George Baker, in his Treatise on this disease.

small-pox from observing that when a spontaneous diarrhœa occurred, especially if it appeared early in the disease, the pustules were less numerous, the fever more moderate, and the swelling of the head less considerable*.

Cathartics produce their good effects most slowly, and their frequent repetition consequently is most necessary where the excitement is greatest.

Upon the whole it appears, that they are useful at all periods of small-pox, and particularly during the eruptive fever, and at the time the secondary fever is expected, unless a diarrhœa has supervened; and that the more severe the disease, even although the symptoms of typhus have come on†, as I have myself witnessed, they are the more indispensable.

The use of cathartics in this disease has perhaps been carried too far by some practitioners, particularly in the secondary fever. If we find the patient's strength sinking, notwithstanding the use of cordials and tonic medicines, it is necessary to discontinue the cathartics, or employ only those of the gentlest kind.

It has long been a practice in eastern countries, and it is recommended by some late European writers, Tissot, Bursarius, and others, to evacuate the matter of the pustules by piercing them with fine needles, which occasions a copious secretion by the skin; for the pustules soon fill again, and are again opened, which is always done by making a very

* Dr. Cleghorn's Account of the Diseases of Minorca.—The reader will find cases to prove the benefit of purging in the confluent small-pox in Dr. Walker's Treatise, and in that of Dr. Friend, entitled "*De Purgantibus in Secunda Variolarum confluentium Febre abhibendis.*" "*Vides ut aliis.*" Dr. Friend remarking on these cases, observes, "*inopinatam præsentissimamque opem attulerit purgatio; ut aliis paulisper subvenerit cunctatius per vices repetita.*"

† "If an apprehension," says Dr. Walker "of weakening the vital powers in this species of small-pox," viz. the putrid, "when neither diarrhœa nor any other apparent evacuation occurs, excepting what is discharged by the salivary glands, induce us to suspend purging altogether, or even delay it long, the prognosis in every case of this sort must be desperate.

* Dr. Friend even relates one case, in which the gangrenous blisters mentioned by Sydenham, and which he always found a fatal symptom, appeared; which treated with mild cathartics terminated favourably. There are some good observations on purging in small-pox by Dr. Simpson, Professor of Medicine at St. Andrew's. For this practice the reader may also consult the works of Hoffman, Huxham, Mead, and Wintringham.

small aperture*. By this means it is thought the accession of the secondary fever is often prevented. There is certainly a striking analogy between the prevention of the secondary fever in this way and by the use of cathartics.

More harm may be done by incautious blood-letting in the confluent than in the distinct small-pox, and it is more difficult to determine when it should be employed. In the former the eruptive fever is very often characterised by great excitement, accompanied with violent pains of the back, breast, and head; so that an inexperienced practitioner would judge copious blood-letting necessary. Those acquainted with the disease, however, will recollect, that these symptoms are the forerunners of a confluent eruption, and that symptoms of typhus will suddenly supervene if the excitement is too much reduced. The pustules will assume a more unfavourable character, and the patient often sink under that train of symptoms which has been termed putrescent†.

With respect to the treatment after typhus has supervened, almost all that was said of the treatment of this fever is applicable here.

The typhus may either, as in the worst cases, show itself in the eruptive, or what is more common, sooner or later in the secondary, fever. In the regular small-pox, typhus never precedes a distinct eruption, nor is such an eruption often followed by any considerable degree of this fever. In anomalous cases, it often precedes, and more frequently follows a distinct eruption.

The earlier the typhus shows itself the tonic plan is the more indispensable.

Morton was among the first practitioners who employed the bark in confluent small-pox. Those who succeeded him adopted the practice, but the late Dr. Alexander Monro was the first who gave it freely in this disease. It is now employed with the same freedom as in common typhus. By the use of the bark, Dr. Monro observes, empty vesicles were filled with matter; watery sanies changed into white, thick pus; while petechiæ became paler, and at last dis-

* It has been considered as dangerous to admit air into their cavities.

† The reader will find these observations illustrated in a striking manner in Dr. Cleghorn's Account of a Malignant Small-pox which raged in Minorca.

appeared. Whatever restores vigour, changes at the same time the state of the matter, from which in most cases the prognosis may with great certainty be collected.

In many cases other astringents are employed with advantage. Alum mixed with Peruvian bark, Vogel* observes, is the best of all medicines when the pustules are bloody. Dr. Wall† also insists on the advantage of alum in such cases. The sulphuric acid‡ has been justly celebrated in all the worst forms of this disease. Acids§ of all kinds have been much employed. Dr. William Wright|| particularly recommends a mixture of vegetable acids and common salt in this and all cases called putrid.

I shall consider the treatment of the anomalous symptoms the more at length, as the same observations apply to the other exanthemata when similar symptoms appear in them.

Inflammation of the brain is a more frequent accident in the crystalline than in other forms of small-pox. When the patient is attacked with an acute pain of the head, or delirium; when the eyes are inflamed, and incapable of bearing the light, the carotid and temporal arteries beating strongly while the pulse at the wrist is small and feeble, we have reason to fear inflammation of the brain. The chief difference in the treatment of idiopathic phrenitis and that we are speaking of is, that we can seldom employ venesection so freely in the latter, and must trust more to local means.

Inflammation is also apt to seize on other viscera, particularly the lungs, occasioning much difficulty of breathing and cough: a similar observation applies to the treatment in this case.

Dyspnœa often supervenes in small-pox from other causes—a pustulary affection of the larynx, trachea, and larger branches of the bronchiæ, or an unusual degree of swelling in the fauces, which also impedes deglutition. In

* Prælect. Acad. &c.

† Philosophical Transactions, No. 484, § 4.

‡ Dr. Brocklesby mentions an instance in which recovery seemed owing to the exhibition of large doses of this acid. The patient took no less than an ounce of the acid. vit. ten. daily.

§ I am induced by long and repeated experience, says Tissot, to regard mineral acids as the most valuable remedy we have in the small-pox.

|| See Dr. Wright's Letter to Dr. Morgan.

these cases, large blisters applied as near the part affected as possible are the most successful remedies. The same may be said of difficulty of deglutition in consequence of the viscidness of the saliva, in which gargles, such as those recommended in the *aphthæ infantum*, should at the same time be employed*. When the state of the fever admits of vomiting, it is often the means of relieving the swelling of the fauces and promoting the secretion of saliva†. The dyspnœa which comes on upon the sudden interruption of the salivation seems often to arise from a degree of pneumonia.

The salivation, on the other hand, is sometimes so copious as to threaten suffocation from the fluid falling constantly into the trachea, especially where there is any degree of coma. In this case cathartics often prove the most successful remedy.

Profuse diarrhœa is a troublesome symptom in confluent small-pox, particularly in children. Unless it should produce a dangerous degree of debility, however, we must be cautious how we check it; and even when it does occasion much debility, the safest plan is to endeavour to lessen the discharge by tonic medicines. There is perhaps no instance, except towards the termination of the disease, in which the diarrhœa should be stopped by opiates and astringents, unless it is so profuse as to threaten danger, and even at this period it should be stopped very gradually. When the medicines produce too sudden an effect, they must be discontinued, or, if necessary, their effects counteracted by gentle laxatives. The diarrhœa is sometimes, though rarely, rendered profuse by exposure to cold; some relaxation in the cold regimen is then proper.

Obstinate vomiting is a dangerous symptom, both by reducing the strength, and preventing the exhibition of medi-

* Bang recommends a gargle of oxymel of squills and water, and the application of sinapisms to the hands and feet, with gentle laxatives; and if the difficulty of breathing be great, the *antimonium tartarisatum*. Dr. Brocklesby observes, that small doses of *ipecacuanha* tend to restore the salivation when it is either suppressed or too viscid, and to alleviate the dyspnœa which often attends this accident.

† Dr. Cameron dissuades from vomiting in this case, and alleges that it has sometimes occasioned suffocation. He strongly recommends breathing the steam of a decoction of marshmallows, myrrh, and honey in vinegar and water. See the 22d vol. of the *Gentleman's Magazine*.

cines. If, from the nature of what is evacuated, the vomiting appears to proceed from irritating matter collected in the stomach, we must in the first place, by draughts of some mild fluid, assist the stomach to empty itself; and if the matter discharged be bilious or acid, we must endeavour to correct what may remain by acids or absorbents.

If the vomiting proceeds rather from the state of the stomach itself than its contents, which may be known by the inoffensiveness of the matter rejected, we must have recourse to such medicines as tend to allay its irritability. These were pointed out in speaking of the same symptom in continued fever. The extract of cascarilla, given in some agreeable distilled water, often allays vomiting*. In many cases a blister applied to the pit of the stomach succeeds. If it arises from any degree of inflammation or a deranged state of the bile, the means which correct these must be employed.

The sweating is sometimes so profuse as considerably to reduce the strength. In the worst forms of the disease, however, and in infants in any form of it, this symptom rarely appears, so that its excess is less to be dreaded. When it shows a tendency to become profuse, the patient should avoid being in bed in the daytime, which, with the cool regimen, laxative plan, and sulphuric acid, almost always sufficiently counteracts it.

A suppression of urine sometimes comes on, particularly in the confluent and anomalous forms of the disease, and proves obstinate. People in the vigour of life, and particularly those accustomed to a free use of spirituous liquors, are most liable to this symptom. It seems generally to arise from neglecting evacuations at the commencement of the disease, or keeping the patient too warm.

If, as frequently happens, it be attended with costiveness, we must begin with an emollient and laxative clyster. When the hot regimen has been employed, Sydenham advises the patient to be supported by two assistants, and exposed in his shirt to a current of cool air. The same practice is recommended by Bang† and others‡.

* See Vogel's Obs. on the treatment of Measles in his *Prælect. Acad.*

† *Praxis Med. Systematicæ Exposita.*

‡ Dr. Cameron of Worcester observes, in the 22d vol. of the *Gentleman's Magazine*, "To facilitate the discharge of urine which is

One or two epileptic fits, it was observed above, even in the mildest forms of the disease, frequently precede the eruption without being attended by danger. In the confluent and anomalous forms of the disease, however, the fits, we have seen, are more frequent, and in proportion to their frequency more to be dreaded. This symptom is rare in adults, but in them it is most dangerous.

Blood-letting was at one time very generally employed to remove or prevent them, but practitioners now agree that it is seldom successful; and the operation of blisters, Dr. Cullen observes, comes too late.

As the violence and frequent repetition of the fits generally depend on the violence of the primary disease, the various means of moderating this are the best for moderating and preventing the fits. But of all the means which have been employed, none has been found so successful as opium and the warm bath. On opium Dr. Cullen chiefly depends, and advises its exhibition per anum while the fit lasts.

These are not only useful as antispasmodics but also by promoting perspiration, one of the best means, it has been found, to prevent the return of the fit*.

“often difficult in the small-pox, Sydenham directs us to get the patients up and lead them about the room; but I would beg all young physicians to read Hoffman’s Dissertation, *De Situ erecto*, in *Morbis periculis valde noxiis*, before they either advise or allow of this practice. I have known sudden and fatal effects from it in very hopeful cases. I think there is no need to make so hazardous an experiment while salt of amber is to be had, for that will seldom fail to answer this intention.” The former part of this observation, however, is chiefly applicable to cases where the debility is considerable. Where there is much excitement, the case in which suppression of urine most frequently happens, although it may be proper in the first place to try the salt of amber, there is little hazard in adopting Sydenham’s plan; and where the increase of temperature is steady and there is no moisture on the skin, if this plan fails, it may be proper to dash cold water on the legs, as is sometimes practised to solicit the alvine discharge. If there is no absolute suppression of urine, but frequent and painful micturition, small doses of camphire and extract of white poppies given at intervals will often relieve it.

* Dr. Walker recommends for this purpose a preparation similar to the compound powder of ipecacuanha. Vogel, with the same view, recommends a mixture of cinnabar, the sulphur antimonii præcipitatum and musk. The last is also recommended by Dr. Brocklesby and Bang, who likewise employed some other of the medicines termed antispasmodic. There are none of these, however, much to be relied on.

Cataplasms applied to the extremities are sometimes serviceable. Whatever other means are employed, laxatives are not to be neglected, as the irritation of retained *fæces* may renew the fits, especially in children.

The pustulary affection of the eyes is often very troublesome, and is sometimes, we have seen, followed by loss of sight. When the pustules are numerous on the face, the use of mild and gently astringent eye-washes should never be neglected. M. De Lassone* recommends frequently wetting the eyes and eyelids with rose water, in order to prevent the appearance of pustules; or, if they have appeared, to diminish inflammation. Burserius recommends water, in which ignited iron has been quenched.

It is of great consequence to prevent the eyelids from growing together, which is often the source of all the mischief, increasing the pustulary affection, and preventing the use of collyria. This accident may generally be prevented, by bathing the eyes from time to time with warm milk, and anointing the tarsi with any mild ointment.

When the load of pustules on the face is very great, it has been recommended to immerse the extremities in warm water, and apply sinapisms to them, or even to scarify them†. Vogel condemns the common practice of moistening the face, with a view to prevent or moderate the eruption there. When pustules have actually appeared on the eyes, we must have recourse to emollient poultices and mild mucilaginous decoctions‡; and fomentations are useful when there is much swelling of the eyelids.

It has been observed above, that in small-pox, as in other eruptive fevers, a retrocession of the eruption sometimes happens, attended with an alarming train of symptoms. I have already had occasion to point out the means to be employed on the retrocession of other eruptions, and the observations then made are applicable to the case before us.

The treatment is in some measure influenced by the causes which produce the retrocession. The chief of these are, the sudden application of cold when the hot regimen

* *Memoire sur quelques Moyens de remedier aux accidents graves dans les Petites Veroles*, in the 3d vol. of the *Histoire de la Société Royale de Médecine*.

† Vogel de Cog. et Cur. Morb.

‡ See the observations of Burserius and Tissot.

has been employed, particularly if the cold be applied about the time of maturation, and when the patient is much debilitated; the excessive employment of the hot regimen; fatigue, from remaining too long out of bed or in the erect posture; syncope; strong affections of the mind, particularly terror or grief; and, above all, profuse evacuations.

The remedies of most general application are wine and opium. These are particularly indicated when the retrocession is the consequence of profuse evacuations*. When it is the consequence of the sudden application of cold, increasing the temperature and even the warm bath are generally of service, and the application of sinapisms and blisters in this case is particularly recommended. When it is the effect of the hot regimen, cool air must be cautiously applied. Musk and camphire, as in other cases of repelled eruption, are very generally employed, but little to be depended on. Vogel thinks ammonia, the semicupium, and blisters applied to the feet, the most successful remedies. If a diarrhoea supervenes on the retrocession of the eruption, as in other similar cases, it is generally of service, and should not be checked. Some have recommended blood-letting. But if, as Burserius justly observes, whatever debilitates tends to occasion this accident, blood-letting is surely the last means we should think of employing†.

When the swelling of the face subsides (especially if it subside suddenly), and is not followed by that of the hands, Dr. Brocklesby recommends the application of blisters to the wrists and fore arms, which often excites the swelling of the hands, or if not, tends to obviate any consequences to be feared from its absence. He recommends the same practice when the salivation suddenly ceases without swelling of the hands. When towards the period of maturation there is reason, from the debilitated state of the system, to apprehend that the swelling of the face may suddenly subside, Dr. Cameron, in a paper just alluded to, recommends the following plan, to which the author's extensive experience naturally calls our attention. "On the day before the face

* See the observations of Rosen, in Haller's Disp. ad Hist. et Cur. Morb. pert.

† The reader who has sufficient knowledge of medicine to separate facts from theory will find some excellent observations on blood-letting in this case, in Dr. Cameron's paper in the 22d vol. of the Gentleman's Magazine.

"is expected to sink," he observes, "I wrap up the arms and legs lightly in a suppurating cerate; the citrine, for instance, spread on linen rollers and tacked together so as to make one contiguous plaster."..... "I assure you, I have known adults in the confluent small-pox in less than an hour after the application of these plasters cry out with joy that they were in heaven. I have seen the pustules as far as the plasters reached ripen and fill even to bursting with laudable pus, and this dangerous period pass without one alarming symptom." About the same period the whole body has been anointed with mercurial ointment, apparently with good effects.

When the swelling of the face and neck is excessive, bathing the lower extremities and applying sinapisms to them often relieve it. For the same purpose Tissot recommends the warm bath.

When the eruption, Vogel observes, is delayed beyond the usual time, a single venesection, a dose of laudanum, and the tepid bath, seem frequently to promote its appearance. The first of these means must of course be employed with caution.

When the pustules are longer of drying than usual, they should be opened; and if the dried pustules adhere too long, fomentations are the best means to make them separate.

When the patient is plethoric we may let blood, with a view to stop hemorrhagies; in other cases we must trust chiefly to astringents*. The serum lactis aluminosum has been particularly recommended, especially if the hemorrhagy be from the skin, tinging the matter of the

When pustules appear in the nares and fauces, Tissot pustules†.

recommends washing them frequently by means of injections. This is preferable to gargling, as the motion of the throat in gargling sometimes increases the pustulary affection.

We have been advised to open the tumours, which now and then appear after the small-pox, if they have suppurated; if not, to apply poultices to promote the suppura-

* Burserius's Inst. Med. Pract. The various means, both local and general, to be employed in hemorrhagy will be considered in another part of this Treatise.

† See the foregoing observations on the use of alum and the bark.

tion. The propriety of the latter practice, at least, particularly in scrophulous habits, is doubtful. When the sore does not heal readily, the bark is serviceable, if there be no tendency to visceral inflammation.

Various means have been proposed to prevent pitting, but none of them seem to have answered the expectations formed of them. It is a prevalent opinion that exposure to the air is the cause of pitting, from its not happening to parts which are covered. It has therefore been proposed to cover the face with something that shall exclude the air. The reader will find an account of this method, and arguments for having recourse to it, in Dr. Walker's Treatise on Small-pox. It would require an extensive experience to determine its success, as pits are not always the consequence of even a numerous eruption. Our faith in it is lessened by reflecting that the hands are often as much exposed to the air as the face, and that there is something in the disease which determines it to affect the face in preference to other parts. The pustules and swelling always appear first on the superior parts of the body, and the former are there most numerous, and in the more severe forms of the disease, of a less benign appearance. Besides, children, I have already had occasion to observe, have been born marked with the small-pox. Other means have been proposed for preserving the face*, but none have been found such as would encourage us to recommend them.

CHAPTER II.

Of the CHICKEN-POX.

SECT. I.

Of the Symptoms of Chicken-pox.

THE Chicken-pox, Varicella, as it is termed by medical writers, is defined by Dr. Cullen,

“Synocha, papulae post brevem febriculam erumpentes,
“in pustulas variolae similes, sed vix in suppurationem

* See a paper by Detharding in the 5th vol. of Haller's Disp. ad Hist. et Cur. Morb. pertinent.

"euntes, post paucos dies in squamulas, nulla cicatrice relictæ, desinentes."

The chicken-pox is so mild a disease, that it seldom requires the assistance of the physician. It resembles the mildest cases of small-pox.

