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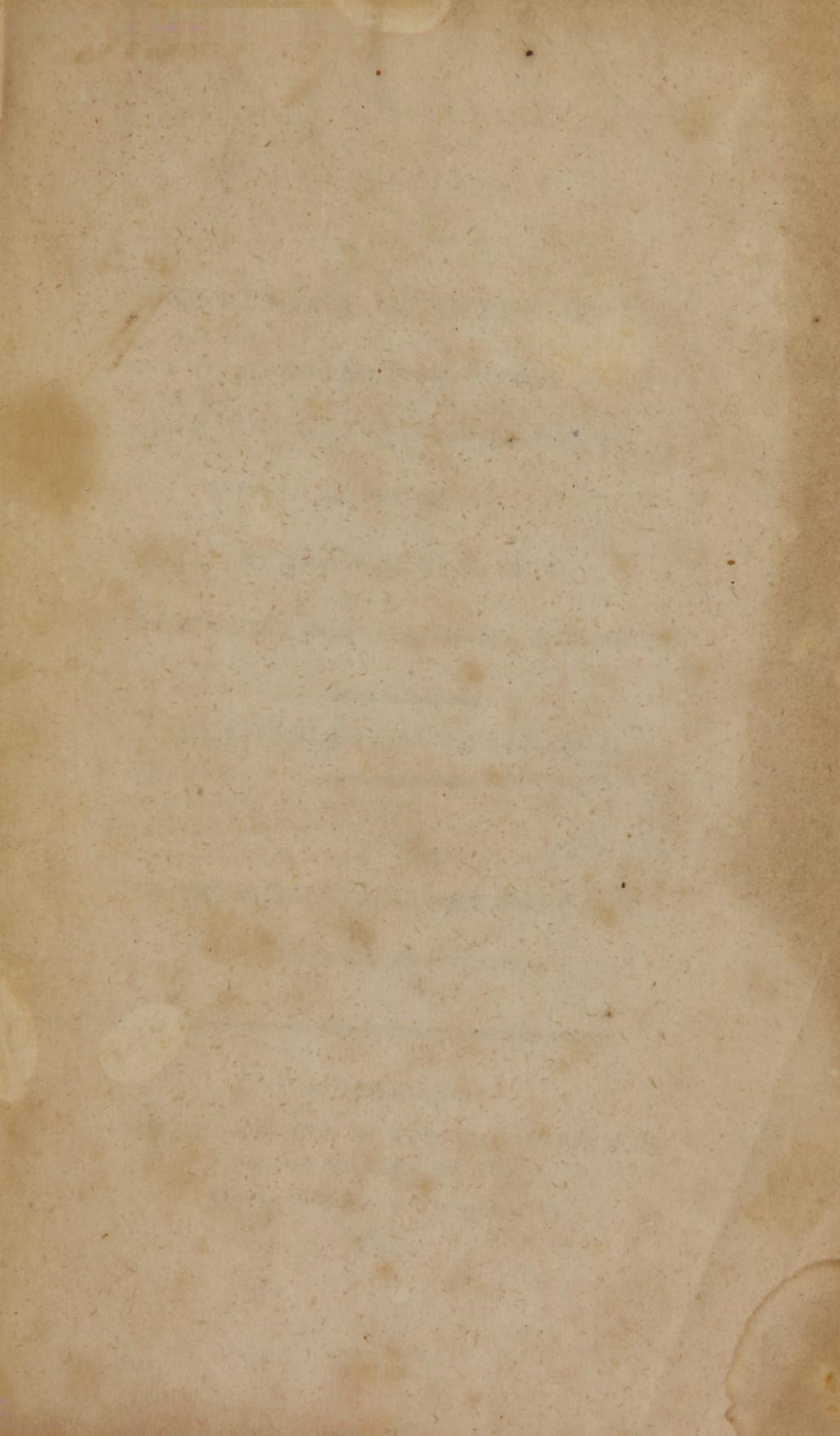
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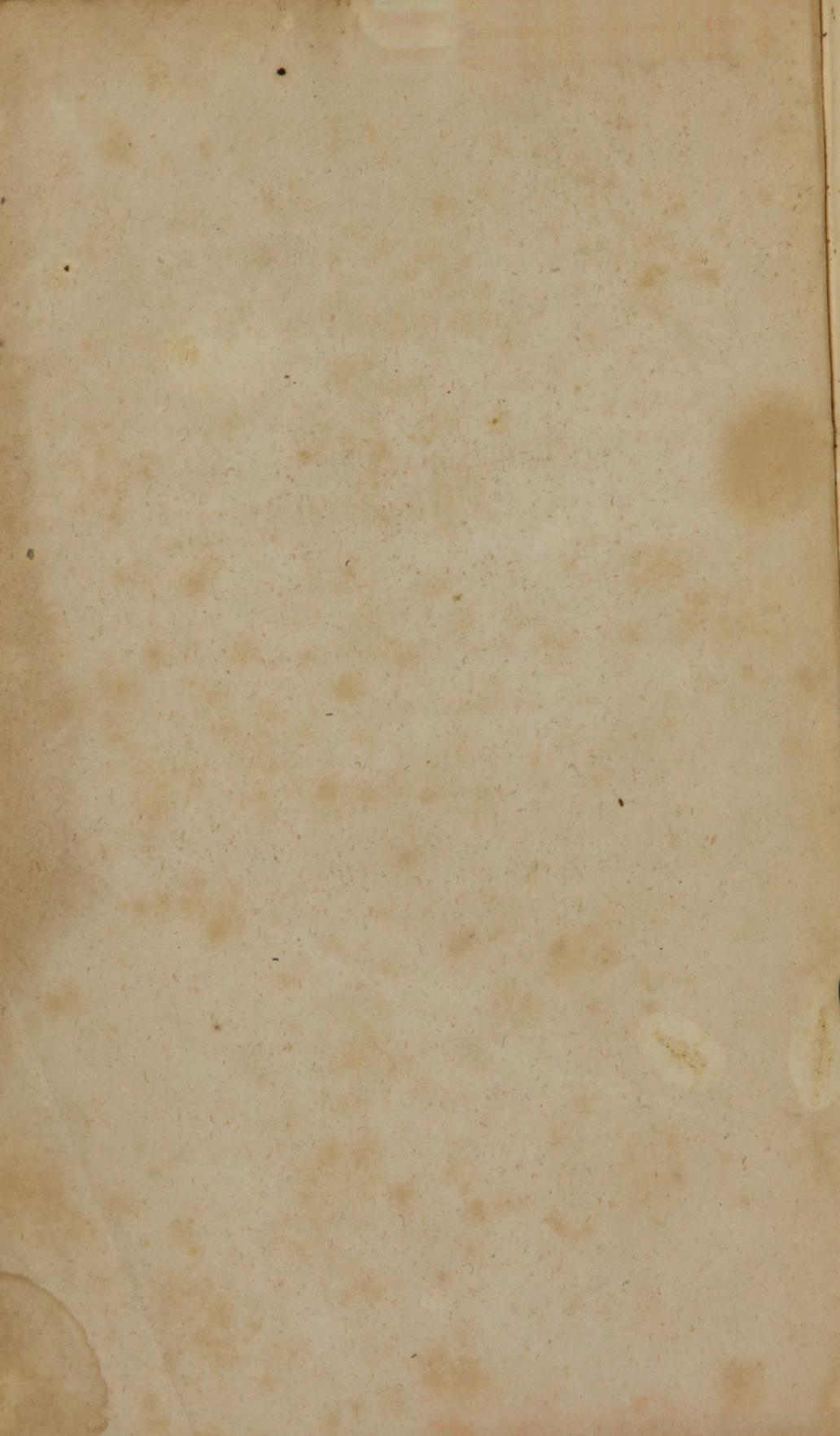
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JOSEPH A. M.