In all cases of small-pox, the disease begins with more or less fever, on the third or fourth day of which the pustules appear. In the chicken-pox, the eruption in many cases appears without any previous sign of indisposition. In others, the pocks are preceded by a degree of chilliness, lassitude, cough, broken sleep, wandering pains, loss of appetite, and feverishness for two or three days*.

On the first day of the eruption the pustules are similar to those of the small-pox; on the second day there is formed on each a small bladder which contains sometimes a colourless, sometimes a yellowish, fluid; at this time, or at farthest, on the third day, the pocks arrive at maturity, and those which are fullest very much resemble what the small-pox are on the fifth or sixth day. It frequently happens, however, either by the rubbing of the clothes, or the patient's scratching to allay the itchiness, that the vesicles are broken. The pustules, previously more or less raised, then subside, and the matter forms a crust without having assumed the yellow colour. Even in those pustules which escape being broken, it has very little of the purulent appearance. On the fifth day of the eruption the pustules are dry and covered with crusts, which in the small-pox does not happen till the eighth or ninth day, that is, the eleventh or twelfth of the disease. The pustules in chicken-pox are less inflamed, and their size is sometimes less than those of small-pox, but in the latter respect there is often little difference.

The chicken-pox is rarely confluent† or very numerous. The greatest number which Dr. Heberden says he ever saw was about twelve on the face and 200 on the rest of the body. The eruption sometimes makes its first appearance on the back. When this happens, it affords another mark of distinction, the eruption of small-pox always first appearing about the face, neck, and breast.

The last circumstance mentioned in Dr. Cullen's de-

* Dr. Heberden's Obs. Med. Trans. vol. 1.

† The chicken-pox is sometimes confluent. See Dr. Willan's Treatise on Vaccine Inoculation. Mr. Ring has given a coloured engraving of confluent chicken-pox in the Med. and Phys. Journal, 1805.

inition "*nulla cicatrice relicta*" assists but little in forming the diagnosis, the milder kinds of small-pox being rarely followed by pitting, and pitting having sometimes, though rarely, been the consequence of chicken-pox.

Upon the whole, then, the small-pox and chicken-pox differ, in the eruption of the former being preceded by a fever of a certain duration, while that of the latter is either preceded by none, or one of uncertain duration; in the vesicles and succeeding scabs appearing much earlier in the chicken-pox than in the small-pox; in the matter of the former never acquiring the purulent appearance, which it always does in the regular distinct small-pox, the only form of the disease which can be confounded with chicken-pox. As the chicken-pox runs its course rapidly, and not at the same time on different parts of the body, those pustules which first appear first coming to maturation and decaying, we may see, about the fifth or sixth day, pustules in all their various stages. "This circumstance," Dr. Willan observes, in a work just referred to, "may be added to the "diagnostics of Varicella, as it cannot take place in the "slow and regulated progress of the small-pox."

With respect to the prognosis of chicken-pox, it is so uniformly good, that practitioners are less acquainted with this disease than with most other eruptive fevers; and we have reason to believe that it has not only been mistaken for small-pox, but that its matter has been used for that of small-pox in inoculation.

Dr. Heberden describes a disease which he believes to be only a more severe species of chicken-pox, in which the symptoms of the eruptive fever are considerable, and continue for three or four days before the eruption appears. Nor does the fever remit on the appearance of the eruption even where there are but few pustules. The pustules are redder than in the common chicken-pox, spread wider, but hardly rise so high, and instead of one little vesicle, they have from four to ten or twelve. In other respects they resemble the common chicken-pox. He thinks the swine-pox and chicken-pox the same disease. See also the 1263d and 1264th paragraphs of Lobb's Practice of Physic. The reader will find an excellent account of chicken-pox in Dr. Willan's Treatise on Vaccine Inoculation. He also considers the swine-pox, and likewise what in the northern parts of England and in Scotland is called the hives, but in

th southern parts of England is included under the term of swine-pox, as varieties of chicken-pox; so that he divides this disease into three varieties. He points out with great accuracy the diagnostic symptoms of each.

SECT. II.

Of the Causes of Chicken-pox.

The chicken-pox, like other exanthemata, arises from a specific contagion, which seems to produce the disease about the same period after infection with that of the small-pox. Dr. Heberden thinks that people are not liable to a second attack of chicken-pox. "I wetted a thread," he observes, "in the most concocted pus-like liquor of the chicken-pox which I could find, and after making a slight incision, it was confined on the arm of one who formerly had the disease; the little wound healed up immediately, and showed no signs of any infection."

SECT. III.

Of the Treatment of Chicken-pox.

The treatment of chicken-pox is very simple, and differs in nothing from that of a gentle synocha. The mildness of the symptoms renders blood-letting and other powerful means unnecessary. Cooling saline cathartics in sufficient quantity to keep the bowels open, with a mild and diluent diet, form the principal part of the treatment. With respect to temperature and exercise, they should be regulated by the patient's feelings.

CHAPTER III.

Of the MEASLES.

THE Measles, or, as it is termed by medical writers, Rubeola, Morbilli, or Febris Morbillosa, is defined by Dr. Cullen,

“Synocha contagiosa cum sternutatione, epiphora et tussi sicca rauca. Quarto die, vel paulo serius erumpunt papulæ, exiguæ, confertæ, vix eminentes, et post tres dies in squamulas furfuraceas minimas abeuntes.”

Dr. Cullen divides this disease into two species, the Rubeola Vulgaris, and Rubeola Variolides. The former he defines,

“Rubeola, papulis minimis confluentibus corymbosis, vix eminentibus.”

Under this species he ranks three varieties.

1. “Rubeola Vulgaris, Symptomatibus gravioribus et decursu minus regulari.”

2. “Rubeola Vulgaris, Comitante cynanche.”

3. “Rubeola Vulgaris, Comitante diathesi putrida.”

His second species, the Rubeola Variolidas, he defines,

“Rubeola papulis discretis eminentibus.”

Of this species he observes, “Sauvagesium secutus, hunc morbum hic indicavi, etsi multum dubito, an recte ad rubeolam referendus est, non solum enim forma pustularum plurimum differt, sed, quod majoris momenti esse videtur, est plerumque absque symptomatibus catarrhalibus, rubeolæ adeo propriis*.” Matthiew is of the same opinion, and observes, that this disease is seldom met with unless the small-pox be prevalent at the same time with the measles†.

The following is the division of Measles generally adopted by authors. It comprehends only the first species of Dr. Cullen.

1. Rubeola Vulgaris, or Morbilli Regularis, the measles,

* Dr. Cullen's Syn. Nosologiæ Meth. p. 136.

† Matthiew's Observations on this species of Measles in the 47th and following pages of the 4th vol. of Baldinger's Sylloge Opusculorum Select.

such as they generally appear when their course is undisturbed by any unusual symptom :

2. Rubeola Anomala, Morbilli Anomali, Morbilli Epidemici *, or the putrid measles, comprehending those forms of the disease in which the usual course is disturbed : and

3. Rubeola Anginosa, in which the affection of the fauces makes a principal part of the disease.

The similarity of the measles and small-pox has induced Eller, and some other writers, to regard them as little more than varieties of the same disease.

In by far the majority of cases, however, there is a well marked difference in the symptoms of the eruptive fever ; and in all the appearance of the eruption in those diseases is wholly different.

SECT. I.

Of the Symptoms of Measles.

It will be sufficient to divide the measles into the regular and irregular forms of the disease ; the characteristic symptoms of rubeola anginosa not being of sufficient importance to constitute a separate division.

The division of measles into regular and irregular has not unaptly been compared to that of small-pox into distinct and confluent. The irregular measles, however, is not so well defined a form of disease as the confluent small-pox, and the division may be more justly compared to that of small-pox into regular and anomalous.

1. Of the Symptoms of Regular Measles.

I shall here pursue nearly the same order which was followed in detailing the symptoms of small-pox ; in the first place, pointing out the symptoms which precede the eruption ; then describing the eruption ; in the third place, enumerating the symptoms which attend it ; and lastly those which follow it.

It is a more distinct plan and better assists the memory

* Morton, Huxham, &c.

to describe the different appearances of the eruption, and having done so, recur to the period of its commencement, than constantly to interrupt the account of it, to notice the symptoms which accompany it.

We cannot distinguish the measles, on its first attack, from other fevers. The patient, for the first day, generally complains of alternate heats and chills. On the second day, though sometimes not till the third, the fever is completely formed, and certain symptoms make their appearance by which it may generally be distinguished. The symptoms of the eruptive fever, therefore, may be divided into those which it has in common with other fevers, and those which characterise it.

Along with other symptoms common to febrile diseases, the patient generally complains of much thirst, often of nausea, sometimes attended with vomiting. The tongue is generally white and moist. In the more alarming cases, subsultus tendinum, spasms of the limbs, sometimes delirium, more frequently coma supervene.

The last symptom indeed so frequently attends the eruptive fever of measles, that by some it is regarded as one of its diagnostic symptoms. In all eruptive fevers it is more common than in fevers properly so called.

Pains of the head, back, and loins, are frequent symptoms; the face is flushed, the pulse frequent and hard, and the respiration hurried. There is generally some remission in the morning, the symptoms returning in the evening with increased severity.

On the third day, the nausea and vomiting increasing or appearing now for the first time, the skin becomes hotter and more parched. In severe cases, if the patient has hitherto escaped delirium, it frequently shows itself on the evening of this day, or increases if it had supervened at an earlier period. When there is no coma the inquietude is considerable, and the sleep, if there be any, disturbed. The inquietude and distress of mind, Rhazes observes, is greater in the measles than in the small-pox.

The matter rejected by vomiting is generally bilious, and when a diarrhoea supervenes, which is not unusual, the stools are frequently of the same kind; and in children for the most part of a green colour: "*Quo fluxu,*" Burserius observes, "*ubi supervenit, vomitus et vomituritio fere sedan-*

"tur." The diarrhœa, he adds, does not impede the appearance of the eruption. In other cases, however, the bowels are costive, and sometimes, as in small-pox, there is a tendency to sweating*.

As far as the prognosis depends on the foregoing symptoms, it is collected in the same way as in fevers properly so called. The more parched the skin, the harder and more rapid the pulse, the more hurried and difficult the breathing, the more the countenance is flushed, and the greater the coma or delirium, the less favourable is the prognosis. A considerable affection of the breathing with an unusually hard pulse is particularly to be dreaded, on account of the tendency to pneumonic inflammation in this disease.

The diagnostic symptoms are the symptoms of common catarrh; but in catarrh they are not accompanied with those just enumerated, the fever for the most part is moderate, and always proportioned to the affection of the head, fauces, or chest.

On the second day of measles, if not earlier, the patient is attacked with a dry cough and hoarseness, with a sense of heaviness in the head and eyes. The cough is often severe and obstinate: Morton† calls it, "*Tussis admodum molesta, frequens, pertinax et ferina, quæ opii ipsius vires soporiferas plane superat.*" A cough often precedes the eruption in small-pox and scarlatina, but it is seldom so violent as that of the measles, which is sometimes the first symptom of the disease‡.

About the time that the cough generally supervenes, the throat becomes inflamed, impeding deglutition, and increasing the secretion of saliva. In some cases, a profuse ptyalism comes on§, and there is generally a sense of oppression and

* Adults, Frank (*Epitome de Cur. Hom. Morb.*) says, sometimes sweat, but not so frequently or profusely as in small-pox. The sweats are often beneficial.

† See Morton de Morbillis in his work *De Febris Inflammatoriis*.

‡ Sometimes, Hoffman observes, it troubles the patient for a fortnight before the fever comes on. Other writers make the same observation. Of an epidemic in London in 1753 Dr. Heberden remarks, the cough often preceded the measles for seven or eight days. In such cases the cough is sometimes accompanied with pains of the throat, head, and back.¶

§ Frank *Epit. de Cur. Hom. Morb.*

uneasy tightness about the breast, occasioning some degree of dyspnœa.

The appearance of the eyes, however, may be regarded as the best diagnostic. They are red, swelled, itchy, very sensible to light, and watery, tears sometimes falling from them.

The membrane of the nose is also inflamed, often discharging a copious thin secretion, which occasions frequent sneezing. Hemorrhagy from the nose is not uncommon, by which the head, eyes, and fauces are relieved. It has sometimes been so profuse as to threaten danger. The various hemorrhagies which occur in synocha occasionally appear in the eruptive fever of measles.

The eruption is less frequently preceded by epileptic fits than in small-pox. As in the latter, severe pains of the back preceding the eruption are unfavourable.

Such is the eruptive fever of measles, by the severity of which we may often judge of that of the succeeding disease.

With respect to the prognosis at this period, it is derived less from the state of the catarrhal than of the febrile symptoms, unless the former threaten suffocation, which sometimes happens in children, or we have reason to dread an inflammatory affection of the lungs.

It appears from what has been said, that the circumstances which distinguish the eruptive fever of measles from catarrh are, 1. The greater violence of the febrile symptoms compared with the catarrhal in measles. 2. The state of the eyes; for, however mild the other catarrhal symptoms are, the affection of the eyes, which in catarrh are less generally affected than the nose and throat, is always considerable. Lastly, certain symptoms which frequently accompany the eruptive fever of measles, and are seldom observed in catarrh, particularly coma. The diagnosis is assisted by the one disease arising from contagion, the other from cold.

When the eruption makes its appearance, it places the nature of the disease beyond a doubt. It generally shows itself towards the end of the third, or beginning of the fourth day; sometimes not till the fifth. It comes out on the forehead, in small points, which are generally distinct at first, but here and there increasing in number and size, are soon formed into small clusters, so that the face seems marked with red stains of various size and figure. In these

clusters the individual pustules are seen with difficulty, but are always readily felt, rendering the parts they occupy rough to the touch. While the eruption is coming out, some degree of moisture is frequently observed on the skin; which is a favourable appearance.

From the face the eruption gradually spreads to the neck, breast, trunk, and extremities. It generally appears on the extremities the day after it shows itself on the face, seldom either later or earlier. Sometimes, though rarely, it does not appear on the extremities at all*. Frank observes, that the morbillous, like the variolous eruption, sometimes appears in the mouth, affecting the tongue and other parts.

On the trunk and extremities the small pustules are often more numerous, but they are generally less prominent than on the face, so that on the former the red stains are broader, though seldom so rough, as on the latter; in all places where there is redness the inequality of the cuticle may be perceived. These stains vary in different cases, being broader and redder in some than in others.

Those on the face continue red, or rather increase in redness, for two days. On the third they assume a brownish colour. In the course of the fifth or at most the sixth, that is, about the eighth or ninth day of the disease, the redness on the face nearly disappears, although traces of it often remain for four or five days longer. The cuticle is now broken and raised in the places which the eruption occupied, so that the face appears covered with a light whitish powder.

It is observed by Frank and others, that when the eruption is not very favourable, it sometimes leaves pits in the skin like those which follow the small-pox.

When the redness has declined on the face it is at its height in the extremities, where about a day or two later it runs the same course. The eruption continuing red longer than usual is an unfavourable symptom. The more early and free the desquamation, which occasions the whitish appearance just mentioned, the more favourable is the prognosis. The eruption sometimes becomes livid, and has even assumed almost a black colour. These appearances indicate much danger. Sydenham and others observe, that they are not uncommon when the hot regimen and stimu-

* Dr. Heberden.

lating medicines have been employed, and are only to be removed by discontinuing this mode of treatment.

During the eruption, the face is turgid, but not swelled as in small-pox, and subsides as the eruption goes off. The eyelids are sometimes so much swelled as to close the eyes.

It sometimes happens, as in mild cases of small-pox, that on the appearance of the eruption the fever entirely ceases; more frequently, however, it brings only partial relief. Sydenham and Burserius observe, that they never saw the vomiting recur after the eruption was out. But the cough and difficulty of breathing are often increased at this period, even when the other symptoms suffer a considerable remission. The affection of the eyes and coma often remain undiminished. More rarely even the febrile symptoms suffer no remission, and in some cases they become more severe, and continue so till the period of desquamation; when the remission is often preceded by a flow of sweat or of urine, a diarrhœa or other spontaneous evacuation. Dr. Heberden mentions an instance in which the cough was relieved by a copious salivation.

In some cases the fever continues, and now and then increases even after this period. The coma in particular, the author just mentioned remarks, sometimes returns, and has even proved fatal after the eruption was gone.

There is generally a considerable tendency to inflammation throughout the whole course of the measles, and those parts are most subject to it which are most apt to be inflamed in common catarrh, the eyes, nose, fauces, and lungs. The inflammation of the eyes, nose, and fauces, is usually of little consequence; it seldom becomes very troublesome, and declines with the other symptoms. The inflammation of the lungs may supervene at any period, but is most frequent after the eruption is gone. If the fever continues, the cough seldom fails to do so likewise, and this cough and fever often become a real pneumonia, or in scrophulous habits degenerate into phthisis pulmonalis. Such indeed is the tendency to inflammation in measles, that blood taken at any period generally shows the buffy coat*.

* Those, says Sydenham, who had been treated with the hot regimen and stimulating medicines were most subject to inflammation of the lungs.

When neither the habit nor mode of treatment are bad, however, such consequences are far from being frequent, the febrile symptoms are generally moderate, and the danger inconsiderable. Sydenham, from very extensive experience, has pronounced the measles a safe disease. It can only be regarded as such when the fever abates on the appearance of the eruption, and ceases altogether at the period of desquamation, leaving the patient free from cough and dyspnœa.

The diarrhœa, which is generally salutary towards the termination of the disease, sometimes becomes profuse, or even dangerous*.

Such is the course of the regular measles. It sometimes varies in circumstances so trifling, that the disease still deserves the name of regular. Thus the eruption sometimes makes its first appearance on the neck or shoulders, instead of the face; sometimes sooner, and sometimes later, than the usual time; and there is sometimes no desquamation on its disappearance.

Although these varieties do not warrant the name of irregular, yet they seem to indicate a disease more dangerous, and in particular more liable to be attended with inflammation of the lungs, than the most regular form. Thus Sydenham observes that more died of the measles of 1674, in which there was no desquamation, than of that formerly epidemic. The fever and dyspnœa, in the decline of the disease, were more severe, and bore a greater resemblance to true pneumonia. Quarin† indeed remarks, that the eruption of the measles sometimes goes off without desquamation, the state of the patient notwithstanding being quite favourable. These variations from the common course may be regarded as the connecting link between the regular and irregular forms of the disease.

2. Of the Symptoms of Irregular Measles.

This is a very dangerous, but fortunately not a very common disease. Sydenham says nothing of it, for that of 1674 does not deserve the name of irregular, yet it cer-

* Frank observes that a profuse hemorrhagy from the nose has sometimes proved fatal after the eruption had disappeared.

† De Febris.

tainly raged in London during his practice. He describes the measles of 1670 and 1674, and passes over in silence the irregular measles which raged in 1672, as we are informed by Morton, who says that this epidemic destroyed nearly 300* weekly.

It appeared in the autumnal season, whereas the regular measles, like other inflammatory diseases, generally makes its appearance about January, continues to increase to the vernal equinox, and then gradually declines, till it altogether disappears, about the summer solstice. The irregular, like the regular, measles, however, most frequently appears in the vernal months.

Since the time of Morton, the irregular measles has been described by a variety of authors, Huxham†, Matthiew‡, Burserius§, Vogel||, &c¶.

In the eruptive fever of the irregular measles, there are not many circumstances to distinguish it from that of the regular. The symptoms in general are more violent, and the fever is sooner formed, the affection of the eyes and the cough being often considerable from the commencement. On the first night the patient is very restless, and on the next day the fever generally rises high, the cough and inflammation of the eyes increasing.

The eyelids are sometimes so much swelled that they cannot be separated, and the eyeball itself is often swelled and prominent; in some cases there is much pain and inflammation of the meatus auditorius.

* Dr. Dickson accuses Morton of having greatly exaggerated the fatality of this epidemic. See Dr. Dickson's paper in the 4th vol. of the Medical Observations and Inquiries.

† Huxham de Aere et Morbis Epidemicis, where he gives a short account of the epidemic measles which raged in the autumn of 1742.

‡ See a paper by Matthiew in Baldinger's Sylloge Opus. Select. in which he gives a copious account of the irregular measles which raged in Alsace, in 1766 and 1767. In this paper the reader will find references to other writers who treat of this form of the disease.

§ Institut. Med. Pract. The irregular measles described by Burserius differs considerably from that described by other writers, and resembles more the measles of 1674 described by Sydenham, which Burserius regards as irregular.

|| De Cog. et Cur. Morb.

¶ In the 4th vol. of the Medical Observations, the reader will find an account of this form of the disease by Dr. Watson, as it appeared in the Foundling Hospital, in the springs of 1763 and 1768. Most of the later writers on measles indeed notice it.

The pulse is now often more frequent, but less hard than in the regular measles. For the most part there is some degree of dyspnœa, and little or no expectoration attends the cough. When an expectoration of mucus occurs, it often relieves both the febrile and local symptoms.

The restlessness increases, with a parched skin, much thirst, and a sense of tightness and oppression about the præcordia. If coma does not supervene, there is generally an acute pain, often accompanied with a sense of heaviness in the head, or delirium.

The fauces are of a deep red colour, and sometimes assume the same appearance as in the cynanche maligna*, the tongue being very foul, and the stools unusually fetid†.

The eruption frequently makes its appearance on the second or third day; it is sometimes delayed to the fourth, fifth, sixth, or even a later period‡.

When the eruption is delayed to the fourth or fifth day, or longer, the excitement is generally less than in regular measles, the fever often assuming the form of typhus at an early period. This always indicates much danger, and if the patient survives, his recovery is generally slow.

The eruption does not always appear first on the face, as in the more benign forms of the disease, but sometimes on the shoulders, neck, or breast.

The duration of the eruption in irregular measles is as various as that of the eruptive fever, though generally proportioned to it. When the eruption appears on the second day, for the most part it disappears on the fourth, or at most the fifth or sixth day. When it does not appear till the fifth day, or later, it is often protracted to the twelfth, fourteenth, seventeenth, or even twentieth day, at different times assuming various colours, red, pale or livid, or even black.

Whether the disease is rapid or not, the febrile symptoms generally suffer a considerable remission, and are sometimes though not often wholly removed, after the disappearance of the eruption. In neither case, however, is

* See Vogel de Cog. et Cur. Morb. Dr. Cameron, in the 21st vol. of the Gentleman's Magazine, mentions several cases in which it had this appearance, so that he regarded the disease as a combination of the measles and cynanche maligna.

† Matthiew.

‡ Burserius and others.

there any remission, but generally an increase of these symptoms on its coming out. If nausea and vomiting have not appeared earlier, they very frequently supervene after the appearance of the eruption, and are more distressing than in the regular measles. The affection of the throat increases; the same may be said of the delirium and coma, when these symptoms have appeared at an early period; where they have not, either the one or the other often makes its appearance now. The pulse becomes more frequent and less full, and when the disease has been protracted, small, feeble, and often irregular; the cough and the hoarseness increase; the breathing, corresponding to the state of the pulse, becomes frequent and anxious, or the patient is oppressed with dyspnœa. Symptoms denoting the last stage of debility succeed, dropsical swellings, petechiæ, the worst kinds of hemorrhagy, tremors, subsultus tendinum, and convulsions, often the forerunners of death.

In general, however, the fatal termination is delayed to a later period. In the irregular, as well as the regular measles, the symptoms which take place after the eruption has disappeared are often most to be dreaded. Although the febrile symptoms, as we have just seen, for the most part, abate, the cough, dyspnœa, and oppression frequently increase, with a frequent, feeble, and sometimes irregular pulse. Diarrhœa often comes on, but generally serves only to increase the debility. When the delirium returns, the danger is very great.

When, on the contrary, the skin becomes moist, the restlessness is diminished, the cough and dyspnœa abate, and the strength begins to return, the pulse becoming fuller and less frequent, the prognosis is good.

Inflammation of the lungs is more frequent at all periods of the irregular than regular measles. Suppurations of the brain, internal ear, and other parts, sometimes occur. In some cases swellings appear about the neck, on or about the fifth day. If the patient survives, they often form abscesses and give much trouble*, and the affection of the eyes sometimes degenerates into obstinate sores.

From what has been said, it appears that the regular and irregular measles differ chiefly in the following circumstances.

* Matthiew.

1. All the symptoms, whether febrile or catarrhal, are generally more violent in the irregular than in the regular measles.

2. The fever in the former always shows a tendency to typhus.

3. In the regular measles, the affection of the fauces always resembles that produced by cold; in the irregular, the fauces are frequently livid, and often assume the same appearance as in the cynanche maligna.

4. The duration of the different stages of the irregular measles is more uncertain.

The irregular measles might be divided into two varieties, that in which the symptoms run high and are soon terminated, and that in which they are less violent and longer protracted; and there is the more room for such a division, as the one of these varieties has been epidemic without the other making its appearance. The same epidemic, however, often assumes both forms.

Besides the regular and irregular forms of the disease, there are certain varieties, as in small-pox, which now and then make their appearance. The fever, with all its usual symptoms, Quarin observes, has sometimes appeared without the eruption. Others make the same observation, the accuracy of which is called in question by Frank, but not (it appears from a variety of observations) on sufficient grounds*.

It even appears from some observations, that the contagion of measles may produce certain symptoms of this disease without either fever or eruption. Dr. Home, in his account of the manner of communicating the measles by inoculation, which I shall presently have occasion to describe, observes, "March 27, inoculated a child of eight years old, with the same blood which had been kept ten days loosely in my pocket-book; I was afraid when I used it that it was too weak. The sixth day this child

* "During this measly season," (it is remarked in the fifth vol. of the Medical Essays) "several people who never had had the measles had all the preceding symptoms of measles, which went off in a few days without any eruption, which they underwent months or years afterwards." The reader will also find a case of the same kind related in Morton's work, "*De Febris Inflammatoriis Universalibus*." The case is entitled, "*Febris morbillosa, absque ulla efflorescentia vel comitante vel subsequente, sanata.*"

"sneezed much, but never was hot or struck out. This child took the measles in the natural way about two months afterwards."

It also sometimes happens, that a few days after every symptom of the disease is gone, the fever again returns, and is again attended with the eruption*. The second appearance of the measles is most frequent in the irregular form of the disease. Matthiew observes of that of Alsace, that soon after the eruption had disappeared, a new fever came on, followed by a second eruption.

No disease is more apt than the measles to call into action, if I may use the expression, any scrophulous tendency. Hence its most frequent consequences are the various forms of scrophula; glandular tumors, marasmus from obstruction in the mesenteric glands, obstinate sores† often affecting the bones, and phthisis pulmonalis. Other inflammatory affections of the lungs are also frequent after this disease.

The bowels are often left in a very weak state, a chronic diarrhœa remaining, which has sometimes proved fatal.

If we except the lungs, no part suffers so frequently as the eyes, which (as appears from what has been said) are much affected throughout the whole disease. The ophthalmia often remains after the other symptoms, and becomes obstinate; and in some cases the sight has been lost from ulceration of the cornea, in others from an affection of the nerve, a true amaurosis supervening‡.

When the measles has been tedious and severe, it sometimes terminates in dropsy, and other diseases of debility.

All these consequences are most frequent in the irregular forms of the disease.

* See Med. Museum, vol. 2.

† See the observations of Dr. Watson in the 4th vol. of the Medical Observations, and Dr. Huxham's Account of the malignant Measles which raged at Plymouth, in 1745.

‡ Vogel.

SECT. II.

Appearances on Dissection.

On this part of the subject there is little to be observed. If the patient dies under the eruption, the trachea and larger branches of the bronchiæ, as in the small-pox, are often found covered with it; which may account for the increase of the cough after its appearance.

When the patient dies with a swelled belly and hectic fever, the glands of the mesentary are found indurated; when of phthisis, indurated tumors of various size, some of them containing pus and ulcers, are found in the lungs. Such appearances, however, it is evident, are not essentially connected with measles.

It was observed above, that inflammation of the viscera is more frequent in the irregular than in the regular measles; in the former also it is more liable to run to gangrene. Hence, in the accounts of the dissection of those who died of irregular measles, we find gangrene of some of the viscera an usual appearance*.

* Dr. Watson observes of the putrid measles, "Of those who died, some sunk under laborious respiration, more from dysenteric purging, the disease having attacked the bowels, and of these, one died of a mortification in the rectum. Besides this, six others died sphacelated in some one or more parts of the body. The girls who died most commonly became mortified in the pudendum." He also mentions ulcers, which were sometimes gangrenous on the cheeks, gums, and jaws.

"Several were opened," Dr. Watson continues, "under different circumstances attending this disease. In some who died of laborious respiration, after the feverish heat and eruption were passed, the bronchial system was found very little loaded with mucus, but the substance of the lungs was tender, and the blood vessels were very much obstructed and distended. In some who died of laborious respiration and extreme debility, many strong adhesions were found between the lungs and pleura. The lungs were distended with blood, and part of them had begun to sphacelate. Part of the jejunum was sometimes inflamed, and contained several worms." In some who died suddenly, it was found that the sphacelus of the lungs had occasioned a fatal hemorrhagy. "Collections of purulent matter," he adds, "were observed in none; on the contrary, in this putrid disease, every morbid appearance indicated a sphacelus."

SECT. III.

Of the Causes of Measles.

The measles, like the small-pox, seems to have been unknown to the ancients, although on this head there is some dispute*. The Arabians certainly first accurately described the disease. It is from them we have the name morbilli. Rhazes, in particular, gives us both its symptoms and the mode of treatment practised in Arabia, which as well as the treatment of small-pox was more judicious than in modern times, till early in the last century.

From what we know of the history of measles, and what we every day see, we cannot doubt that it arises from a specific contagion.

So much was said of contagion in general, that there is little to be added here. The measles appear earlier after infection than the small-pox, and the time of its appearance is rather more uniform, being generally about the sixth and seldom later than the eighth day. Dr. Heberden observes, however, that he has known its appearance delayed even to the 14th or 15th day.

The circumstances which determine the severity of the measles are far from being well ascertained; almost all we know on this subject is, that it is particularly unfavourable in plethoric, and often still more so in scrophulous habits. It appears to be less dangerous in pregnant women than the small-pox: like the latter, it is sometimes communicated to the foetus in utero.

The measles seldom attacks the same person a second time, of which, however, there are a few well authenticated instances†.

* See the observations of Matthiew and others.

† "Nunquam enim," Morton observes, "in tota mea praxi novi quemquam, præter unum puerum, secunda vice hoc morbo correptum." In the Medical Institutes of Burserius, the reader will find that the measles have not only appeared a second but even a third time in the same person. "Quod secundo et tertio eundem hominem in eos incidisse, ex fideis observatis constet;" and in the fifth volume of the Edinburgh Medical Essays, it is observed of the measles of 1735 and 1736, that many who had formerly had the disease were seized with all its symptoms, not excepting the eruption.

The great success which attended inoculation for the small-pox induced many to believe that similar advantage might be expected from it in measles. The very prevalent opinion of the latter being received in the natural way by the lungs, and the lungs being the chief seat of danger in this disease, seemed farther to strengthen the opinion. Dr. Home, of Edinburgh, however, was the first who actually made the experiment.

He met with some difficulty from no matter being formed in the measles, and his not being able to collect a sufficient quantity of broken cuticle at the time of desquamation, to produce the disease. "I then applied," he observes, "directly to the magazine of all epidemic diseases, the blood." He chose the blood when the eruption began to decline in patients who had a considerable degree of fever. He also ordered it to be taken from the most superficial cutaneous veins where the eruption was thickest.

While the blood came slowly from a slight incision it was received upon cotton, and an incision being made on each arm of the person to be inoculated, the cotton, as soon as possible after it had received the blood, was applied over these incisions, and kept upon them, with a considerable degree of pressure. He also used the precaution of allowing the incisions of those to be inoculated to bleed for some time before the cotton was applied, that the blood might not wash away or too much dilute the morbillous matter. The cotton was permitted to remain on the part for three days. How far all these precautions are necessary to success has not been determined.

Dr. Home inoculated ten or twelve patients in this way, in whom the success of the operation was equal to his hopes. The eruptive fever generally commenced six days after inoculation, and the symptoms of the disease were milder than they usually are in the casual measles. The fever was less severe, the cough either milder or wholly absent, and the inflammation of the eyes trifling; they watered, however, as much, and the sneezing was as frequent, as in the casual measles: nor did bad consequences follow any case of inoculated measles; no affection of the chest remaining after it.

The chief difference between the casual and inoculated measles seemed to be, the absence of pulmonic affection at all periods of the latter.

Dr. Home now regarded it as ascertained, that the natural measles are received by the lungs, and that on this circumstance depends the danger of the disease. He wished, however, to observe the symptoms of the disease when evidently received in this way, and therefore put a piece of cotton, which had remained in the nose of a patient under measles, into that of a healthy child, making him breathe through the infected cotton. This very unjustifiable experiment, although repeated, did not succeed in inducing the disease. Nor, it is evident, if successful, would it have decided the question, whether or not the casual measles is received by the lungs. Dr. Home's experiments have not met with the attention they deserve. In scrophulous habits particularly, it would certainly be worth while to try his mode of inoculation. If more extensive experience prove it capable of producing the effects which he ascribes to it, it will certainly be an improvement of considerable importance.

It was observed above, that when the small-pox prevails at the same time with measles, the former is often of an unfavourable kind. This has been particularly remarked of the irregular measles.

SECT. IV.

Of the Treatment of Measles,

We may divide the treatment of this disease into that of regular, and of irregular measles.

As inoculation is not practised in the measles, we seldom have the advantage of certainly knowing under what disease the patient labours as soon as he is attacked. If, however, he never has had the measles, and has about six days before the appearance of the fever been exposed to its contagion, and the fever is accompanied with the diagnostic symptoms above pointed out, there can be little doubt of the nature of the disease. The information required, however, cannot always be procured, and the diagnostic symptoms are often not alone sufficiently decisive at an early period, so that in many cases we cannot positively ascertain its nature till the eruption appears. But this is not a matter of much consequence, as the train of symptoms present require very nearly the same

mode of treatment, whether the disease be measles, common synocha, or catarrh; the chief difference being that the same remedies are employed more assiduously in measles.

The diet should be the same as in the more severe forms of the distinct small-pox. We seldom see the measles so mild a disease as the most favourable inoculated small-pox, for even in the least dangerous forms, inflammatory affections are to be dreaded. On this account, we find practitioners insisting much on a diluent and antiphlogistic diet*.

With regard to exercise, if the patient find himself inclined, from the commencement, to remain in bed, he should not be prevented; at the same time there is no occasion to confine him to it against his inclination. In all cases, towards the period of the eruption, he feels fatigued, and averse to motion.

Whether he be in bed or not, extremes of heat and cold are equally to be avoided. By the former we always increase the febrile, by the latter we may increase the catarrhal symptoms.

After the benefit derived from the application of cold in the small-pox was perceived, many recommended it with equal freedom in the measles; and this practice is still defended by some, particularly the followers of Dr. Brown. Sydenham, who contributed more than any other practitioner of this country to introduce the cool regimen, when he cautions against keeping the patient too warm in measles, says nothing of the application of cold. "*Neque autem, vel stragulis vel igni, quibus sani adsueverant quidquam adjici patiebar.*" In other places he makes similar observations. Morton, the contemporary and almost the rival of Sydenham, adopted the same practice, and their example

* "*Acarnibus quibuscunque arcebam,*" Sydenham observes, "*juscula avenacea, hordeacea et similia, nonnumquam et pomum coctum concedebam.*" "*Dietam vero diluentem,*" Huxham (*De Aere et Morbis Epidemicis*) remarks, "*mollem, omni carni vacuum instituere oportet.*" Morton, Mead, Burserius, and many others, might be quoted to the same purpose; the last of these even dissuades from the use of milk. M. De Lassone, however, having experienced the good effects of milk in the small-pox, made trial of it in measles, and thinks it of great use, particularly when the bilious diarrhœa becomes profuse. Dr. Mead recommends asses' milk. The debilitating effects of antiphlogistic measures, however, are never to be overlooked. When the habit is very weak, Quarin justly observes, we must abstain from too much dilution.

has been followed by the best practitioners since their time. This much at least is certain, that if experience has not proved the harm done by a free application of cold in the measles, the practice has not hitherto been sufficiently general to ascertain its safety *; we may, therefore, say of the degree of temperature, as of the exercise, that it should in a great measure be regulated by the patient's feelings. It is particularly to be observed, that the partial or sudden application of cold, or exposing the patient to a current of air, is dangerous.

In most cases it is necessary to have recourse to other means for diminishing excitement. It is needless to repeat what has been said of nitrate of potash, saline draughts, &c.; these are useful in all cases of increased excitement. Acids are to be avoided, if they increase the cough.

Gentle cathartics are indispensable in all cases. They are not only useful by removing irritating matter and diminishing excitement, but also by obviating the tendency to inflammatory affections of the head.

Emetics have not been much employed in this disease, except for the removal of certain symptoms, the treatment of which does not come under the general plan of cure.

The remedy which principally demands attention in measles is blood-letting. Though its utility when the symptoms run high is generally admitted, there has been some difference of opinion respecting the period at which it should be employed. For the most part Sydenham did not recommend it till towards the decline of the disease; for which he has been censured by many, particularly Dr. Mead †. Had Sydenham, however, taken the trouble to defend his practice, he might have found arguments to support it. Unless the inflammatory symptoms run unusually high, the danger at the commencement is inconsiderable; this period is succeeded by a greater or less remission, which is often followed by a more dangerous train of symptoms than any which preceded them. The patient's strength in the two former stages should as much as possible be saved,

* See the 650th paragraph of Dr. Cullen's First Lines.