A TREATISE *Sept. 25. 1815th*

ON THE HIDDEN NATURE,

AND THE

TREATMENT OF INTERMITTING

AND REMITTING FEVERS;

ILLUSTRATED BY VARIOUS EXPERIMENTS AND OBSERVATIONS;

IN TWO BOOKS;

BY JEAN SENAC, M. D.

TRANSLATED FROM THE LATIN, WITH NOTES,

BY CHARLES CALDWELL, M. D.

AND

A RECOMMENDATORY PREFACE,

BY BENJAMIN RUSH, M. D. &c.

PHILADELPHIA:

PRINTED AND SOLD BY KIMBER, CONRAD, & CO.

NO. 93, MARKET STREET,

AND NO. 170, SOUTH SECOND STREET.

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1805.

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District of Pennsylvania, to wit :

BE IT REMEMBERED, That on the twenty-fifth day of October, in the thirtieth year of the independence of the United States of America, A. D. 1805, Kimber, Conrad, & Co. of the said District, have deposited in this Office, the Title of a Book, the right whereof they claim as Proprietors, in the Words following, to wit :

A Treatise on the hidden nature, and the Treatment of Intermittent and Remitting Fevers, illustrated by various Experiments and Observations : in Two Books ; by Jean Senac, M. D. Translated from the Latin, with Notes, by Charles Caldwell, M. D. and a commendatory Preface, by Benjamin Rush, M. D. &c.

In conformity to the Act of the Congress of the United States, intituled, “ An Act for the Encouragement of Learning, by securing the Copies of Maps, Charts, and Books, to the Authors and Proprietors of such Copies during the times therein mentioned.” And also to the Act, entitled “ An Act supplementary to an Act, entitled, “ An Act for the Encouragement of Learning, by securing the Copies of Maps, Charts, and Books, to the Authors and Proprietors of such Copies during the Times therein mentioned,” and extending the benefits thereof to the Arts of designing, engraving, and etching historical and other Prints.”

D. CALDWELL,

Clerk of the District of Pennsylvania.

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BENJ. RUSH, M.D.
 Professor of the Institute and practice of Medicine
 and of Clinical Surgery in the University of Pennsylvania
 Philadelphia

RECOMMENDATORY PREFACE.

THE following translation of Senac's treatise, "De recondita februm intermittentium, tum remittentium natura, et de earum curatione," was undertaken by Dr. Caldwell, at the request of the Subscriber. He has long known it to be a judicious and useful work, and has derived much assistance from it in his practice. He is happy in this opportunity of recommending it to the students of medicine in the United States, as peculiarly calculated to assist them in forming just opinions, of the nature and treatment of the summer and autumnal diseases of our country.

BENJ. RUSH, M. D.

Professor of the Institutes and practice of Medicine,
and of Clinical practice in the University of
Pennsylvania.

June 29, 1805.

TO BENJAMIN RUSH, M. D.

PROFESSOR OF THE INSTITUTES AND PRACTICE OF MEDICINE,
AND OF CLINICAL PRACTICE IN THE UNIVERSITY OF
PENNSYLVANIA.

DEAR SIR,

THE following translation of Senac's celebrated treatise, on the nature and treatment of intermitting and remitting fevers, is inscribed to you, *without your knowledge*, because I am confident that had your permission been asked, your modesty would have prevented you from granting the request. Were any apology necessary, on my part, for the liberty I have taken, it could be easily found in the relation in which you stand to the work. You first taught in your lectures the important truths which have long lain concealed in it, under the garb of the Latin language, and have also been eminently instrumental in having them now stripped of this dark and dead covering, and clothed in the language of the United States. Of the reality and usefulness of these truths, it is only an echo of public acclamation, to say, that you are one of the ablest judges now living, as well as their most distinguished and successful teacher. These circumstances would be alone sufficient to designate you, even in the public eye, as the most proper and natural patron of the work.

But I am actuated, also, by other considerations, which, though more private and personal in their nature, are not with me less powerful in their operation. These considerations, were they to be even rejected by the judgment, would appeal to the feelings, and though

DEDICATION.

repulsed from the head, could never fail to gain admission to the heart.

During an intercourse of some continuance, particularly during the term of my medical pupilage, and the first years of my practice as a physician, I received from you many acts of attention and courtesy, which as a young man and a stranger in the place, impressed me deeply at the time, and have still continued to be sources of grateful recollection. Out of these civilities, obligations naturally arose on my part, which our relative situation has not yet allowed me to cancel. It is even possible, that an opportunity of cancelling them may never occur. I must, therefore, beg your acceptance of this dedication as some acknowledgment of them, accompanied by my sincere wishes for a long continuance of your health, happiness, and *useful labours*. For however grateful, in the evening of life, the *otium in secessu honestum* may be to a philosophical and contemplative mind, I am unable to wish you such a retirement. It is enough that we should be deprived of your labours and services when you shall have gone to enjoy the reward of them in a better world.

CH. CALDWELL.

Philadelphia, Oct. 23, 1805.

PREFACE,

BY THE TRANSLATOR.

THE following treatise on the nature and treatment of intermitting and remitting fever, after having lain for many years entombed in the catacomb of a dead language, is now for the first time introduced to the light, through the medium of a living one. Viewing it in itself and in its several relations, it presents, as the translator conceives, a well supported claim to the attention and patronage of the physicians of the United States. He, therefore, flatters himself that its reception among them will not be unfavourable, but that it will be regarded as a valuable if not a necessary addition to most of their libraries. Besides containing much matter calculated to interest the scientific and to instruct the practical physician, it is the production of a character of great celebrity and worth. Indeed in whatever light it be considered, whether in relation to its origin, its execution, or its object, it will be found alike respectable, masterly, and useful. To such readers as are pleased with slight biographical notices, a few remarks on the subject of its origin may not be unacceptable.

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The name of Dr. Senac, the author of the work, is deservedly enrolled among those of the most distinguished physicians of France. Though educated with a view to holy orders, yet an early inclination which nothing could resist, led him at length to the profession of medicine. He flourished in the reign of Louis XV. and stood high in the estimation and favour of his royal master. Besides being for a considerable length of time first physician to that monarch, whose favourites were selected on account of their pre-eminence in talents and worth, he had conferred on him the honorary titles of Counsellor of State, and Superintendent General of the mineral waters of the kingdom of France. He was also elected to a seat in the Academy of sciences at Paris, an institution choice and rigid beyond all others in its admission of members. Of these several places and appointments he proved himself to be even more than worthy, for it was always considered that he was rather an ornament to them than they an honour to him. He was one of those self-dependent characters who shine not with borrowed light, but like an *electron per se*, contain their lustre within themselves. He died in the year 1770, and was followed to the grave by the regret of the literary characters of his time, and the tears of thousands whose sufferings had been often times alleviated by his skill. Besides the present treatise, he left behind him "*A treatise on the causes of acids and the cure of the plague*," "*A translation of Heister's anatomy*," "*A new course of chemistry*," and "*A treatise on the structure of the heart*." This latter work is the most extensive and weighty of all his writings. It is said to have been the result of twenty years application and enquiry. It is a work of

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great learning, and is considered by the anatomists and physiologists of France, as a master piece for depth and accuracy of research.

To the skill of the physician, the science of the philosopher, and the learning of the scholar, Dr. Senac, added the accomplishments of the gentleman, and even the exquisite polish and elegance of the courtier. He possessed, in an uncommon degree, the happy, but rare, art of appearing to equal advantage and acquitting himself with equal effect, whether seated by the bed of sickness, immured in his closet, or surrounded by the splendid circles of a court. It is scarcely necessary to add, that these various qualifications and excellencies, which are so seldom united in the same person, secured to Dr. Senac for many years his choice of business in the metropolis of France.