† "Sanguis itaque, incipiente morbo, pro ætatis ac virium ratione detrahendus est." See Dr. Mead's *Monita et Præcepta Med.* In this observation we perceive the remains of the hypothesis which led to an indiscriminate use of blood-letting in fevers.

as in the last more strength than can remain after such a disease is often required to bear without injury the only effectual means of relief. "As this fever," Dr. Cullen remarks, "is sometimes violent before the eruption though a sufficiently mild disease be to follow, so bleeding is seldom very necessary during the eruptive fever, and may often be reserved for the periods of greater danger which are perhaps to ensue*."

In some cases, however, even unattended by visceral inflammation, the excitement is sufficient to warrant blood-letting at an early period. When the excitement is such as threatens much subsequent debility, we should have recourse to it†.

With regard to the employment of blood-letting at a late period of measles, it cannot be fully understood till the reader is made acquainted with its employment in inflammatory affections of the chest.

It is remarkable that blood-letting sometimes removes certain symptoms remaining after measles, for the removal of which under other circumstances very little is to be expected from it. Thus it has removed cough, although unaccompanied by fever, or the other symptoms denoting inflammation. It has even been found a successful remedy in the diarrhœa which remains after measles. "Quin et diarrhœa," Sydenham observes, "quam morbillos excipere diximus, venæsectione pariter sanatur."

Concerning the use of blisters, so generally recommended in this disease, it is only necessary to repeat an observation already made. If our view in using them be to remove fever, we shall very constantly be disappointed; if to relieve local affections, we shall find them a powerful remedy. I shall presently have occasion to make some observations on the symptoms for which they are employed.

Of the treatment of irregular measles it will not be necessary to say much.

* The reader will find a paper, in the 4th vol. of the Medical Observations and Inquiries, by Dr. Dickson, in which Sydenham's practice with respect to blood-letting in measles is defended, and Dr. Mead censured for his observations on it.

† The presence of the menstrual discharge, Dr. Heberden justly remarks, is no objection, as some have supposed, to the employment of blood-letting in the measles.

When the fever is synocha, the treatment differs only in degree from that of the regular measles. Cooling laxatives, and in many cases blood-letting, are necessary, and must be employed to sufficient extent to reduce the symptoms of excitement, whatever be the period of the disease. In measles, as in small-pox, a prejudice has prevailed against letting blood before the appearance of the eruption. It is equally unfounded.

The chief difference in the treatment of irregular measles accompanied with synocha, and the regular form of the disease, arises from the fever in the former being apt to assume the form of typhus. There is perhaps no febrile disease of this country more perplexing than a severe case of irregular measles; the excitement often indicating the most vigorous antiphlogistic means, while debility frequently supervenes so suddenly as to render their use, even in the earliest stage, precarious.

The safest plan appears to be to avoid blood-letting, if the excitement can be diminished by less debilitating means; if not, to employ it only to that extent which the state of the symptoms requires. If the excitement is prevented from rising too high during the first days, the nature of the disease will soon overcome it.

When the fever has changed to typhus, the guarded use of wine and opiates, with bark, are the best medicines. There is nothing to be observed in addition to what has already been said of them*. Some have been afraid of the bark in every form of measles; this fear, however, appears to be groundless†.

It only remains to point out the means to be employed when certain symptoms supervene, the treatment of which does not come under the general plan of cure. On this part of the subject there is little to be added to what was observed respecting the treatment of the corresponding symptoms in small-pox.

A hoarseness which now and then remains after the

* See the observations on the use of these medicines in continued fever.

† Among other writers on what has been called putrid measles, the reader may consult for the use of the bark in this disease the observations of Dr. Cameron, in the 1st vol. of the Medical Museum, and the 21st of the Gentleman's Magazine.

measles, when accompanied neither by fever nor dyspnœa, is sometimes removed by the bark*.

Dyspnœa may often be relieved by inhaling the vapour of warm water, or by the medicines termed Antispasmodic, particularly the Ammonia, when not counterindicated by the other symptoms. A gentle cathartic frequently relieves it. These failing, we must have recourse to venesection, if the pulse admits of it; if not, blisters are the best remedy. When it remains after the measles, a perpetual blister on the sternum, or a seton in the side, are the best means; when it is urgent and attended with fever, blood-letting is necessary. The treatment of this symptom and of the cough, however, cannot be fully understood without being acquainted with that of Pneumonia, of which I shall have occasion to treat in considering symptomatic fevers.

It is proper to use some precautions to prevent the inflammation of the eyes from becoming troublesome: exposure to light should be avoided, and they may be washed occasionally with a little rose or plantain water. If inflammation has supervened, more powerful means are necessary, which I shall have occasion to enumerate in treating of Ophthalmia.

A spontaneous diarrhœa should be moderated, but not stopped, particularly by the use of astringents and opiates. When it remains after the disease, Hoffman recommends the carscarilla. If it does not disappear soon after the febrile symptoms, it is to be treated like a simple diarrhœa, but still with caution, on account of the tendency to inflammatory affections after the measles. For the same reason it is necessary for some time cautiously to avoid exposure to cold, and the other causes of such diseases.

* See a paper by Dr. Whytt, in the third volume of Essays and Observations, Physical and Literary. Testaceous powders are said to be often serviceable in this hoarseness. See a paper in the second volume of the Medical Museum.

CHAPTER IV.

Of the SCARLET FEVER.

THE Scarlet Fever, termed by medical writers *Scarlatina*, is defined by Dr. Cullen,

“*Synocha contagiosa. Quarto morbi die facies aliquantum tumens; simul in cute passim rubor floridus, maculis amplis tandem coalescentibus, post tres dies in squamulas furfuraceas abiens, superveniente dein sæpe anasarca.*”

He divides this disease into two varieties, the *Scarlatina Simplex*, and the *Scarlatina Cynanchica*.

The former is defined, “*Scarlatina nulla comitante cynanche.*”

Dr. Cullen observes, that although in the space of forty years he had seen the scarlet fever epidemic six or seven times, it had always assumed the appearance of the *scarlatina cynanchica*, and was, for the most part, attended with ulceration of the fauces. It appears, however, from the observation of Sydenham and others, that the simple *scarlatina* has sometimes been epidemic, without the other form of the disease showing itself. It frequently happens, that in the same epidemic some have the scarlet fever with, and others without, the affection of the throat; while others have the affection of the throat without any eruption*.

It has long been disputed whether the scarlet fever and malignant sore throat ought to be esteemed different diseases, or only varieties of the same disease. This dispute is only of consequence from its having made some noise. I shall defer any observations on it till the symptoms of both diseases have been laid before the reader.

The second variety of *scarlatina*, Dr. Cullen defines “*Scarlatina cum cynanche ulcerosa.*”

In considering the symptoms of scarlet fever, I shall follow the same mode of arrangement as in the foregoing exanthemata.

It may seem proper, in laying down the symptoms of *scarlatina*, to keep in view the division of this disease into

* Dr. Clark's Treatise on Fevers, and other works on this disease.

the two varieties just mentioned ; and this division might be compared to that of the small-pox into distinct and confluent, or that of the measles into regular and anomalous.

For several reasons, however, it is unnecessary to insist much on the symptoms of scarlet fever unaccompanied by cynanche : it is not often met with ; it may be readily known from what will be said of the scarlatina cynanchica, and it is a very mild disease, and does not require any particular mode of treatment. The following is Sydenham's description of it. The patient, as in other fevers, is seized with chills and rigors, but does not complain of much sickness ; soon after this the whole skin is covered with small red stains, more numerous, broader, redder, but not so uniform as those in measles ; these stains remain for two or three days, and disappear with a desquamation of the cuticle, in small scales that fall off and appear again two or three times in succession*.

SECT. I.

Of the Symptoms of Scarlet Fever.

At the commencement, this fever differs little from others. It comes on with lassitude, languor, dejection, chills, and shivering, often alternating with fits of heat. The thirst is generally considerable, and as the disease advances, the patient complains of a sense of anxiety, and sometimes of pain in the stomach, and is frequently troubled with vomiting ; but the anxiety and vomiting are rather symptoms of cynanche maligna than of scarlatina.

The patient soon feels some degree of pain about the throat, increased on swallowing. This is to be regarded as a favourable symptom : in cynanche maligna there is little pain in swallowing, and it is as it approaches to this disease that the scarlatina is dangerous.

The uneasiness of the throat is sometimes among the first symptoms, and in some cases it precedes the others†. The sore throat is not often attended with cough or other catarrhal symptoms, but frequently with a sense of stiffness in the

* See the 2d chapter of the 6th section of Sydenham's work, Circa Morborum Acutorum Historiam et Curationem.

† Aaskow, Acta Societ. Hafniensis, and others.

muscles of the neck, which distinguishes the eruptive fever of scarlatina from that of measles.

In some cases, however, the eyes, as in measles, are inflamed, watery, and incapable of bearing the light, with swelling of the eyelids and sneezing. Rather more frequently the patient is troubled with a cough*.

On examining the internal fauces, they are found red, and more or less swelled. A florid appearance and a considerable degree of swelling are favourable symptoms.

On the tonsils, velum pendulum palati, and uvula, the parts chiefly affected with inflammation, there generally appears a number of small, whitish, or greyish specks, or sloughs. The darker their colour the less favourable is the prognosis.

The skin is now very hot, the pulse frequent, sometimes full and strong, which is a favourable symptom; at other times, particularly where the throat is of a purplish hue, and the specks of a dark colour, small and weak, though at the same time often hard, a state which always indicates danger. The breathing is hurried, difficult, and sometimes rattling. The fever suffers an exacerbation towards night, and when it is considerable, delirium or coma often comes on. Either indicates danger.

What first seemed greyish specks now frequently appear small ulcers. The internal fauces and mouth are loaded with viscid mucus, and the swelling of the fauces increasing, the swallowing becomes more difficult and painful.

In milder cases, the sloughs continue till the fever is passed, and then falling off, an ulcer appears on one or both tonsils, which for the most part is well conditioned, and heals readily.

Hemorrhagy from the nose at an early period often relieves the fauces. A thin discharge from the nose, especially if fetid, and if it excoriate the lips and nostrils, is a bad symptom. The same may be said of a diarrhoea, which seems often to proceed from the morbid secretion of the fauces being swallowed.

* Frank's Epitome De Cur. Hom. Morb. The works of Morton, one of the earliest writers on the disease, and Dr. Cotton's letter to Dr. Mead on a particular form of scarlatina prevalent at St. Alban's, in 1748. Dr. Sims observes of an epidemic scarlatina, that a short cough was a very frequent symptom, which was most severe when the throat was least affected.

But the purple colour and ulceration of the fauces, the coryza at least when the matter discharged is acrid, and the diarrhoea, are rather to be regarded as symptoms of the cynanche maligna than of the scarlatina.

If the swelling of the throat at any period of the disease suddenly subside, a swelling sometimes appears in a neighbouring part*.

In unfavourable cases, a little before the eruption appears, the face is sometimes flushed and swelled. It sometimes happens, though very rarely, that in children the eruption is preceded by an epileptic fit†.

The period of the eruption is more uncertain than in the other exanthemata. When the symptoms are moderate, it is generally delayed to the third or fourth day; in more severe cases, it often appears on the second or even on the first. Bang often saw it on the first day, Dr. Clark met with it within twelve hours from the commencement of the disease, and Dr. Cotton mentions cases in which the eruption appeared as soon as the fever.

The eruption first appears on the face, most frequently about the nose and mouth, like a red stain or blotch, which disappears on pressure‡. It soon spreads over the neck, breast, trunk, and at length over every part of the body, which often appears uniformly red. The prognosis is then better than when the redness appears here and there in blotches, which is sometimes the case on the trunk, while at the same time the redness is uniform on the extremities. The degree of redness also varies much: it is sometimes such as not to be very remarkable; in other instances, the whole body is so red, that it has been compared to a boiled lobster.

When the eruption is nearly inspected, it appears to consist of innumerable little pimples running together. Upon the extremities and in the interstices of the blotches on the trunk small points are often observed more prominent than

* In an epidemic mentioned by Dr. Rush, a swelling behind the ear often followed that of the throat. Such a translation of the swelling generally denotes an unfavourable form of the disease. That mentioned by Dr. Rush approached to the nature of the cynanche maligna.

† See Sydenham's work on Acute Diseases, sect. 6th, chap. 2d, and a paper by Bang, in the 2d volume of the Acta Soc. Med. Hafniensis.

‡ It sometimes makes its first appearance on the neck. See the observations of Eickel in the Act. Soc. Med. Haf. and others.

those forming the stains, which is generally an unfavourable appearance.

The eruption seems much connected with the state of the throat, so that the former is seldom completely and uniformly diffused if the latter be alarming; and on the contrary, if the affection of the throat be slight, the redness is more general.

The duration of the eruption is as uncertain as the time of its appearance. It frequently remains for three or four days, sometimes disappears within twenty-four hours. In general, however, the red colour begins to change into a brown in the space of two or three days; soon after this the skin becomes rough, and the cuticle begins to peel off, sometimes in small scales, at other times in large pieces, which process now and then continues as late as the twenty-eighth or thirtieth day. In most instances it is finished much sooner.

The nails have, though very rarely, been cast off with the cuticle; sometimes the cuticle of the tongue peels off at the same time*. The tongue becoming clean while the desquamation goes on is a favourable appearance.

When the desquamation begins, a gentle sweat very generally appears, and all the symptoms abate, and are soon wholly removed.

Such is the general course of the eruption in scarlatina: considerable variations have occasionally been observed†.

The symptoms which accompany the eruption differ little from those which precede it. The febrile symptoms are seldom relieved by its appearance. The inflammation and swelling of the internal fauces in some cases abate; in others, they are increased; and the viscid mucus, which is now often secreted in considerable quantity, renders the deglutition more difficult. The swelling, however, is seldom so great as it frequently is in other kinds of sore-throat. When the maxillary and parotid glands partake of the swelling, it is sometimes so considerable as to affect the breathing.

* See the observations of Bang and others.

† "Die autem morbi quarto, quinto, vel sexto, singuli scarlatinam efflorescentiam per cuticulam ubique sparsam perpetiebantur, eamque per septem, octo vel decem dies protensam." (Morton De Feb. Scarlat.) The most remarkable variety in the eruption of scarlatina is analogous to the variety of measles, termed Rubeola Variolides. "In some," Dr. Rush observes, "an eruption like the chicken-pox attended the sore-throat." This variety is called by Sauvages Scarlatina Variolosa.

The mucus frequently assumes the appearance of a crust covering the tonsils and neighbouring parts. When by the use of gargles it is washed off, which may readily be done, the surface sometimes appears inflamed but sound, at other times covered with small ulcers. In the worst cases, small masses resembling coagulated blood are frequently spit up, and the acrid secretion from the nares is increased or supervenes if it did not appear before the eruption, excoriating the lips and nostrils. The eyes assume a dull and heavy appearance, and the face seems bloated, and is affected with œdematous swelling; the hands and fingers are often affected with the same kind of swelling, and painful on pressure; or severe pains of the extremities without swelling, much restlessness, delirium, or coma supervene. But such cases belong rather to *cynanche maligna* than *scarlatina*.

In the most favourable cases, the symptoms upon the whole become milder after the appearance of the eruption. The febrile symptoms indeed are seldom much relieved, but the inflammation and swelling of the fauces begin to abate, and by the time the eruption is over, if there be a free desquamation with moisture on the skin, have wholly disappeared, at most leaving only superficial ulcers of the tonsils, which soon heal.

The fever now abates, and for the most part in a short time wholly disappears, more or less of an œdematous swelling appearing on the legs and sometimes over the whole body, which in two or three days goes off without the assistance of medicine; and the debility which remains, as the appetite is generally keen, is soon removed by a nourishing diet. In less favourable cases, the febrile as well as other symptoms continue to harass the patient after the eruption has disappeared.

It sometimes happens that although the patient is free from complaint for some days after the eruption is passed, yet in a short time, particularly if the skin has remained dry during the desquamation, symptoms of fever again show themselves, and, as sometimes happens in the other exanthemata, have been followed by a second eruption*.

* If the skin remains dry, Eickel observes, after the beginning of the desquamation, the disease will either be dangerous or protracted; the affection of the fauces and fever become worse, and in some cases a new eruption appears on the face and neck; which unfavourable symptoms, he adds, generally disappear as soon as the skin becomes moist. The

A running from the ear now and then comes on towards the decline of the disease, and is sometimes very copious and fetid, by which the hearing has been impaired or wholly lost. It sometimes happens that a swelling of the parotid glands comes on at the same period, which is now and then relieved by a spontaneous salivation. The swelling of the parotid glands is unfavourable; the running from the ear more so; and the prognosis is still worse if both symptoms attend, especially, Eickel observes, if the parotids show a tendency to suppuration, from which, he says, he never observed any benefit*.

The swelling of the parotids is generally relieved when the running from the ears is considerable, and again increases when this is lessened. While the running from the ear and the swelling of the parotids remain, it is very difficult to produce a general moisture on the skin.

Sometimes the symptoms which succeed the eruption take a different turn; the patient falls into obstinate anasarca swellings, or is attacked with dropsy of some of the cavities. When the swelling of the glands about the neck suppurates, obstinate sores, at the same time, often form in the nose and ears, and even affect the bones. The mouth, lips, and palate, and the parts in the neighbourhood of the anus, also occasionally suffer from ulceration.

The inflammation sometimes spreads to the trachea and lungs, occasioning hoarseness, violent coughing, and wheezing, or rattling breathing†; or, as in cases mentioned by Drs. Rush, Home, and others, a squeaking voice similar to that which attends the croup‡.

Symptoms of debility; often accompanied with scanty,

same author remarks, that a similar train of symptoms are also most apt to appear in the measles and erysipelas, when the skin remains dry at the time of desquamation.

* The swelling of the parotid glands, Dr. Sims observes, occurs at various periods of the disease, and seems, when it is late of appearing, to protract all the symptoms, or even to renew them after they had ceased, the eruption itself not excepted. See a paper by Dr. Sims in the 1st vol. of the *Memoirs of the London Medical Society*. Plenciz in his *Tractatus de Scarlatina*, Quarin in his work *De Febris*, and others, make similar observations.

† See the observations of Dr. Clark.

‡ In the case of Dr. Morton's daughter, related by him, the scarlatina terminated in an intermitting fever, which was removed by the bark.

sometimes with bloody, urine, have now and then appeared after the patient has remained well for some days or even weeks. This train of symptoms is mentioned by Plenciz, Quarin, and De Haen in the continuation of the 1st vol. of his *Rat. Med.* Dr. Sims and Dr. Withering mention a similar train of symptoms*.

Although the swelling of the parotids has not previously appeared, it sometimes attends the anasarca, and even goes on to suppuration. The reader will find cases of this kind mentioned by Bang, who observes that epileptic fits sometimes both precede and follow the dropsical swellings. De Meza also says, that during these swellings he has seen both children and adults seized with epilepsy, which did not, however, prove dangerous, and seemed generally owing to exposure to cold, or some error in diet.

Death seldom happens at a very early period of the scarlatina. When the symptoms run high and the eruption appears on the first or second day, the patient is sometimes carried off on the fourth or fifth, in other cases seldom sooner than the eighth or ninth day, and often later†.