With regard to the real merit of the present work, there can be little doubt but various and even opposite opinions will be formed. For it is true that many physicians are too apt to make their own customary modes of thinking and practising, the standard of truth and excellence in others. Perhaps this is more particularly the case with those, whose reading and enquiries have been on too limited a scale to enable them to be even tolerable judges.

The translator has no wish to forestall public sentiment on the present occasion. Nor, if he even had, is he vain enough to fancy himself equal to such an undertaking. It is one of the felicities of a free country that public opinion is too independant to bow to the

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sceptre or submit to the controul of any individual. If, however, it be admissible for him to offer a remark or two on the subject, he will briefly observe, that he recollects no work in any language, which comprizes such an extent and rich variety of general and practical information respecting the nature and treatment of intermitting fever, as the treatise before us. It is one of those rare productions in medicine, that may be denominated a work of principle as well as fact. For our author has shewn himself to be able not only to observe and to collect, but also to digest, arrange, and generalize. Though the work contains here and there certain fanciful points of doctrine and hypothesis, that are known to be erroneous, and that have been long since exploded, it bears no mark of having arisen from the pen of either a theorist or a copyist. It exhibits everywhere the strokes of a master if not of an original in his profession. In composing it, Dr. Senac appears to have had no pre-existing model in view. He described diseases as he had seen them, and recommended that practice which he had found most successful. Like Hippocrates of Greece, Sydenham of England, and a physician now living in the United States, whose modesty would be offended were I to mention his name, he took nature for his text-book and observation for his interpreter, disregarding alike the theories of his predecessors and the dogmas of the schools. Persevering in this plan, he necessarily produced a work of fact and experience, interspersed with much original remark and forcible reasoning. He oftentimes, indeed, refers to preceding writers, and speaks of them in terms respectful and modest. But he quotes them rather for their facts than their opinions; for what they have seen

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rather than for what they have thought. He does homage to them no further than they appear to him to have done homage to nature. With the genius, judgment, and experience of Cleghorn, he has given a much more general and complete treatise on Intermittents than that able and excellent author attempted. Cleghorn's celebrated treatise on the diseases of Minorca has somewhat of a local and circumscribed character; but the treatise of Senac is as general as the prevalence, and as varied as the nature, of Intermittents themselves. It describes them in all their forms, and unmasks them in all their disguises.

In clothing this treatise in the English language, the translator has had other objects in view, than that of merely putting the physicians of the United States in possession of one single work of merit. He wishes to become instrumental in directing them to an important source of information, to which he apprehends they have hitherto paid but little attention. He alludes to the medical writings on the continent of Europe. It is greatly to be lamented, that, owing to their being published in Latin, or some foreign language not much read in the United States, these writings have had but a very limited circulation among us. For what we know respecting them we are chiefly indebted to British translations and British reviews. But this is a kind of dependence neither useful nor honourable to us as a literary people. It bespeaks a state of humble minority from which it ought to be our pride, as it is certainly our interest, to endeavour to emerge.

The British physicians translate such foreign publications in medicine only, as are accommodated to the

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diseases of their own climate and country. But the diseases of Great Britain are very dissimilar to those of the united States. Nor do they bear a much nearer resemblance to the diseases that prevail in many parts of the continent of Europe. Medical publications highly useful both on the continent of Europe and in the United States, may, in a practical point of view, be worth but very little to a physician in Great Britain. It is scarcely to be expected, therefore, that we should receive, through the medium of the British press, those continental works in medicine, best accommodated to the diseases of our own country. It is believed that the present translation of a work written in France, and but very little known to the physicians of Great Britain, will serve as a confirmation of the truth of these remarks. Perhaps a spirit of national jealousy and pride may have some influence in making the physicians of Great Britain undervalue and neglect the medical writings of France and other nations.

Recent and melancholy experience convinces us, that the United States and the southern parts of Europe are nearly allied to each other on the score of epidemic diseases; for the same pestilential fever, arising from the same atmospherical causes, has committed the most deplorable ravages in both places. But, owing to a different state and temperature of atmosphere, both Great Britain and the more northerly countries of Europe are exempt from this calamity.

Indeed if we compare the climate and summer temperature of the United states with those of Spain, Portugal, Italy, and some parts of France, we will be at once convinced that these several countries must neces-

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sarily be marked by a very considerable similarity of endemic and epidemic diseases. But a like comparison between the United States and Great Britain, will as readily convince us, that the diseases of these two portions of the globe must be greatly dissimilar.

But our knowledge on the subject does not terminate here. We are taught the same truths by a reference to medical writings. It is well known, that we look in vain into British publications for accurate accounts either as to the histories or modes of treatment of our indigenous diseases of summer and autumn. But this is not equally true with regard to certain continental publications. In them we find such statements, particularly with respect to the histories of diseases, as correspond precisely to our own observations. This is, perhaps, more particularly the case with respect to the medical writings of Italy and France.

It is not the intention of the translator, by any thing here advanced, to offer the least disrespect to the medical character of Great Britain. On the contrary, he is convinced that the physicians of that nation are more enlightened than those of any other country of the old world. But their actual experience in their profession is necessarily confined to such forms of disease as fall under their immediate observation. And having no opportunity of witnessing those gigantic and anomalous forms of intermittents and remittents, that oftentimes occur in the United States, and in the south of Europe, it is not to be expected that they should be capable of either describing them accurately, or teaching their proper mode of treatment. They

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are, no doubt, masterly physicians in the climate of Great Britain, but very feeble and unsuccessful ones in that of the United States. To treat our summer and autumnal diseases conformably to the rules of practice laid down in British publications, would, in many instances, amount to but little less than licenced murder. From these remarks, the reader will be sensible, that some of the British West and East India writers are, in a great measure, excepted. Yet even these do not seem to have been conversant with forms of intermitting and remitting fever precisely similar to those that occur in our own country.

The translator will only add, that should the present treatise meet with a reception corresponding to its merit, it is his intention to submit to the American press, translations of other valuable continental works in medicine.

Philadelphia,
October 3d, 1805. }

BOOK FIRST.
OF
THE NATURE OF INTERMITTING
AND REMITTING FEVERS.

CHAPTER I.

Of the various kinds of Intermitents.

AN intermitting fever is a disease which alternately commences and terminates at a given time, and is marked by regular and distinct periods. On stated days, for instance, and at stated hours of these days, a febrile rigor or chilly fit occurs, and is succeeded by a hot stage, which again gradually abates until it terminates in a state of true apyrexia or intermission. But as the duration of this intermission, or the intervals of time between the recurrences of the paroxysms of the disease are various, it has accordingly been distinguished by various names. Thus, when the disease commences and terminates every day, it is called a *quotidian*; when on alternate days, a *tertian*; and when on every fourth day, a *quartan*.

Other forms of the disease are mentioned by both ancient and modern writers, such as the *quintan*, the *sextan*, the *septan*, and the *nonan*. That quintans do sometimes occur cannot be denied; but the existence of the others is a matter of very great uncertainty. If the credit due to the reports of certain celebrated physicians prevents us from denying their existence altogether, we must at least acknowledge that they have been but rarely observed. Even with respect to those diseases which assume such an appearance, there is ample ground for the admission of doubts. It may indeed accidentally happen that some paroxysms fall on the sixth or seventh day; but it can scarcely be admitted that they pursue this course and observe these periods with regularity for any length of time.

But however reasonable and specious these observations may appear, I am unwilling that too much reliance should be placed on them: the course and operations of nature are very imperfectly understood: those things which we consider as differing from her customs and laws, are oftentimes found to be consonant to them: paroxysms may occur on unusual days; as the febrile power can come into action every third and fourth day, it ought not to be considered as very surprising should it show itself every sixth day. A patient may escape one or two pa-

roxysms of a tertian, in which case the disease will appear like a quintan or septan. A similar occurrence in a quartan will produce other varieties in the type of the disease.

But it is asked, do these occurrences actually take place? Nor can the question be determined with any degree of certainty. We will therefore treat of those diseases only, that have a well defined type, and that pursue a regular course. The quotidian we will not rank among genuine intermittents, because its nature is totally different from theirs, as will be elsewhere demonstrated.

The diseases which deserve above all others to be denominated intermittents, are tertians and quartans. From these arises almost every other form that is marked with distinct periods, such as the double tertian, and the double quartan: of these the course and order of the paroxysms are such, that their nature and composition are easily discovered.

When, for example, the disease comes on and terminates every day, provided the paroxysm be alternately lighter one day and severer the next, it appears evident that there exist two forms of fever, one consisting of lighter paroxysms and the other of more severe ones.

Here the lighter paroxysms correspond to the lighter, and the more severe to the more severe, every third day, that is, in the order of the tertian type. The disease, therefore, which at first view appeared to be a quotidian is evidently composed of two tertians.

The form and course of the double quartan are still more easily detected. This disease, for instance, begins and terminates at a given hour for two days in succession, and does not appear on the third; but, on the fourth and fifth again, it recurs as at first. Hence between the first and third paroxysms, and between the second and fourth, there are intervals of two days each. This is a composition or form of disease which rarely occurs; yet in the frequency of quartans it does sometimes occur, as every physician of extensive experience must be able to testify.

Triple tertians and quartans more rarely appear. The disease is called a triple tertian, when three paroxysms occur in the space of two days, one, for example, every sixteen hours. This type was observed by Galen and Riverius, but must be ranked among the unusual phenomena of intermittents. More frequently two paroxysms take place in one day, while the next proves a day of complete intermission: this form of disease might be likewise denominated

a double tertian, since it consists in reality of two fevers, which recur every third day.

As to the triple quartan, if the paroxysms only be regarded, it cannot be distinguished from the quotidian or double tertian: nor indeed have physicians observed any thing different in it, except the paroxysm that falls on that day which, in the double quartan, is a day of apyrexia or intermission. Such, for example, was the opinion of Celsus, who treated of the change of that form of disease into a quotidian. The sentiments of Celsus on this subject were adopted by Hoffman, who mentions the formation of a quotidian out of a quartan, in such a manner, however, he observes, that the paroxysms do not commence every day at the same hour.