It may be observed upon the whole, that the true scarlet fever is a very mild disease. It is only in proportion as it partakes of the nature of the cynanche maligna that it becomes dangerous. In collecting the prognosis, therefore, the symptoms showing a tendency to the cynanche maligna particularly demand attention. These I shall recapitulate, contrasting them with the corresponding symptoms of the mild scarlatina. They are not only of consequence in determining the prognosis, but of the first importance in regulating the treatment of the disease.

If the scarlatina makes its attack with only a degree of lassitude, languor, dejection of spirits, and shivering, the disease promises to be less dangerous, and to approach less to the nature of cynanche maligna, than when, along with these symptoms, the patient is troubled with anxiety, nausea, and vomiting.

* These symptoms indicate a tendency to dropsy, as farther appears from the treatment found most successful in them. Diuretics and cathartics, De Haen observes, were sometimes serviceable, diaphoretics very rarely. The medicine chiefly recommended by Plenciz and De Haen has for its principal ingredients calomel and squills. The cases mentioned by Dr. Withering often terminated in confirmed dropsy. See Dr. Withering's *Treatise on Scarlatina*.

† Dr. Clark on Fevers.

If the internal fauces are of a florid colour, and considerably swelled, with difficult and painful deglutition, the prognosis is better than when they appear of a dark red or purple colour, without swelling, the deglutition being easy, and attended with little or no pain.

If the specks, which appear about the tonsils, velum pendulum, and uvula, be of a whitish colour, and are not soon changed into ulcers, the disease is more favourable than when they are of an ash or brown colour, and become ulcerous at an early period.

When there is no running from the nose, or such as produces no excoriation, the prognosis is better than when a thin acrid and fetid secretion runs from it.

It is also a sign of the mildness of the disease to be unattended with purging, and of great danger when the purging excoriates the anus.

When the pulse is strong and full, the disease is less dangerous than when it shows a tendency to become weak and irregular.

When the patient bears the disease well, and without much loss of strength, his situation is more favourable than when he is restless and debilitated.

When the mental functions remain unaffected, the prognosis is better than when delirium or coma supervene.

If the eruption is delayed till the third or fourth day, the disease is safer than when it appears earlier.

When it is universal, every part of the body becoming uniformly red, the prognosis is better than when it comes out here and there in stains or blotches, or in small points.

A tendency to swelling in the neck, hands, and feet, and the eruption being less on the trunk than the extremities, add to the unfavourable prognosis.

The same may be said of the eruption appearing unsteady, glandular swellings coming on, and the fever not remitting at the period of desquamation.

When the dyspnœa is considerable, without much swelling about the throat, there is reason to apprehend that the inflammation has spread to the trachea, which is always an alarming accident*.

Hæmorrhages in general are unfavourable, except at an

* The inflammation also sometimes extends along the œsophagus to the stomach. See what was said in speaking of this accident in the aphthous fever.

early period, and when the excitement is considerable. Bloody saliva * in particular denotes an unfavourable state of the fauces.

All anomalous consequences of the scarlatina are to be dreaded.

SECT. II.

Of the Causes of the Scarlet Fever.

There is no mention of the scarlet fever in the works of Hippocrates; nor do we find it mentioned as a distinct disease by any other of the Greek or Roman writers. Some of them have taken notice of a scarlet rash as an accidental occurrence in fever.

Prosper Martianus, an Italian physician, is among the earliest writers on this disease. He gave an account of the scarlatina as it appeared at Rome about the middle of the seventeenth century. It soon after made its appearance in London, and was described both by Sydenham and Morton, who term it *Febris Scarlatina*. Sydenham describes it in its mildest state: Morton in its more severe forms, and varying in some respects from the ordinary course of the disease; but he did not always distinguish very accurately between measles and scarlatina. The disease described by Prosper Martianus resembles that described by Sydenham †.

The cynanche maligna, so intimately connected with the scarlatina, is said to have made its first appearance about the year 1610, in Spain, where it is called *Garrotillo*. From Spain it soon spread to other countries of Europe. It appeared in Naples, in 1618, where it raged for twenty years, destroying great numbers. If we compare the accounts of these epidemics with what Sydenham and Prosper Martianus say of the scarlatina, we shall be inclined to believe that this fever and the cynanche maligna, on their first appearance, were more distinct diseases than we now find them to be.

It appears from the history of the scarlatina, that its exciting cause is a specific contagion. Concerning its predis-

• Plenciz's *Tractatus de Scarlatina*.

† The scarlet fever which Morton describes prevailed in the same year in which Sydenham died, which is the reason we do not find it mentioned by the latter.

posing causes little has been determined. It has only been ascertained that children are more subject to it than adults, and those of a lax habit of body than the more robust. Females have generally been supposed to be more liable to it than males*.

The scarlet fever may appear at any season of the year, but it most frequently shows itself about the end of summer. It is sometimes checked by a severe winter. Dr. Sims remarks that he has seen it wholly at a stand during some days of sharp frost, after which it seemed to recover new vigour. It generally disappears in the spring, but has been known to continue for several years, and consequently has withstood the different seasons.

Physicians have endeavoured to ascertain the circumstances which determine the severity of this disease. "The remote and external causes," Dr. Clark observes, "which had the most obvious influence in rendering the epidemic malignant, may be reduced to the three following, namely, the heat and moisture of the air, and effluvia arising from many persons being crowded together in the same house, or often in the same room."

I have seen it at the same time assume all its various appearances in different individuals of the same family. We have reason to believe that it is most severe in the debilitated and the plethoric. In the latter I have known it assume its worst form, while in others similarly circumstanced it proved very mild.

Respecting the means of prevention, there is nothing to be added to what was said in speaking of contagion generally†.

* It seemed particularly fatal to girls, Dr. Sims observes, from two to eight years of age. He saw but one child at the breast who had it, and that but slightly. Dr. Fothergill observes, that women are more subject to it than men. This, however, is contradicted by the observations of Dr. Clark: see Dr. Clark's Table of Patients labouring under Scarlatina, received into the Newcastle Dispensary; and Bang asserts that all under thirty are equally subject to it. But whatever may have happened in the particular epidemics which he saw, it has been well ascertained that those under puberty are most liable to this disease.

† Dr. Sims says, he found rhubarb given in small doses, so as to support a moderate catharsis, a good preventive. He also thought it was of use in moderating the ensuing disease, when given between the period of infection and the commencement of the disease.

It has been asserted by some, that the scarlatina never attacks the same person a second time. Bang and others declare they never knew this happen. More extensive observation has contradicted this opinion. It appears, however, that the scarlatina properly so called, namely, that in which the eruption is complete, very rarely attacks the same person a second time; that in which the eruption is imperfect and the affection of the throat considerable is more apt to do so. The recurrence of the true cynanche maligna in the same person has not been questioned, although this disease also is less apt to attack those who have formerly laboured under it. It is observed in the Edinburgh Medical Essays, that such as formerly had had scarlet fever without sore throat were now attacked with the sore throat without the eruption; those who had formerly had the sore throat now had the fever and eruption without any affection of the throat. There are even instances in the same epidemic of the same person having the disease first in the one form, and then in the other.

SECT. III.

Of the Treatment of the SCARLET FEVER.

As the treatment of small-pox was divided into that of the distinct and that of the confluent form, and the treatment of measles into that of regular and that of irregular measles, so the treatment of scarlatina may be divided into that of simple scarlatina and that of the scarlatina cynanchica.

It is unnecessary to enter particularly into the treatment of the former; it differs little from that of a mild synocha, and consequently little from that of the distinct small-pox, or regular measles. The particular nature of these diseases, however, points out some difference in the treatment of even the mildest cases, which is not to be overlooked.

In the small-pox, the application of cold can hardly be too free. In the scarlatina, from the greater tendency to inflammatory affections, it requires more caution. Any sudden or partial application of cold in measles is still more to be feared, the catarrhal symptoms always demanding particular attention, which is not the case either in the distinct small-pox, or simple scarlatina. As the fever in distinct small-pox ceases when the eruption is completed, and as the applica-

tion of cold is very free, other antiphlogistic measures are less necessary than in the measles and scarlatina, where even in mild cases the fever usually does not cease while the eruption is out, and an equally free application of cold is inadmissible. Besides, the greater tendency to inflammation in the measles and scarlatina enforces the necessity of an attention to the antiphlogistic plan; and as the measles are most apt to be accompanied with or followed by visceral inflammation, in it a strict attention to this plan is least dispensable.

Many recommend the cold affusion in the scarlet fever; and regulate its employment in the same way as in simple fever, without regard to the presence of the eruption. In the second volume (second edition) of Dr. Currie's work on the use of cold and warm water in fevers, the reader will find his observations and those of Dr. Gregory of Edinburgh, on this subject, with a minute detail of cases, in which the cold affusion was employed. It has been unintentionally employed in measles. "I should have been still less inclined," Dr. Currie observes, "to have prescribed it intentionally in the measles, on account of the disposition to pulmonary affection which attends that disease. It has happened to me, however, to have directed it four different times by mistake, in the eruptive stage of measles, and in like manner, the disease that followed was singularly mild in every instance."

With regard to the treatment of the scarlatina cynanchica, as this form of the disease may be regarded as a combination of the simple scarlatina and cynanche maligna, its treatment cannot be understood without a knowledge of the latter. For the treatment of the scarlatina cynanchica, therefore, I must refer to what will be said under the head of cynanche maligna, when I treat of Symptomatic Fevers*.

* The reader will find an excellent account both of the scarlatina and measles in Dr. Willan's Treatise on cutaneous diseases, and exceedingly good engravings, illustrating his descriptions. Of the scarlatina, especially, he gives a very full account, with copious quotations from the principal authors on it. I shall have occasion to refer more particularly to his observations on it, in treating of the cynanche maligna, which he considers as the same disease with scarlatina.

He thinks that when the eruption of measles appears with little or no fever, or catarrhal affection, as sometimes happens when this disease is prevalent, it does not secure against a second attack. The measles and scarlatina have frequently been mistaken for each other; to this he ascribes many supposed cases of the former having occurred a second

CHAPTER V.

Of the PLAGUE.

THE plague is defined by Dr. Cullen,
 “Typhus maxime contagiosa. Incerto morbi die eruptio
 “bubonum vel anthracum.”

Although few British physicians have occasion to practise in the plague, the propriety of being acquainted with a disease which has demanded so much attention, and bears so strong an analogy to diseases which every day fall under their care, is apparent. Besides, we cannot foresee in what circumstances we may be placed; and for a physician to betray ignorance of the plague would be unpardonable.

There are few diseases so remarkably varied, and there are few, perhaps none, of which it is more difficult to give an account, which shall be at the same time sufficiently full and distinct.

As much as possible to prevent confusion, authors have divided the plague into different classes; nor is it possible without this to give a just view of it, since no two diseases are more opposite than its different forms. In one we shall find it the most dreadful of all fevers, destroying without exception all whom it attacks; in another we shall find it consisting chiefly of an eruption unattended by danger. Why, it may be asked, are diseases so different regarded only as varieties of the same? However different these extremes,

time in the same person. This does not seem surprising when it is considered that diseases so different as small-pox and measles have not always been distinguished. The Arabian physicians, although they give very good accounts of both, treated of them as the same disease, and it appears from what is said above that the moderns are not wholly free from this charge. He notices a mode of inoculating for measles, from the matter of miliary pustules, which sometimes appear in the eruption of this disease when at its height. From the few trials which have been made of it, independently of our seldom having an opportunity of putting it in practice, it seems more uncertain and less capable of producing a mild disease than the method practised by Dr. Home, with which Dr. Willan does not seem to have been acquainted. He remarks of the measles, as has been frequently remarked of the small-pox, that children sometimes have it before birth. Some have been born with the eruption, and others with traces of having had it.

they are not only produced by the same specific contagion, but almost insensibly run into each other; from which some idea may be formed of the variety which the plague presents.

I shall not spend time by laying before the reader the modes of arrangement adopted by different writers, or by pointing out the objections which might be made to them. The objections consist chiefly in many of the divisions not being marked with sufficient precision, so that it is often impossible to say what are the corresponding divisions in the different accounts of the disease; as the reader will perceive if, for example, he compare together the different accounts of the plague in the *Traité de la Peste*, or any of these with the division adopted by Dr. Russell in his *Treatise* on that disease.

In dividing a disease into varieties, each variety must be distinguished by some symptom or train of symptoms which constantly attends it, not accidental or unconnected with the state of the symptoms in general, which would render the division useless, but marking a variety, in which the symptoms on the whole, and, what renders the division of more importance, the prognosis, differ from those of other forms of the disease.

I shall not defer a particular account of the eruptions, namely, the buboes, carbuncles, &c. till after the different forms of the disease have been considered, as has generally been done, by which we are forced to use terms before they have been defined; and it is equally objectionable, where the variety of symptoms is so great, and where there is so much to be said of the different eruptions, to interrupt the account of the general course of the disease, in order to describe them. It appears necessary, therefore, to depart from the order which has been pursued in laying down the symptoms of the other exanthemata, and to regard bubo, carbuncle, &c. as terms which must be defined, before we proceed to consider the symptoms of the plague.

SECT. I.

Of Pestilential Eruptions.

1. Of Pestilential Buboes.

A pestilential bubo at its commencement is a small, hard, round tumor, readily perceptible to the touch, about the size and shape of a pea; it is moveable under the skin, the appearance of which is not altered at an early period, the bubo lying at a greater or less depth, and the swelling not appearing externally.

As the tumefied gland enlarges, it changes from a round to an oval shape, becoming at the same time less moveable. The integuments now begin to thicken, and the swelling to appear externally.

The appearance of the bubo is often preceded by a sense of tightness and pain sometimes lancinating, or itching, in the part where it is about to appear, now and then accompanied by shivering. In many cases, however, the small swelling just described comes on without being preceded by any peculiar symptoms.

Some buboes are indolent and insensible, others very sensible and rapid in their progress. The tumor advancing quickly to suppuration is usually regarded as favourable*.

It is difficult to foresee in what way a bubo will terminate. The fluctuation is often scarcely perceptible where suppuration has taken place, and buboes are sometimes resolved after fluctuation has been very evident. Their progress indeed is almost always more or less irregular, especially after the first week. At one time they seem advancing to suppuration, at another show a tendency to resolution. "But these variations," Dr. Russell† remarks, "chiefly respected the integuments; for the gland itself, when carefully explored, was seldom found to alter; and where the tumor actually dispersed, it was not suddenly, but by slow degrees. At the same time I am far from thinking that this fluctuation was never real." And Chenot‡ observes, "Vidimus

* De Mertens' Account of the Plague of Russia.

† See his Work on the Plague.

‡ Chenot De Peste.

“quoque abruptam suppurationem in his resuscitari ac de-
“mum per effusionem puris absolvi.”

The bubo, as it increases in size, becomes somewhat flat; and generally in the second week the skin over it grows tense and painful, and begins to be inflamed. In some cases the inflammation is moderate, in others considerable; but it seldom terminates in gangrene, although the skin now and then assumes a bluish colour.

It sometimes happens, however, that the bubo runs to suppuration without any degree of inflammation appearing on the skin, and then, as it is generally harder than a suppurated venereal bubo, it is often difficult to determine whether suppuration has taken place or not. When buboes break spontaneously, it generally happens in the third week, sometimes later.

Buboes most frequently appear in the groins, or a little lower, among the lowest clusters of the inguinal glands; they also frequently appear among the axillary glands; sometimes, though more rarely, in the parotid: the disease is then by many reckoned most dangerous. They still more rarely appear in the maxillary or cervical glands.

“The maxillary and cervical glands,” Dr. Russell remarks, “were seldom observed to swell without either the parotid swelling at the same time or soon after, or a carbuncle protruding near them; they never were the sole pestilential eruptions, and I recollect few instances of their coming to maturation.” It has been remarked by others, that the parotid bubo seldom appears unaccompanied by one or more in the axilla or groin.

It may upon the whole be observed, that the axillary buboes suppurate more frequently than those situated about the fauces, and the inguinal more frequently than the axillary.

Buboes often make their appearance on the first day; sometimes indeed they are among the first symptoms. It has been observed, that when they appear later than the third or fourth day, they are generally preceded by an exacerbation of the febrile symptoms. Those which come out at so late a period, however, are not, for the most part, the first which appear; for a succession of them sometimes takes place, till three or four have made their appearance. In this case several hours usually intervene between the appearance of any two.

When the inflamed gland advances to suppuration more rapidly than the integuments, troublesome fistulous ulcers are sometimes formed, if an artificial opening has not been made in the skin. This accident, however, is rare; in general the buboes, left to themselves, give little trouble.

When they do not suppurate, and the patient recovers, they generally disperse in the space of a few weeks. In some cases, whether they have suppurated or not, they are succeeded by an induration of the glands, which remains for many months. This induration never terminates in cancer.

Such are the circumstances to be learned from attending to the external appearances of buboes; some others, of less moment however, have been ascertained by dissection.

It has been the practice of many, particularly the French surgeons, to extirpate the buboes; which gave them an opportunity of observing the internal change which takes place in them. From the appearances on dissection they have been divided into several different species. It is unnecessary to detain the reader with an account of this hitherto useless division; he will find it at length in the *Traité de la Peste*, from the 428th to the 434th page. One observation deserves attention: it has just been remarked, that the skin covering the buboes never runs to gangrene; dissection shows that it is otherwise with respect to the gland itself. "Je coupai par le milieu celle (h. e. the bubo) qui étoit sur les vaisseaux, que je trouvai toute noire." "Le lendemain j'ouvris le bubon, j'y trouvai le corps glanduleux comme un rein de mouton, tout noir*."

Another pestilential eruption has received the name of bubo, and to distinguish it has been called spurious. It is so rare, that some who mention it have been accused of misrepresentation.

The principal circumstance in which the spurious differs from the true bubo is in the former appearing indiscriminately on almost every part of the body†, while the true bubo is confined to the parts just mentioned.

Spurious buboes, if they are not lanced at a proper time, sometimes grow to a great size, particularly those on the scapulæ or back; in other parts they seldom much exceed the size of a hen's egg. They generally make their appearance

* See *Traité de la Peste*, p. 447, 448.

† Dr. Russell's *Treatise on the Plague*, p. 119.

about the second or third day, and for the most part after the protrusion of true buboes or carbuncles. They suppurate less rapidly than true buboes*.

2. Of Carbuncles.

Next to buboes, carbuncles are the most remarkable of the pestilential eruptions.

The reader will find them divided by different writers into several varieties. One makes three, another four, a third five.

Dr. Russell divides them into five varieties.

The first appeared in the form of a small pustule, about the size of half a pea, on its upper surface of a dusky or yellow colour, and a little wrinkled. The skin which immediately surrounded this pustule was hard and inflamed. The pustule itself soon became very painful, and continued to increase till it was of the size of a nutmeg, and sometimes that of a walnut; and a yellowish matter was secreted under the cuticle, which was sometimes moist, at other times dry and crusty; the base assumed a dark reddish colour, the circle which surrounded it appearing at different times of various hues.

On the third, fourth, or fifth day of the carbuncle, a gangrenous crust appeared on the middle of it, which soon occupied the whole surface of the tumor, exactly resembling the black eschar formed by caustic.