Some physicians mention fourfold and sixfold tertians and quartans; but these writers are led by mere hypothesis, rather than observation, to speak of fevers of this description: they have seen paroxysms occurring in an irregular and disorderly manner, and have endeavoured to arrange them under certain types. But, in the first place, fevers of this kind are not intermittents; or if they are, they pursue no regular course: departing in a short time from the course in which they began, they pursue a different one,

and that altogether broken and disorderly. But, to conclude the matter at once, physicians of long and extensive experience have scarcely ever witnessed diseases of the kind.

Simple intermittents degenerate into other compound forms of fever. They may be converted, for example, as we shall presently see, into continued fevers, still, however, preserving so much of their original type as serves to distinguish them from all others. They may likewise be combined with other fevers, as with those of a continued form. They have also been known to be joined at times with certain other morbid affections. But we will proceed first to the consideration of simple intermittents, that we may thence be the better enabled to comprehend the nature of such as are compound.

CHAP. II.

Of the various causes of Intermittents, as laid down by certain medical writers.

THE cause of intermittents, which acts and lies dormant by turns, is extremely difficult to be understood. Enquiries respecting it have exercised the ingenuity of physicians in every age, and it has been supposed to reside in various parts of the body. Many have considered it as lurking in the *primæ viæ*. The principal argument in favour of this opinion is drawn from a symptom constantly attendant on intermittents, namely, a vomiting preceding the paroxysms. As the febrile cause, therefore, acts first on the stomach, it would seem to have its seat in that organ. But nausea and vomiting usually precede most kinds of acute diseases. Small-pox, pleurisy, and other similar diseases, do not originate in the *primæ viæ*, and yet they are for the most part ushered in by a vomiting.*

* The translator, from his present view of the subject, is decidedly of opinion, that the poison which produces bilious fever in all its forms, and also the variolous poison in cases of casual small-pox,

Others derive an argument no less feeble from the effects of drinking cold water. Thus a drink of cold water makes the disease more severe, while a draught of warm water renders the efforts to vomit much lighter. But in the cold stage of the fever every part of the system is contracted or shrunk up; can it, therefore, be inferred, that the first seeds of the disease lurk in the *primæ viæ*, merely because a new or additional contracting power, such for instance as a draught of cold water, subverts the action of the stomach?

The insufficiency of these arguments appears in a particular manner, from the uncertainty that accompanies the use of emetic remedies. If intermittents arose from the condition of the *primæ viæ*, they might be removed by emetics or purgatives alone. But every one must be acquainted with the fact, that they do not yield to remedies of this description, and that they are not unfrequently even rendered more violent by them. Besides, topical applications to the limbs, and peruvian bark used by way of injection,

have their original seat in, and, therefore, make their first impressions on, some part of the *primæ viæ*. This leads him to an unqualified belief in the sympathetic doctrine of fever. These opinions he hopes to lay before the public, at some future period, accompanied by such facts and arguments as may contribute to their further establishment and more general reception.

have oftentimes been known to cure intermittents : but these remedies do not operate by evacuating the *primæ viæ*.

Physicians have accused another part of the body, which is no less innocent than the *primæ viæ*. The pancreas, for example, has been considered as the seat of the febrile cause, and this opinion has been thought to derive support from anatomical observations. That organ has been found sometimes schirrous, and at other times in a state of suppuration. But were not these appearances the effect, rather than the cause of the disease? How many persons have laboured under obstructions of the pancreas, without experiencing any thing of intermitting fever? We will pass over that opinion, therefore, as a mere conjecture. Nor are we inclined to set a higher value on the sentiments of those, who consider the fomes of the disease as lying hid in the recesses of the mesentery, because the hypothesis is not supported by either reason or experience.

With as little reason and justice has the disease been attributed to a deficiency of perspiration. There are indeed some instances which would seem to favour the belief, that intermittents may arise from such a cause. It has been observed, for example, that boys who had eaten largely of summer fruit, have been seized with

intermittents on plunging themselves into a stream of running water. A kind of febrile paroxysm appears also to be excited by the use of the cold bath. But it is no less certain that perspiration may be checked without producing any febrile affection. It appears also from the circumstances of the cold of winter, which is so unfavourable to perspiration, that persons when warm are very often exposed to cold air without experiencing any febrile commotion in consequence of it.

From these causes which they considered as uncertain, some physicians have retreated to others less obvious to the senses. Many seem to be fully convinced, that the origin of intermittents is to be sought for in the action of the nerves; some, for instance, suppose it to be owing to an inert or sluggish state of the nervous fluid, while others attribute it to an irregular influx of the same. They contend, in particular, that the sudden invasion of the paroxysms can be deduced from no other source than the nerves. Examples are brought forward, where an intermittent appears evidently to have been produced by the passions of the mind. For no other reason, according to some, can peruvian bark prove serviceable, but because it gives relief in hysterical or nervous affections.