This crust, when the termination was favourable, was thrown off by suppuration, leaving an ulcer of various depth, which for some time continued to secrete matter. When the case terminated fatally, the crust remained dry, and often spread to the inflamed circle, so as to form a gangrene of considerable extent.

The second kind of carbuncle appeared in the form of a small angry pustule, not rising so high as the former, more disposed to spread, and becoming gangrenous on the second day. In this state it was not easily distinguished from the other, but was generally surrounded with a more highly inflamed ring. It chiefly attacked tendinous parts, particularly the joints of the fingers and toes.

In the third variety, the cuticle was at once raised into a blister of the size of a horse bean, filled with a dusky yellow

* *Traité de la Peste*, part 1st, p. 435.

or blackish fluid, and the skin which surrounded this variety was less tense and of a paler red than that surrounding either of the foregoing. When the blister broke, the cuticle fell upon the flat surface, which was of a dark colour, and soon became black. At this period, that is about the third or fourth day of the carbuncle, it resembled the preceding varieties, except that it was flatter. The circle surrounding the eschar gradually assumed a very dark red, but never became gangrenous. The eschar was about the size of a sixpence. This carbuncle was very painful, and five or six sometimes appeared on the same patient.

The fourth variety was a small red spot raised only to the touch, which gradually rose higher and spread, till in 24 hours it was a flattish dusky pustule, surrounded by a light rose-coloured margin. It was very painful, and when it appeared on the face occasioned swelling without inflammation of the skin. It often became black beyond the rose-coloured margin on the second day, and the mortification spread to neighbouring parts. This species of carbuncle always accompanied other eruptions, and was usually pretty numerous.

The fifth and last variety was on the second day a pustule resembling that of the small-pox; it rose in the form of a cone to twice the size of a large distinct pock with a blunt yellowish point, which, instead of advancing to suppuration, became black to the size of a large field pea. The gangrene, however, did not spread farther. The margin became of a dusky red, but appeared brighter as the suppuration which threw off the eschar advanced. After the second day, it differed from the third and fourth varieties only in the gangrenous part being of less extent, and the pustule more raised.

In other writers we find an account of carbuncles in some respects differing from the foregoing. Samoilowitz, in his Account of the Plague of 1771 in Russia, observes, that the petechiæ or maculæ are very large and confluent, and often turn to carbuncles a short time before death, which happens in the following manner: two, three, or four large petechiæ run together and form a large pustule; sometimes a similar pustule arises on each petechia; in either case, on opening the pustules a true carbuncle appears beneath. In the *Traité de la Peste*, it is observed of a plague which raged in the eastern parts of Europe, that purple spots appeared on various

parts of the body, in the middle of which arose small gangrenous tubercles.

In the same publication, Geoffry takes notice of a carbuncle, no part of which assumed a black appearance. Dr. Russell, however, thinks that he describes its appearance at one period only.

Dr. Gotwald describes a carbuncle, appearing at first as a small swelling, on the surface of which there soon arose a number of little vesicles in clusters, which in a short time were formed into an eschar. These carbuncles were generally situated in membranous and tendinous parts, about the knee, behind the ears, upon the toes, &c. A streak of different colours has sometimes been observed proceeding from carbuncles on the fingers.

Dr. Hodges mentions an eruption of vesicles, which in one case he found covering the whole body. When the inflammation was considerable, they sometimes became gangrenous, and were changed into carbuncles; they then resembled Dr. Russell's third variety.

Eruptions now and then appear in the plague in some respects differing considerably from any of the carbuncles just described; in others resembling them. Gotwald (says Goodwin in his *Historical Account*) observed the *papulæ ardentes* or fire-bladders in two patients only, both of whom recovered. They were as broad as a shilling, of an irregular shape, and the skin seemed as if it were shrivelled by fire; at length they emitted a small quantity of moisture, and vanished in a few days. They appeared on the belly, thighs, and legs.

It would be tedious to enumerate all the eruptions of this kind which have been observed in different epidemics. The true pestilential carbuncle may be defined,

A pustular or vesicular eruption, sooner or later running to gangrene.

The eruption called anthrax is nothing more than a carbuncle after it has sphacelated.

Carbuncles, to whatever variety they belong, for the most part do not exceed the size of a walnut; they have sometimes been observed considerably larger. The time of their appearance is uncertain: they sometimes show themselves on the first day, but more commonly not till a later period; and

when several appear on the same person, they generally succeed each other rapidly. They have been known to come out as late as the eighteenth or twentieth day.

Respecting the number which appears on the same patient, Dr. Russell observes, "Of those of the first and second species seldom more than one or two were observed in the same subject, in general one only. The other varieties occurred in greater number, and including those of the fifth, I have sometimes counted between twenty and thirty, but this happens very rarely."

This eruption is always attended with considerable pain, which in some cases is very violent. No external part of the body is exempted from carbuncles. "I have observed them every where," the author just quoted remarks, "the penis and scrotum not excepted, but never observed them on the tongue, the tonsils, and internal parts of the mouth," (there have been instances, however, of their appearing on the tongue) "though in carbuncles on the cheek, near the corner of the mouth, the gangrene spreads inwards, and in one instance of a carbuncle on the eyebrow, the gangrene spreading upon the globe of the eye had destroyed part of it."

Carbuncles were regarded by the Russian physicians, Dr. Guthrie informs us, as a sign of greater malignity than buboes. They thought the carbuncle indicated less danger when red than when livid; when it suppurated than when it did not. When the hands and feet were the seat of carbuncles, Dr. Guthrie observes, the patient seldom or never recovered. Carbuncles on the spine were also regarded as particularly unfavourable.

It is remarked, in the *Traité de la Peste*, that in those cases in which little or no eruption appeared, and in which the patients died on the fourth or fifth day, some of the viscera were generally found much diseased; the intestines, chiefly the small intestines, the mesentery, the liver, the internal parts of the stomach or the lungs, being eroded, or having large pustules or gangrenous spots formed on them.

Carbuncles and buboes often appear separately; they are also frequently combined, and in the latter case, it has been remarked that the carbuncles most frequently appear on the same side of the body with the buboes. This, however, is far from being universally the case. The carbuncle some-

times comes out very near the bubo, and sometimes, though rarely, upon it*.

Carbuncles now and then give rise to buboes, for it frequently happens that when the former appear on the arm, the glands of the axilla swell; these have been observed to be less painful than primary buboes, and they disperse when the carbuncles come to a favourable suppuration; which is not the case with primary buboes. These lymphatic buboes, as they have been termed, are also observed, but much more rarely, in the groin, when the carbuncles appear on the thighs, legs, or feet.

The foregoing are the eruptions which distinguish the plague. There are some others, however, which occasionally attend this disease.

3. Of the other Pestilential Eruptions.

Common boils or furuncles, as they have been called, appear more rarely than buboes or carbuncles. They are protruded suddenly, and are very much like the pustule which precedes some kinds of carbuncles, but considerably larger. They soon rise to a point, suppurate, and discharge good matter.

From what has been said of petechiæ, it will not seem surprising that they should attend a fever, of which, debility, we shall find, is one of the most striking features. They are not, however, a constant attendant. In some epidemics they have been rarely observed. It is chiefly this eruption which has been called tokens; by some, God's tokens; but these names have not been used in a very definite sense.

The appearance of petechiæ in the plague adds to the unfavourable prognosis. By the Russian physicians they were regarded as a very fatal symptom.

I need not say much of the different classes into which, from their different appearances, they have been divided. In some cases they appear red, afterwards becoming brown, or even black; in others they are brown from the first, and become black sooner. In some cases they are few in number, and confined to the superior parts of the body, in others they are more numerous, and appear on every part. They are sometimes small circular spots, at other times larger and of a more irregular shape. As in other fevers, the darker their

* Dr. Guthrie's observations on the Plague of Russia.

colour the more danger they indicate. Eruptions very different from petechiæ are mentioned under this name by writers on the plague*.

As in other malignant fevers, petechiæ often run together, forming blotches of various size and figure. Sometimes blotches appear without petechiæ, properly so called, the skin being variegated with stains of different colours, which have been compared to the clouds and stains in marble. In different places it is blue, yellow, red, brown, black, of various shades and brightness. "The skin," Dr. Russell observes, "in various places was sometimes deformed by narrow streaks of a reddish, purple, or livid colour. When such took possession of the face they gave a frightful appearance to the countenance, and frequently produced such an alteration of the features, and so completely disguised the patient, as to render him hardly known by his acquaintance. A streak nearly of the same kind was sometimes observed darting from the edges of the buboes and carbuncles."

Very often the stains or blotches do not appear till after death, and then, particularly on the fleshy parts, the body seems as if it had been bruised. "Sometimes," Dr. Russell continues, "the whole skin of the thighs, back, and shoulders, turned livid, while the corpse was yet warm." These appearances, he remarks, are not often observed at the commencement of the epidemic; which is to be regretted, as it is then that a characteristic mark of the plague is most wanted.

Such are the pestilential eruptions. In Dr. Russell's Treatise, the reader will find tables, giving the proportional frequency of the different kinds of buboes and carbuncles. The following are the result.

Of 2700, 1841 had inguinal buboes, 569 axillary, 231 parotid, 74 spurious buboes, 490 carbuncles. From these tables it appears that buboes in the right groin were more frequent than in the left, 729 had the former, 589 the latter. In another instance, 161 the former, 130 the latter. Buboes were also rather more frequent in the right axilla, than in the left, though not in so great a portion; 184 had buboes in the right, 165 in the left, axilla. In another table, the

* Goodwin's Historical Account.

numbers of those who had them in the right and left axilla differed only by one, and that was in favour of the left. Not above one in ten or twelve had buboes in both groins, or both axillæ.

The fourth table shows the number of cases in which buboes in the parotids, carbuncles, or spurious buboes, were the sole eruptions, compared with that in which they were combined with inguinal or axillary buboes.

Buboes in the parotids in 130 were unattended, in 110 were attended, by inguinal or axillary buboes.

Carbuncles were the only eruption in 85 cases; they were combined with axillary or inguinal buboes, in 405.

Spurious buboes appeared alone in 37 cases; they were combined with axillary or inguinal buboes, in the same number.

In 143, inguinal and axillary buboes were variously combined. In 602, there was a complication of various eruptions.

It is to be remembered, however, that these proportions are drawn only from one or two epidemics, and will not, perhaps, apply with much accuracy to others; they may serve upon the whole to give some idea of the comparative frequency of the different eruptions.

SECT. II.

Of the other Symptoms of the Plague.

That I may abridge the following account of the symptoms of the plague, and consequently render it more distinct, it may be observed, that all the symptoms, both of synocha and typhus, occasionally attend this fever. It is unnecessary again to detail all of these, for which I refer the reader to the second book; and shall here consider at length those which characterise the plague, or appear in this disease under peculiar modifications. It has already been remarked, that in the several divisions of the plague adopted by writers, many of the varieties are ill defined. They seem to be marked by accidental symptoms, and some of them by no particular symptom, but the general mildness or severity of the disease. In the former case, the division can be of no use; in the latter, it can admit of no precision. Besides, most writers on the

plague, speaking from their own observation alone, describe the disease as it appeared in one or two epidemics; and in almost all epidemics there are peculiarities. It is only by comparing many that we can form an account of the disease generally applicable.

On comparing different epidemics, we shall find, that whatever be true of other eruptions, buboes are salutary. They almost always mark a form of the disease less generally fatal than that unattended by this eruption. "Those perished," Dr. Russell remarks, "sometimes within the twenty-four hours, sometimes on the second or third day; they had neither buboes nor carbuncles, and it was very rare to find suspicious marks of infection on the dead bodies." In another place he observes, "The total absence of buboes in those who died suddenly I have no doubt of." He also remarks, "That the plague, under a form of all others the most destructive, exists without its characteristic eruptions, or other external marks reckoned pestilential, can admit of no doubt." The Russian physicians, Dr. Guthrie informs us, found the cases attended with buboes less fatal than those attended with carbuncles. Carbuncles and petechiæ, De Mertens, in his Account of the Plague of Moscow, observes, are not critical eruptions, they only denote a putrid condition of the humours, whence it follows, that in proportion as buboes are more common, and petechiæ and carbuncles more rare, the milder is the plague. Orræus, in his Treatise on the same Plague, observes indeed, that buboes often attended the most acute form of the disease; yet in another place he informs us, that there were no buboes in the worst form, their germs only being sometimes observed after death; and Samoilowitz*, in his account of this plague, in describing the worst form of the disease, notices petechiæ and carbuncles as frequent symptoms, but makes no mention of buboes.

Upon the whole, then, the plague unattended by buboes runs its course more rapidly, and is more generally fatal, than when accompanied by this eruption. The plague may therefore be divided into that which is, and that which is not, attended with buboes†. The first of these includes many

* *Memoire sur la Peste qui en 1771 ravagea l'Empire de Russie, surtout Moscow*, par M. Samoilowitz.

† Some writers have divided the plague into three species; that attended with buboes, that attended with carbuncles, and that attended

varieties, from that in which the prognosis is almost uniformly good, to a form of the disease little less fatal than that unattended by buboes.

The appearance of the buboes also affords the means of subdivision, for it will be found, on comparing the accounts of different epidemics, that upon the whole the earlier the buboes appear, the milder is the disease: thus, for example, in the first class of Dr. Russell's division, which was the most fatal, buboes were very rare; in the second, which was also very fatal, though less uniformly so, buboes appeared on the third day or later; in the third class, which was less fatal, they appeared earlier; in the fourth, which was still milder, buboes generally appeared on the first day; in the fifth, which never proved fatal, they were among the first symptoms.

To the two foregoing forms of the disease, a third may be added; for the pestilential eruptions towards the decline of the epidemic sometimes appear without fever. This form is a mere local affection unattended by danger.

The most fatal form of the plague makes its attack in various ways, sometimes merely with depression of strength, a sense of weight in the head, confusion of thought, giddiness, dejection, and oppression about the præcordia, often accompanied with a bitter taste*. The patient is inclined to be silent, shews much anxiety in his countenance, but makes few complaints; the febrile symptoms are very moderate. The attendants suppose the patient a little indisposed, but suspect nothing alarming; yet such patients often die within the first twenty-four hours, sometimes on the second day†.

with petechiæ. It will appear, I think, from a very cursory view of the disease, that there is no room for such a division.

By some of the older writers we find plagues mentioned, in no case of which, it is said, any eruption appeared. This is said of a plague which raged in Europe in the 15th century. We have every reason, however, to believe, that these epidemics were not the true plague. That of the 15th century appears to have been of the same nature with the *Sudor Anglicus*.

* The bitter taste the reader will find mentioned by different writers as characteristic of the plague. It is observed by some that a favourable change seldom happened while this symptom continued.

† See Russell's *Treatise on the Plague*, and Orræus on the *Plague of Moscow*.

In general, however, this form of the plague makes its attack less deceitfully. In an epidemic described by Chenot *, and that of Marseilles †, it appeared with violent and irregular shaking. Delirium is sometimes the first symptom. At other times, a remarkable state of the pulse, which very suddenly becomes so weak that it can hardly be felt, frequent and intermitting, with much debility and languor, announces the disease. The prostration of strength is sometimes so sudden and great, that Mr. Smith, Dr. Guthrie ‡ informs us, saw men in apparent good health, on being infected by the plague, suddenly drop down as if shot. Sometimes the first symptoms are extreme horror and despair. In other cases, the disease attacks with very slight chills, in a short time followed by a burning heat; as soon as the heat commences, the patient complains of insufferable head-ache and excessive thirst. Sometimes, as in the plague of Russia, described by Orrœus, he is suddenly seized with violent shivering, succeeded by a hot fit, the shivering and hot fit alternating several times. The first symptom is sometimes a violent beating of the temporal arteries, while the pulse at the wrist is small and feeble. In this case the heat is generally moderate, but the head-ache intolerable. In the plague which raged at Lyons in 1628, a burning heat in some of the viscera, and a dull pain or rather great heaviness of the head were the first symptoms. It sometimes comes on with violent palpitation, and strong convulsive tremblings. The plague which raged in London in 1665, often made its attack in this way.

As the disease advances, it assumes more of the appearance of the fevers we have been considering. The inflammatory symptoms generally run high for the first day or two; for the most part the plague assumes the form of typhus at an early period, and the patient soon becomes delirious or comatose.

The delirium is sometimes of the furious kind, particularly, Orrœus observes, in those of a robust and full habit, and in whom a full meal appeared to be the immediate exciting cause. In general, however, it is of that species which characterises typhus, the patient appearing rather stupid than outrageous, and complaining of a pain at the

* Chenot de Peste.

† Traité de la Peste.

‡ Observations on the Plague of Russia.

heart, a frequent symptom in the plague. When coma comes on early, it has been looked upon as affording a worse prognosis than delirium, particularly if it suffers no remission in the daytime. The remission in the daytime is generally more evident when the patient is delirious than when he is comatose.

Whether he become comatose or not, there is always a very remarkable muddy appearance of the eyes, which is sometimes observable at the very commencement, and is one of the most characteristic symptoms of the disease. This appearance of the eyes resembles that in the last stage of malignant fevers. It is not, however, described as altogether such, for with the muddiness there is blended a degree of lustre. It is an appearance very remarkable to those who have seen it, but not easily conveyed in words. Chicoyneau says of it, "*Les yeux étoient ternis, le regard fixe et égaré annonçoit la terreur et le desespoir**." Chenot calls it, "*Oculorum languor et mæstitia*;" in another place, "*oculi tristes scintillantes*," which last might almost be supposed a translation of Dr. Russell's account of it. The eyes, Orræus observes, are unusually prominent and preternaturally red, watery, and of a sparkling fierceness, but in the advanced stage of the disease, they sink, the redness goes off, and a little before death, they appear dull and as if covered with a film. This change may be observed to a greater or less degree during each remission, for it is in the exacerbations that the peculiar appearance of the eyes is most remarkable.

Almost all writers on the plague take notice of an expression of countenance, which to those who are conversant with the disease, is one of its best diagnostics. It was the state of the eyes, Dr. Russell remarks, which contributed chiefly to occasion that confusion of countenance which he does not attempt to describe, but from which, after repeatedly observing it, he could with some certainty pronounce whether the disease was the plague or not.

In the comatose, the muddiness of the eyes is most remarkable. Their fierceness is most striking in those who labour under delirium, particularly the furious delirium; and it sometimes happens, that the coma and delirium, with the peculiar casts of countenance which accompany

* *Traité de la Peste.*

them, alternate with each other. In the delirious, however, there is still an appearance of muddiness, and the eyes retain some lustre in the comatose. These appearances of the eyes are less remarkable in children than in adults. The danger is very generally proportioned to them. When the eyes resume the natural appearance, particularly after sweats, the prognosis is favourable. In the form of the plague we are considering, this rarely happens.

The changes which take place in the eyes are not always confined to their appearance; the retina is sometimes much affected. The patient complains of seeing sparks, flashes of fire, and various colours passing before the eyes; this is only a greater degree of the symptom termed *muscæ volitantes*. Deceptions of sight, however, are not frequent symptoms in the plague. Deceptions of hearing are still more rare. Deafness, as in other fevers, is a favourable symptom, but it seldom attends this disease. With respect to the other senses, nothing particular is to be observed. The depravation of taste, which is in some measure characteristic of the plague, I have already had occasion to notice.

The anxiety in many cases is extreme, the patient constantly changing his posture, and soon finding the present as uneasy as the last, so that he is sometimes perpetually in motion. When this symptom is considerable, it affords a very unfavourable prognosis. The appearance it assumes when at its height, which generally indicates the approach of death, is described by authors, who have termed it a mortal inquietude, in very strong terms. The patient incessantly twists his body as if in agony, but is incapable of giving any account of his feelings, so that it is difficult to determine whether it is occasioned by a great degree of anxiety or severe pain.

The temperature is sometimes, but not often, very high. While the chills continue to recur, its increase is not considerable, and in the cases where it is most so, it seldom equals that which we often meet with in common synocha.

The state of the pulse varies. In most cases after the first days, in many after the first hours, and in some from the commencement, it is feeble and frequent. Sometimes it is remarkably hard and small, but regular; at other times it is irregular or intermitting, and at length fluttering.

During the exacerbations at an early period, it often be-

comes full, open, and strong, as Dr. Russell expresses it; after which it again sinks; in the more advanced stage, the opposite change is observed, the pulse, during the exacerbations, becoming so feeble that it can with difficulty be felt. It has been observed, that though to a slight touch the pulse is strong and full, it is often easily compressed*. It is very remarkable, that it has often been observed nearly natural while the other symptoms indicated much danger.

The increase of debility is generally indicated by a considerable affection of the speech; in some cases there is only a degree of confusion and faltering, or a change of tone; in others the voice is greatly impaired or lost. When the debility is excessive from the beginning, when, as Chenot observes, "*Ægri erecti stare aut sedere impotes, proprio pondere labebantur*," a considerable affection of the speech is generally observed on the first night, or the second at farthest.

The tongue often retains the natural appearance throughout the greater part of the disease. Sometimes it is moist, and covered with thick mucus, at other times dry. "Sometimes," Dr. Russell observes, "it became parched with a yellow streak on each side, and reddish in the middle, but it never was observed to form so thick a fur or become of so dark a colour as in the advanced stages of some other fevers. The dryness or moistness of the tongue," he adds, "rarely corresponded with the febrile symptoms, for the tongue was often moist where the external heat was intense and the pulse indicated high fever; and, on the contrary, parched where the fever in appearance was very inconsiderable."

Vomiting, though more frequently observed in less violent forms of the plague, sometimes attends this variety. The pain at the heart, so frequently complained of, Dr. Russell thinks situated about the orifice of the stomach. As it often accompanies vomiting, he was at first led to believe that it arose from bile or other irritating matter in the stomach. He found, however, that it was not relieved by the discharge. It seems more than probable, from the

* In the *Traité de la Peste* the reader will find the state of the pulse mentioned both by Chicoyneau and Conzier. "*Il étoit ouvert et animé*." The former observes, "*Il disparoissoit cependant si on pressoit l'artere avec le doigt*."

nature of the symptoms, that this pain proceeds from an inflammatory affection of the stomach.

The matter evacuated by vomiting is generally bilious. It is sometimes of a dark colour and mixed with blood ; and it is not uncommon for worms to be thrown out by vomiting. They must of course have existed before the attack of the disease by which they were expelled. Whatever be the appearance of the matter ejected, when vomiting occurs at an early period and returns at intervals, the prognosis is bad.

Nausea without vomiting is a frequent symptom. It does not seem to proceed from irritating matter in the stomach, as repeated emetics are not found to relieve it. There are few means more effectual in allaying nausea and vomiting than those which promote perspiration. It has been observed of the plague, that if the repeated retching occasions a moisture on the skin, the nausea abates.

A diarrhœa frequently supervenes, sometimes during the first days, more frequently at a later period. This is a dangerous symptom. The matter passed by stool is similar to that rejected by vomiting, often bilious, frequently with an evident admixture of blood ; sometimes blood only is passed. Chenot often met with dysenteric purging in the plague.

As there are few fevers in which purging is so unfavourable, so there are none in which constipation appears to be less injurious. "A number of the sick," Dr. Russell observes, "were disposed to be costive throughout the disease, "and some had no stool for several days, the popular dread "of provoking a diarrhœa proving a bar to laxatives and "even to simple clysters, which are readily admitted at "other times. The consequences of this sluggishness of the "bowels were by no means what might have been expected, "for on comparing a number of cases in which the body "had been all along regular, with others in which there "had been no stool, the former did not appear to have "been particularly exempt from those symptoms which "might plausibly have been imputed to costiveness in "others."

The urine is often observed in no respect different from that of a person in health ; at other times it is pale, high-coloured, frothy, turbid, or deposits a great deal of sediment, and is sometimes more or less tinged with blood ; in short,

it assumes in different patients, or sometimes in the same at different times, all the various appearances observed in other fevers.

There is no excretion of such consequence in the plague as that by the skin. When it remains parched, or when only slight, clammy, partial sweats appear, the prognosis is bad; when on the other hand a thin, general, and copious sweat takes place, it often proves more or less critical.

Dr. Russell remarks, that the breath and perspiration were seldom or never fetid. Other writers, however, have observed that they are often so to a great degree.

Slight convulsive motions of the limbs and subsultus tendinum are frequent; hiccup rarely, and sneezing almost never, attends the plague.

Hemorrhagies are a common symptom, and unless very moderate, generally indicate danger. They are not uncommon, as appears from what has been said, from the stomach, intestines, and kidneys. They are most frequent, however, from the nose, and in women from the uterus. These, particularly the hemorrhagy from the nose, when they occur early in the disease, and the patient is young and plethoric, sometimes bring relief. At a later period, hemorrhagies are always unfavourable, and when they become profuse the patient rarely survives. It has been remarked, as might have been inferred *a priori*, that the blood which flows in these hemorrhagies is thinner in proportion as the disease is further advanced.

Such are the symptoms of the worst form of the plague. The strength gradually sinks, till the pulse impresses the finger with only a weak, undulating, or tremulous motion, with frequent intermissions. The surface, particularly on the extremities, becomes cold and covered with clammy moisture, the pulse cannot be felt, and the patient calmly expires, or, as sometimes happens in all idiopathic fevers, is carried off by convulsions.

The second and more common form of the plague, that accompanied with buboes, includes endless varieties*. What I am about to say of this form may be divided into

* Some objection might be stated to regarding the plague as an exanthema. Were it not that it arises from a peculiar contagion, it ought rather to be ranked as a species of synochus.

two parts; the circumstances in which it differs from the preceding form, and those in which its principal varieties differ from each other.

In the first place, of the circumstances in which this form differs from the preceding. If we except the appearance of buboes, we shall find no symptom constantly attending the one, and never present in the other. There are certain symptoms, however, more frequent in the one than the other.

Both vomiting and diarrhœa are most frequent in cases where buboes are about to appear. They sometimes attend from the commencement: at other times supervene at a later period. When the vomiting and purging commence early, they often continue to harass the patient through a great part of the disease.

Although the delirium and coma are sometimes as uniform in this as in the preceding form, it is not generally so. In most instances, indeed, some degree of these affections comes on in the evening and continues through the night, but in the majority of cases, unless the disease is far advanced, the patient during the day is nearly and sometimes altogether free from them. An epileptic fit now and then, very rarely, precedes the eruption, a symptom hardly ever observed in the form of the disease we have been considering. The sudden depression of strength is upon the whole less remarkable, and the pulse for the most part continues longer full, and is less apt to become irregular. The duration of the disease upon the whole is longer, petechiæ and vibices are more common, and the body more frequently becomes livid and black after death.

The great difference between the general course of the symptoms in the first and second forms of the plague is, that in the latter, they are upon the whole less alarming and more protracted, the patient often labouring under various symptoms for some days before the fever is formed*. In the danger and rapidity of the second form, however, there is a great variety; it varies from a degree of severity nearly equal to that of the first, to a degree of benignity approaching to that of the last, in which the eruptions are unaccompanied by fever.

* See what Orrœus calls the period of infection, in his Account of the Plague of Russia.

Although the varieties of the second form are in reality endless, there are only three which can be distinctly marked, for (notwithstanding the numerous divisions of authors) I can discover no symptom which characterizes any varieties included under these; and varieties ill characterized, instead of conducing to perspicuity, tend to perplex, by holding forth distinctions which the reader soon perceives nature has not made. Surely vomiting occurring more or less frequently, or coma supervening at an earlier or later period, is not sufficient to characterize different varieties of the plague, unless it can be shown that the general course of the disease is materially influenced by the absence or delayed appearance of such symptoms, which on perusing the account of different epidemics we do not find to be the case.

The first variety of the second form, according to the division I have adopted, is characterized by the buboes not appearing till the second or third day, or later. In this case the symptoms are generally more violent, and the prognosis worse, than when they appear on the first day, which characterises the second variety of this form; in the third, the eruption of buboes is among the first symptoms, in which case the febrile symptoms are for the most part still milder.

Many cases of the first of these varieties so much resemble some of the first form of the disease, that the difference consists almost solely in the appearance of buboes in the former; thus the first and second forms of the plague imperceptibly run into each other.

The pulse generally continues pretty full and tolerably strong till the second day, during which, for the most part, it becomes weak, and sometimes intermitting. The peculiar dejection of countenance, with the muddiness of the eyes, which come on more early in the very worst cases, frequently supervene at this time. If they are accompanied with irregular flushing, a sense of internal heat, pain about the præcordia, and incessant inquietude, the danger is extreme; as in the first form, these symptoms often precede that diminution of temperature and cold dampness of the surface, that announce the patient's death to be inevitable, which is often, however, at the distance of a day or two, or more. After this, although the heat of the body returns, the symptoms upon the whole gradually become worse. When the strength has not been greatly reduced by the vomiting and purging,

a remission is often observed on the third day; but if the foregoing train of symptoms has previously occurred, it is always fallacious, and the disease returns with increased violence. The patient often survives to the fifth or sixth day or later, the remissions constantly becoming slighter, and the exacerbations more severe.

On the second or third day, sometimes later, buboes make their appearance, in general without bringing relief; carbuncles also frequently supervene with no better effect. This, however, is not uniformly the case; Chenot observes, that the eruption of buboes and carbuncles was often attended with an evident remission. In some epidemics, Waldshmidt* remarks, when the symptoms were most alarming, the appearance of buboes often saved the patient, but in others they were not attended with any advantage.

In this variety the body is frequently covered with petechiæ or vibices, and the corpse often becomes black.

The malignant train of symptoms just mentioned as appearing on the second day, sometimes do not supervene till a later period. At whatever time they occur, however, they almost always afford a fatal prognosis. In some favourable instances, especially where the vomiting and purging do not occur, or at least not in such a degree as greatly to reduce the strength, the foregoing train of symptoms does not appear, and the patient escapes. In these cases, the delirium or coma seldom comes on before the second night, and the remissions which take place in the morning are more considerable. Such flattering appearances, however, often prove deceitful, and even a salutary sweat on the morning of the third day is sometimes succeeded by a fatal train of symptoms.

The fatal termination frequently happens on the fifth day, sometimes not till the sixth, seventh, or eighth, and then the symptoms are generally milder, and the buboes appear early on the second day. Few recover from this variety.

In the second variety of the second form of the plague, according to the division I have adopted, buboes appear on the first day. Here the symptoms are wonderfully varied. Many cases are equally fatal with those which have been considered, but this variety upon the whole is less so†.

* See Haller's *Disput. ad Hist. et Cur. Morb. pet.* vol. 5.

† See the observations of M. Chicoyneau, in the *Traité de la Peste*.

Dr. Russell observes of his fourth class, which corresponds to this variety, "The fourth class was the most numerous of all, comprehending those forms of the disease, which, from the various and sudden changes in their course, so often, though not constantly, met with, cannot easily be represented in concise and connected description; I therefore enter on the attempt with diffidence, and as a supplement for defects, must refer to the cases themselves noted below. The distinctive marks of this class are, the continuance of the inflammatory and febrile symptoms with less interruption than in the former; a pulse more constantly sustained or soon recovering itself when sunk and hurried in the exacerbations; the length and rigour of the exacerbations decreasing in the advance of the disease: and, above all, the prevalent tendency to a favourable crisis by the skin, with the critical sweats on the third, fifth, or subsequent days."

Vomiting is not so frequent a symptom in this, as in the former variety. The symptoms, upon the whole, however, are sometimes as severe as in that variety; but, for the most part, they are milder. The fever is more moderate; and delirium or coma still more rarely appear on the first night, during which the patient is less restless and anxious.

The remission on the second morning is generally considerable, and during the second day the symptoms undergo many changes; at one time running high, often with more or less coma, soon afterwards suffering an evident remission, which in many cases is only a prelude to a new exacerbation.

The exacerbations are sometimes followed by a sweat, more or less general, on the morning of the third day, which is found in proportion as it is general to bring relief. The most general sweats commonly occur in the morning, and consequently the most evident remissions. At other times the sweats for the most part are partial, and the patient, during the remissions, anxious and oppressed. The morning sweat of the third day often proves completely critical, or brings such relief that the patient remains free from danger.

This remission, however, is frequently inconsiderable, and the exacerbation soon returns. If during this there be an evident change in the state of the pulse, if from having

been pretty full and strong it become weak and fluttering, the prognosis is bad. After this, the pulse varies in frequency, but seldom recovers its strength.

When the change in the pulse is less remarkable, however, the sweat, which returns on the morning of the fourth day, again brings relief, and if the exacerbation on this day be less, the sweating is more profuse and brings more relief on the fifth, and a third profuse sweat on the morning of the seventh day often completes or nearly completes the recovery. It has been remarked, that the sweats in this class of patients are more profuse and bring more relief on the mornings of the odd, than on those of the even, days*.

All who escape, however, do not recover in this way, but often very slowly, and with little or no sweat.

In the last variety of the second form of the plague, namely, where the eruption of buboes is among the first symptoms, many cases are attended with a considerable degree of fever, sometimes protracted for six or eight days; but comparatively few are attended with much danger.

Chenot gives the following short account of his first division of the plague, which nearly corresponds with this variety, "*Subinde vix ulla bubonis ortum præcedit stipatve ægritudo. Ipse carbunculus nonnunquam prodit, prævia tantum miti commotione febrili, manifestior tamen plerumque est quam in bubone.*"

The patient is sometimes not even confined to the house, and very often not to bed. In short, the mildest cases of this variety almost resemble the last form of the plague, in which the eruptions are the only symptoms.

Such are the symptoms of the plague, and the gradations by which the first form runs imperceptibly into the last, than which it is impossible to conceive two diseases more dissimilar.

Before leaving this part of the subject, it is necessary to observe, that although most cases of the plague will be found referrible to some of the foregoing heads, there are many anomalous cases which cannot be arranged under any one description, as they differ from each other, as well as from all other cases. Dr. Russell forms a separate class for such anomalous cases, without, however, attempting any general

* See what is said in the first book of the doctrine of critical days.

account of them; all he observes is, " This class being reserved for such cases as were dubious, anomalous, or extraordinary, varying more or less in some material circumstances from any of the foregoing classes, admits of course of no general description. The particular cases, to which have sometimes been subjoined occasional remarks, may be consulted agreeably to the references made below to the journals."

An account of such cases would not only be tedious but of little use, since the anomalous cases of one epidemic are not always found to resemble those of another. All that can be done is to warn the practitioner that anomalous appearances are to be looked for, which do not seem, however, materially to influence the mode of treatment.

SECT. III.

Of the Causes of the Plague.

The history of the plague is involved in much obscurity. It is impossible to say from what source, or where, it originated. The earliest plagues of which we have any account raged in Egypt and other parts of Africa*.

We are sufficiently acquainted with its history, however, to be assured, that it arises from a peculiar contagion. Professor Stoll of Vienna, indeed, and some others, have combated this opinion; but it would be mis-spending time to trouble the reader either with the arguments of these writers or any refutation of them, as they have scarcely now a single advocate†.

The subject of contagion has already been considered at length. It is needless to repeat what has been said of the means of preventing the generation and checking the progress of contagious diseases‡; and it would be tedious here to de-

* See Waldshmidt's Treatise on the Plague, in the fifth volume of Haller's Disput. ad Morb. Hist. et Curat. pert.

† See the Traité de la Peste, and Dr. Russell's work on the Plague.

‡ De Mertens recommends, as a good preventive, wearing a cloak of oiled cloth over the clothes, while in the rooms of the sick. It has also been recommended to anoint the body with oil. De Mertens thinks issues not to be depended on. The reader will find, in his Treatise on the Plague of Moscow, formulæ for what have been termed

scribe lazarettos and the various precautions employed to prevent the introduction of the plague; for these I shall refer the reader to the works of Mr. Howard and Dr. Russell.

The contagion of the plague, like that of other diseases, is active only for a very short distance around the patient.

Some facts would lead us to suppose that peculiar states of the air are favourable to the production of the plague. It has sometimes appeared in many parts of a country at the same time*. More generally, however, it appears at first in one place only, and gradually spreads to others.

As in other contagious fevers, warm weather is generally favourable, and cold weather unfavourable, to its progress. The plague was greatly weakened, De Mertens informs us, while the thermometer stood between sixteen and twenty degrees below frost. It often happens, however, that its violence is not checked by the winter, and there are many instances of the plague ceasing in the warmest seasons of the year. All the plagues with which Aleppo has been visited during this century, the Rev. Mr. Dawes observes, are said to have regularly ceased in August or September.

The young and robust, it has been observed, are more liable to infection than the old and infirm. It has often been remarked of the plague, as of most other contagious fevers, that infants are less liable to it than adults. Waldshmidt saw several infants who sucked nurses ill of the plague, and yet escaped infection. He even observes, that one infant sucked two nurses ill of the plague, both of whom died, yet the child did not receive the disease. A woman who suckled her child five months old, was seized with the plague, and died after a week's illness; but the child who sucked her, and lay in the same bed with her, escaped the distemper. De Mertens and others make similar observations. It is remarkable, however, that the foetus in utero sometimes receives the disease, and that even where the mother escapes†.

antipestilential powders: they are similar to the fumigating powders mentioned above, in speaking of the purification of fomites; the manner of using them, also, is there pointed out.

* See a Letter by the Rev. Mr. Dawes from Aleppo, in the third volume of the Medical Museum.

† "Last year as well as this," says Dr. Dawes, "there has been more than one instance of a woman's being delivered of an infected child with the plague sores on its body, though the mother herself has been entirely free from the distemper." In pregnant women the plague generally produces abortion.

It has been observed of some of the exanthemata * that certain constitutions are not liable to them. This seems to be true of the plague. Waldshmidt knew a woman who was servant in a family where seven people died of the plague, and afterwards in another all of whom died of it, and yet remained uninfected. A Greek lad, Mr. Dawes observes, made it his business for many months to wait on the sick, and to wash, dress, and bury the dead, yet escaped the disease.