It is indeed surprising that physicians should have fancied causes of this kind, which are so remote from the reach of the senses. I confess that I oppose these hypotheses not without difficulty. Who, I would ask, can prove, that the nerves are alone affected in intermittents? Suppose a person to be attacked by fever, in consequence of a violent agitation of the nerves, what then? do not other affections also arise from the same cause? Besides, what peculiar affinity to such a cause have cold, heat, profuse sweating, apyrexia, and a return of the paroxysms at a stated hour? Those who spend their time in searching for these things in the nerves, are idle theorists rather than practical physicians intent on the cure of diseases.

CHAP. III.

Of other and more probable causes.

THOSE writers appear to have approached nearer to the truth, at least to have more probability on their side, who have referred the cause of intermittents to certain animal fluids. Among these the first to be mentioned are the more ancient authors, who have laid the blame especially on the bile, namely on its redundancy or acrimony, qualities which show themselves more particularly in the autumn, or, from various causes, at other seasons.

If indeed any fluid can become too acrid, it is the bile. This appears evident from the circumstances of its origin and formation, which, however, do not seem to be very clearly understood. This yellow excretion cannot be said to be formed in the blood, and separated from thence by certain strainers, because neither the surface of the body, nor the internal parts are tinged by it, when the liver is entirely indurated. In the internal recesses of that viscus, therefore,

the officina or laboratory of the bile is necessarily situated.

But it cannot be proved that the bile can be formed either from fat, from lymph, or from serum. Fat is not saponaceous, since it is nothing but mere oil; lymph is white, coagulates spontaneously in a short time, and does not form an extract with spirit of wine; the serum into which all the humours are resolved, contains in it nothing bilious, nor is any such quality attributed to the urine.

It is more probable, therefore, that the immediate matter of the bile resides in the red portion of the blood, for the blood like the bile, is saponaceous when rubbed on the hands; it is also resinous, in as much as it is inflammable when dried, and forms a tincture with spirit of wine; finally, it is strongly disposed to putrefaction, and, when in a putrid and dissolved state, assumes a yellow colour: these latter circumstances are illustrated in cases of echymosis, and in the putrefaction of blood under a gentle heat.

Now the blood returning from the intestines, having left its more fluid part behind it, has a tendency to a dissolved as well as to an alkaliescent and putrid state. It stagnates in the mesenteric veins, is exposed to a gentle heat, and is

tainted by the putrid halitus of the intestines. It becomes therefore dissolved, and turns yellow in the liver itself, in which it circulates but slowly, and is at length separated or taken up by the biliary tubes. Thus, as it is already inclining to an acrid state, this acrimony can be the more readily increased by the mixture of febrile miasmata.

But if bile be the cause of intermitting fever, it must necessarily have first acquired some peculiar and unusual power : for it is oftentimes in very great super-abundance without giving rise to this disease. Nor indeed are those persons who labour under jaundice more subject to it, although the bile ought in such cases, if ever, to prove troublesome and injurious ; for it then stagnates in the liver, taints the blood and other humours, disturbs the functions of the body, and fails to perform its usual offices in the stomach and intestines.

Influenced, no doubt, by these considerations, some have supposed, that intermittents are to be attributed to a certain putrid matter contaminating all the humours of the body. Hence arose their belief, that febrifuge medicines possess properties strongly antiseptic ; such as the peruvian bark, for example, which is a powerful preventative of putrefaction. But it must

be acknowledged, that they who lay the blame on putridity alone, carry the matter to an extravagant and erroneous length. Putrid aliment does not always produce intermitting fever: besides, this disease oftentimes prevails in places where not a vestige of putridity exists: there are even certain remedies, such as testaceous substances, which promote putrefaction, and yet possess febrifuge virtues.

But whether it be acrid bile, or some putrid matter, that is the cause of intermitting fever, it remains to be enquired whether it is confined to some particular part, or is diffused throughout the whole body. Some circumstances indeed seem to prove, that the febrile cause is diffused through the whole system; when about to disappear, it shows itself on the lips and around the mouth; for it produces pustules on these parts, and leaves marks of its departure, when it is gone. This position is further confirmed by many other circumstances which sometimes occur in certain cases of disease, and seem to show that a poison is diffused throughout the whole body.

But there are arguments not without weight, which tend to prove, that the febrile cause is principally confined to some particular organ, or, at least, that there is some part to which its ac-

tion is more immediately directed and confined, and which is, therefore a greater sufferer in consequence of that action. This opinion is countenanced, as we shall presently observe, by various phenomena attendant on intermittents.

From every view of the subject it would appear, that the part which more immediately sustains the action of the febrile poison, is the liver: for, in intermittents, the urine is tinged with the same saffron and brick-dust colours, as in hepatic affections. So great is the superabundance of bile in these diseases, that, on the exhibition of an emetic, it seems to overflow, and is often discharged of an oily nature and very viscid consistence. So great is its accumulation that it is necessary to have recourse to vomits. Such a tendency has the system to generate bile, that without procuring its evacuation the disease cannot be removed.

Hence, as must necessarily be expected, the countenance is for the most part suffused with some degree of yellowness. In those who are unskilfully treated and imperfectly cured, this colour becomes so deep as to degenerate at length into a true jaundice. Unless this affection be removed, it is not to be expected that the disease will disappear; at least, if it even should terminate for a while, it will certainly have a

strong disposition to recur. Lastly, in those who die of intermittents, the liver is always more or less affected. It cannot, therefore, be doubted but that in this complaint, that organ is particularly and chiefly diseased, and constitutes the principal seat of the fomes.