Those who have once had the plague are less subject to it than others. This circumstance, together with the success which had attended inoculation for the small-pox, induced some to recommend inoculating for the plague, which has actually been done. In Dr. Guthrie's Letter to Dr. Duncan there is an account of a surgeon, Matthias Degio, who inoculated himself for the plague. He inserted, with a lancet, under the cuticle of the arm, a little of the matter from a pestilential abscess. On the fourth day after inoculation the fever appeared; he treated himself in all respects in the same way as if he had been inoculated for the small-pox, paying particular attention to the cool regimen. His only medicines were cold water and vinegar, with a little wine. The disease proved so mild that he was never confined to bed, but was generally in the open air. It was not more severe than the common inoculated small-pox.

He afterwards regularly attended an hospital allotted for the reception of patients under the plague, without suffering from the disease; while most of the other surgeons fell a sacrifice to it. From one case, however, no conclusion can be drawn; besides, it is far from being uncommon for the plague to attack the same person a second or third time.

It appears, from the foregoing case, that the contagion of plague produces the disease about four days after infection. De Mertens also observes, that the attendants on the sick generally fell ill about the fourth or fifth day, and Dr. Guthrie relates a case in which the patient sickened on the fourth day. Sometimes, however, its effects are more sudden. Waldshmidt mentions the case of a person, who, while he was drying some clothes which had been worn by a patient under the plague, was immediately seized with nausea and

* This has often been remarked of the small-pox and measles. Respecting the latter, Dr. Willan doubts the accuracy of the observation.

head-ache, and died on the sixth day, a bubo and other pestilential symptoms having made their appearance.

Brutes are incapable of receiving this disease, although, like other things which have been in contact with or near the sick, they are often the means of conveying the contagion. It appears, however, from an instance related by Boccacio, and some similar ones mentioned by Waldshmidt, that the contagion of the plague, if received into the stomach, often produces violent effects on brutes; a circumstance which affords a strong argument against contagion, in casual infection, making its first attack on the stomach.

The contagion of the plague, like that of typhus, appears sometimes to act merely as a predisposing cause. In speaking of the latter, it was remarked, that the observations of Dr. Lind have proved, that the contagion of typhus may sometimes lurk in the body, remaining inactive for a considerable length of time, if the patient is not exposed to other causes of disease, which seem to prepare the system for its action. De Mertens makes a similar observation with respect to the plague: many, he observes, were suddenly seized after a hearty meal, a fit of anger, or violent exercise.

It is of great importance to determine how long the contagion of plague will lurk in the human body, or in fomites while freely exposed to the air, and retain its activity, as this circumstance determines the duration of quarantine. Dr. Cullen thinks forty days longer than necessary for the quarantine of people: and that if goods are properly unpacked and aired, the term of their quarantine may also be shortened.

"I suggested," Dr. Guthrie observes in his Letter to Dr. Duncan, "to Baron Ash, physician general to the Russian army, a doubt of the possibility that the very active contagion of the plague could remain so long latent in the body, as the quarantine of persons seems to imply, and that it appeared to me to be founded on an imperfect knowledge of the disease, drawn from a period of ignorance or of general consternation and terror. His answer was, that he did not think that the contagious nature of this violent disease could remain longer in the body than fourteen days without declaring itself on, or before, that period; but that from his own observation and experience he could not take it upon him to say that it could not be

“concealed so long. Such were likewise the answers I
“received from the other medical gentlemen whom I con-
“sulted on the subject. Some gave a little more latitude
“and some less, as it can only be a matter of opinion, but
“none exceeded fourteen days.”

From different facts just stated, it would seem that the plague generally appears as early as the fourth or fifth day after infection: but we do not know how long a person who has laboured under the disease is capable of infecting others, nor how long the contagion may lurk in an unfavourable habit without producing the disease, and be communicated and excite the disease in habits more susceptible of infection. Upon the whole, we have reason to believe that a quarantine of forty days is considerably longer than necessary. Experience, however, has not yet ascertained how much this term may be shortened.

The most unaccountable circumstance respecting the contagion of the plague, which has also indeed been observed to a greater or less extent respecting that of other fevers, is, that it often suddenly, and without any apparent cause, ceases to produce the disease. The plague, says De Mer- tens, ceased at one time over the whole Russian empire, after having prevailed at Moscow and other places for a year and a half. “But a greater difficulty,” Dr. Russell observes, “than that of all persons not being susceptible of
“infection, arises from the cessation of the plague at a
“period when the supposed contagious effluvia preserved
“in apparel, furniture, and other fomites, at the end of a
“pestilential season, must be allowed not only to exist in a
“much greater quantity than can be supposed to be at once
“accidentally imported by commerce, but in a state also of
“universal dispersion over the city. The fact, however
“unaccountable, is unquestionably certain; the disease
“seems to be extinguished by some cause or causes equally
“unknown as those which concurred to render it more or
“less epidemical in its advance and at its height. In
“Europe something may be ascribed to the means em-
“ployed for the cleansing of houses and goods supposed
“liable to retain the latent seeds of infection. But at
“Aleppo, where the distemper is left to take its natural
“course, and few or no means of purification are employed,
“it pursues nearly the same progress in different years. It
“declines and revives in certain seasons, and at length,

“without the interference of human aid, ceases entirely.”
 “Ubi pestis nondum penitus extincta fuit,” says Waldshmidt, “hæc sua sponte præter omnium expectationem ita cessavit, ut ne vestigium quidem ejus postea apparuerit.”
 Nor was any one infected by another, he adds, although the latter still had the pestilential buboes about him, while articles which had been in contact with the sick entirely lost the power of communicating the disease.

At the beginning of the epidemic, the plague generally assumes the first form according to the arrangement I have followed, so that it appears without its peculiar eruptions. It is also then less contagious than at the height of the epidemic; two circumstances which often lead to fatal errors. During its progress it inclines more and more to the last form, in which it generally terminates.

It is remarkable that convalescents from the plague have the venereal appetite unusually strong, a circumstance which often counteracts the endeavours of the magistrate, and tends to spread the distemper. The same thing has been observed respecting other malignant fevers. It is particularly remarked by Dr. Rush of the late fever of North America.

SECT. IV.

Of the Treatment of the Plague.

“In the cure of the plague,” Dr. Cullen justly remarks, “the indications are the same as those of fever in general.” I therefore refer the reader to what was said of the treatment of continued fever, and shall now only make a few additional remarks particularly applicable to this disease.

The Asiatics employ blood-letting in all cases of the plague, and even recommend it as late as the fourth, fifth, sixth, or seventh day; and some European physicians have used it with great freedom*.

The reader will find many declaring that they could not perceive that a small blood-letting, particularly at the com-

* It is a remark of Sydenham that blood should be let if the physician see the patient before any appearance of a bubo. The reader may consult on this subject Dr. Alexander Russell's account of the plague, in his *Natural History of Aleppo*.

mencement, did harm. They appear to have assumed it as an axiom, that if blood-letting is not evidently hurtful, it must be beneficial in this disease; and all that they seem anxious about is to adduce cases and arguments in support of its innocence.

Nothing can be more fallacious, however, than the arguments employed for this purpose, as the reader will readily perceive, when he reflects that the consequences to be dreaded from blood-letting in the plague, the various symptoms indicating a general loss of tone, occur in all the more alarming cases of this disease, and supervene at different periods. How then shall we ascertain that blood-letting has not accelerated, or even occasioned, their appearance?

“Upon finding the pulse sink so suddenly after bleeding,” an author I have frequently had occasion to mention observes, “I was at first inclined to attribute it to that evacuation, and to suspect in less plethoric habits bleeding must prove still more prejudicial; but I afterwards found the low state inseparable from certain forms of the disease, and often could observe no material difference in its progress in cases where blood-letting had or had not been omitted.” The author, in this quotation, confesses that the symptoms of debility were those which he dreaded, and also those to be feared from the means he employed, without informing us of any advantage to be expected from it, to counterbalance the risk.

Others run to the opposite but safer extreme, and maintain that blood-letting is universally hurtful in the plague.

The more we study the observations of the original writers, we shall, I think, find the more reason to believe that the employment of blood-letting in this disease is to be regulated by the same maxims as in other idiopathic fevers.

Many of the Turks employ local instead of general blood-letting, and in the latter they usually draw much less blood than we are accustomed to do; circumstances which have probably contributed much to establish the safety of blood-letting in the plague.

An opinion has prevailed, as respecting the other exanthemata, that blood-letting is apt to repel the eruption, which it is feared might be attended with bad consequences. Dr. Russell thought that in one case it had this effect.

Direct experience is not sufficiently extensive and accurate to determine the question, whether blood-letting, if otherwise indicated, should be delayed when an eruption is expected; if we admit of reasoning from analogy, it may, without hesitation, be answered in the negative.

We are led by analogy to believe that emetics may be useful at the commencement of the plague, and they have sometimes been employed with advantage. "Vomiting," Dr. Alexander Russell* observes, "was also of the utmost consequence at the beginning." "The mode of treatment," says Dr. Guthrie, "which the Russian physicians found the most successful in the plague was, beginning with a vomit on the appearance of the first symptoms, and working it off with acid drinks. If the nausea and bitter taste in the mouth were not relieved by the first, they gave a second, and sometimes a third and fourth; nay, if the symptoms were very urgent, they gave two or three in the space of twelve hours, as there is no time to be lost in this disease; for they did not find this evacuation subject to the same objections as brisk purges, which a man in the plague is unable to support." Dr. Patrick Russell also approves of emetics at the commencement, although the prejudice of the Asiatics against them prevented his employing them at an early period.

We have reason to believe, that in the progress of the disease they will seldom be of much service, and by their debilitating effects they may do harm. When retching occurs without vomiting, an emetic is frequently serviceable. When it fails to allay this symptom, opiates often succeed.

There appears to be little doubt of the propriety of opiates, used for the purpose of allaying restlessness and procuring sleep, in all cases where the excitement is not considerable. Dr. Patrick Russell says he never saw them produce coma.

In one respect the treatment of plague differs much from that of simple fever. Almost all physicians who have practised in the plague agree that much purging is hurtful. A spontaneous diarrhœa is always a dangerous symptom; on this account, in those places where the disease is frequent, there is the utmost dread of cathartics; and this often proves an obstacle to the exhibition of any laxative or clyster, however mild.

* See his Natural History of Aleppo.

Suppositories are much used in Eastern countries, but even these are avoided in the plague, so that the bowels often remain inactive for a long time, and it is said without the patient appearing to suffer from it.

We may say of this, as of blood-letting, that in a disease whose symptoms are so varied, it requires much experience to ascertain the effect of any mode of treatment; and we have a double reason for drawing our conclusions cautiously, when the measures which appear safe have in similar cases been found pernicious. Besides, although the common inconveniences of costiveness be less felt in this disease than in many others, it seems often, by occasioning an accumulation of irritating matter in the intestines, to induce the very effect which we dread from cathartics.

When diarrhœa occurs, whether spontaneously or from medicine, it is for the most part readily checked by opiates at the commencement of the disease; but in the advanced stages, opiates, astringents, and all other means often fail, and then the prognosis is fatal.

It was observed that spontaneous sweating is often attended with the best effects. But, as I have already had occasion to remark, there is generally a great difference between the effects of spontaneous sweating and that produced by art. The effects of antimonials in the plague have not been ascertained. Dr. Russell thinks that, combined with opium, they promise to be of service. Little is to be expected from valerian, contrayerva, bezoar, and other similar articles, regarded as diaphoretics, and much celebrated in this disease. I have not seen any account of the cold affusion having been employed in it. We have reason to believe that it may often be of use in the early stages.

A very different mode of exciting the action of the skin, to which I alluded in speaking of the treatment of fever, has lately, it is said, been attended with great success in the plague. It was proposed by Mr. Baldwin, the British agent and consul-general at Alexandria, and has been made known to the public by a small treatise in the Italian language by Count Bertchfold; the following extract from which has been translated into different languages, and circulated throughout Europe.

“The directions are simply these: immediately after a person is perceived to be infected with the plague he must be taken into a close room, and over a brazier of hot

“ coals, with a clean sponge dipped in warm olive oil, his
“ body must be very briskly rubbed all over, for the purpose
“ of producing a profuse sweat. During the friction, sugar
“ and juniper berries must be burnt in the fire, which raise
“ a dense and hot smoke that contributes to the effect.

“ The friction ought not to be continued more than four
“ minutes, and a pint of oil is enough to be used at each
“ time.

“ In general, the first rubbing is followed by a very co-
“ pious perspiration; but should it fail of this effect, the
“ operation may be repeated, first wiping the body with a
“ warm, dry cloth; and in order still farther to promote per-
“ spiration, the patient may take any warm sudorific drink,
“ such as elder-flower tea, &c. It is not necessary to touch
“ the eyes; and other tender parts of the body may be
“ rubbed more gently.

“ Every possible precaution must be made use of to pre-
“ vent the patient taking cold, such as keeping covered those
“ parts of the body not directly under the operation; nor
“ must the linen be changed till the perspiration has entirely
“ subsided.

“ The operation should be repeated once a day, until
“ evident symptoms of recovery begin to appear. If there
“ are already tumours on the body, they should be gently
“ and more frequently rubbed, till they appear to be in a
“ state of suppuration, when they may be dressed with the
“ usual plasters.

“ The operation ought to be begun on the first appear-
“ ance of the symptoms of the disease; if neglected till the
“ nerves and the mass of blood are affected, or a diarrhœa
“ has commenced, little hopes can be entertained of cure;
“ but still the patient should not be despaired of, as, by an
“ assiduous application of the means proposed, some few
“ have recovered even after diarrhœa had commenced.

“ During the first four or five days the patient must ob-
“ serve a very abstemious diet; the author allows only a
“ small quantity of vermicelli, simply boiled in water. Nor
“ must any thing be taken for the space of thirty or forty
“ days, except very light food; as he says an indigestion in
“ any stage of the disorder might be extremely dangerous.
“ He does not allow the use of wine till the expiration of
“ forty days.

“ There is no instance of the person rubbing a patient

“having taken the infection. He should previously anoint himself all over with oil, and must avoid receiving the breath of the infected person into his mouth and nostrils. The prevention to be used, in all circumstances, is that of carefully anointing the body, and living upon light and easily digestible food.”

Mr. Baldwin observes, that among upwards of a million of people who died of the plague in Upper and Lower Egypt, during the space of four years, he could not discover a single oilman or dealer in oil.

The buboes and carbuncles often require some attention, but their treatment belongs to the province of surgery.

CHAPTER VI.

Of the URTICARIA.

THE Urticaria or Nettle-rash is defined by Dr. Cullen, “*Febris amphimerina**. *Die secundo rubores maculosi urticarum puncturas referentes, interdum fere evanescentes, vespere cum febre redeuntes, et post paucos dies in squamas minutissimas abeuntes.*”

SECT. I.

Of the Symptoms of the Urticaria.

Dr. Cullen remarks, that he gives the character of the nettle-rash rather from the accounts of others than from his own observation, as he had seldom seen the disease, and never a single case of it in which it run the course described in his definition.

Sydenham considers it a species of erysipelas, and describes it to be a slight fever, soon followed by an eruption

* The term *amphimerina* is generally used to express a fever, which returns daily, and is always finished within the day, so that it is a quotidian intermittent. The term, however, has not always been employed in precisely the same sense.

of pustules over the whole body, resembling the appearance produced by the stinging of nettles. The reader will also find it described by Vogel*, Eller†, Burserius‡, Dr. Herberden§, and others. The best account of it which I have seen is by Dr. Willan.

“The symptoms preceding the eruption,” he observes, “are pain and sickness at the stomach, head-ache, great languor or faintness, with a disposition to sleep, a sense of anxiety, an increased quickness of the pulse, and a white fur on the tongue. In two days, or sometimes later, after these symptoms, the wheals,” (Dr. Willan’s name for the eruption of the urticaria), “appear with an efflorescence in patches of a vivid red, or sometimes nearly of a crimson colour. They are preceded by fits of coldness and shivering, and are attended with a most troublesome itching or tingling, which is greatly aggravated during the night, and which prevents rest for many hours. In order to avoid this inconvenience, I have known many persons sleep on a sofa without putting off their clothes, as their distress begins immediately on uncovering the body. The patches often coalesce, so as to produce a continued redness: they appear on most parts of the surface, but they are diffused particularly on the shoulders, loins, nates, thighs, and about the knees. They extend likewise to the face; and there is sometimes a red circle round the palm of the hand, accompanied with a sensation of violent heat. They appear and disappear irregularly, first on one part, then on another, and they may be excited on any part of the skin by strong friction or scratching. During the day, the efflorescence fades, and the wheals in general subside, but both of them return with a slight febrile paroxysm in the evening. The red patches of efflorescence are often elevated above the level of the adjoining cuticle, and form dense tumours, with a hard distinct border: the interstices are of a dull white colour. When the patches are numerous, the face, or the limb chiefly covered with them, appears tense and considerably enlarged. At the latter end of the disorder, the eyelids are red and tumefied, and there

* Prælect. Acad. de Cog. &c.

† De Cog. et Cur. Morb.

‡ Institut. Med. Pract.

§ First volume of the Medical Transactions.

“ is often a swelling and inflammation on the sides of the feet. On the appearance of the eruption, the pain and sickness at stomach are in general relieved, but when it disappears, these symptoms return. The whole duration of the febrile nettle-rash is seven or eight days. As the eruption declines the tongue becomes clear, the pulse returns to its usual state, and all internal disorder ceases: the efflorescence exhibits a light purple or pink colour, and then gradually disappears, being succeeded by slight exfoliations of the cuticle.”

This disease in general is unattended with danger, although instances have occurred of its proving fatal in very unfavourable habits. One is related by the author just quoted.

The eruption of urticaria unattended by fever is a very common disease. In Worcestershire there are few affections of the skin more frequent. Dr. Willan enumerates several species of it.

SECT. II.

Of the Causes of Urticaria.

Urticaria is most apt to appear in summer; and in those of a sanguine and plethoric habit. It is more frequent in children than in adults. Like many other eruptive fevers, it is connected with the state of the primæ viæ. Sydenham observes, that it occurs at all seasons of the year, and seems often produced by too free an use of thin wines or other similar liquors. Burserius says, he has seen it arise from irritating matter in the primæ viæ, or from the perspiration being checked; and Dr. Willan gives cases in which it evidently arose from affections of the stomach. In children it seems often occasioned by teething. It seems doubtful, from these circumstances, whether it be properly arranged among the exanthemata, from which it also differs in not being contagious. It may attack the same person several times, and there are instances of its constantly recurring on every slight cause of derangement. It seldom, however, appears as a symptomatic affection, and one species of it, at least, is always preceded by fever.

SECT. III.

Of the Treatment of Urticaria.

The treatment of urticaria differs little from that of common synocha. An emetic, as may be inferred from what has been said, should always be exhibited at the commencement, and the bowels cleared. Dr. Willan thinks antimonials objectionable, on account of the debility which frequently attends this disease, and for the same reason recommends, in its decline, peruvian bark with the sulphuric acid.

THE END.





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