But in an investigation so extremely intricate, it is not allowable to proceed any further. It appears evidently that a certain matter is either generated in the body, or is introduced into it from without, and that this matter is diffused throughout the whole of it, and proves noxious to the liver in particular. But how is it concentrated in that viscus, and how does it acquire strength? How does it show itself by making as it were a sudden attack, and afterwards gradually abate, till it at length ceases to act? Finally, how does the fomes remain in its lurking-place? How does it contaminate the humours like a ferment, and prove the cause of repeated paroxysms? These things cannot be ascertained, till we shall have taken a survey of all the symptoms and effects of the fever.

CHAP. IV.

Of the remote causes.

IT is much easier to enumerate the remote causes than to point out their mode of operation. It is obvious to every one that intermittents are the immediate offspring of changes in the weather ; yet it cannot be ascertained in what way such changes contribute to the production of these diseases rather than of others. We only learn from observation, that by particular states or conditions of the atmosphere, certain motions or modes of action are excited in living bodies : nor are these motions produced alike in all kinds of animals : dogs, horses, and cattle are not so liable to intermitting fevers, at least they are but very seldom attacked by them.

The human system, on the other hand, is very subject to these diseases. There is scarcely any one who has not experienced something of intermitting fever. This disease spares neither childhood, manhood, nor old age. It prevails in the spring, though more extensively in the

autumn, and also makes its appearance occasionally during the severest cold of winter, and the most intense heat of summer. But during these latter seasons the occurrence of the disease is much more rare. In general, a continuance of intense cold or intense heat produces fewer diseases, and those of a different aspect.

There are in the mean time certain years, in which intermittents are rare during the spring, and even during the autumn, the season in which they more generally prevail. But at other times they break forth sporadically, or epidemically, and that in particular tracts of country rather than in others. In such cases they begin and terminate their ravages sooner or later, according to the changes of the weather, or the nature of the soil. When they commence early in the season, we may look for an epidemic of considerable severity. These epidemics have been known to continue with great violence and mortality, even till some time in the winter. On such occasions, however, those persons who had been attacked by the disease during the autumn, were the principal sufferers, while such as had escaped till the commencement of cold weather were seldom affected afterwards.

Intermittents prevail not only at certain seasons of the year, but also in particular situ-

ations. Persons living in the vicinity of marshes are particularly subject to them. They rage, for example, in the northern parts of France. The French troops suffered once the greatest mortality from them, when they were encamped along the coasts of Holland. On that occasion, such was the nature and malignity of the fever, that after having continued for a certain time it scarcely admitted of a cure. Even the most robust systems and vigorous constitutions, when much reduced by the violence of the disease, carried the relicks of it with them through different climates.

This fever arose from marine exhalations, which were, therefore, supposed to contain something noxious derived from the waters of the ocean. But other kinds of exhalations are not less hurtful. Near to the walls of a large city stood a very extensive and deep pond of water, which for forty years had served as a receptacle of all the filth from the houses and streets. As long as these putrid matters remained covered with water, they were productive of no mischief. But when they had so far accumulated as to rise above the surface of the water, a most malignant fever spread through the tract of country adjoining the city. Where, previously to this, only four hundred persons had died an-

nually, not less than two thousand were now swept away.

Such was the peculiar power of these exhalations, that persons living near the pond, could not preserve meat for the space of three hours ; it usually began to putrefy almost immediately, and all kitchen furniture became in a short time covered with a kind of crust. Perhaps this fever was of a different kind : it was truly malignant and produced various affections of the head, a circumstance not so observable in the fevers which prevail along the coasts of France. These latter diseases more frequently terminate in troublesome obstructions of the viscera.

Hence it appears, that in epidemic constitutions of the atmosphere, there is something that rises from the earth, and floats in the air, which tends to the production of intermittents rather than of other diseases. Of the nature and composition of this, it is extremely difficult to judge. We learn, however, from observation, that a similar cause may be generated in our own systems, and that it sometimes originates from the aliments we use ; yet these aliments cannot be regarded as a certain cause of intermittents. For, when any one, after an error in diet, is attacked by a disease of this kind, he might have been before pre-disposed to it ; he might have

received a certain portion of miasma from the reigning constitution of the season. Thus, in camps, for instance, it is certain that if the provisions be heavy and glutinous, like beans, or austere and harsh, like unripe fruit, attacks of intermitting fever are apt to be common throughout the autumn.

Thus, then, it stands, with respect to these and other occasional causes, such as sleeping in humid situations, cold air, fatigue, passions of the mind, such as anger and sorrow, long continued watching, and the use of heating medicines. To these things, not as their proper, but as their exciting causes, fevers are known to succeed very frequently. The body being already pre-disposed, has a disposition to take on these diseases. Under such circumstances the solids and fluids are, so to speak, thrown into the flame of fever by a slight cause. It would, indeed, be a secret, well worth possessing, to know how to reduce the fever certainly to an intermitting type.

CHAP. V.

Of the febrile rigor, or cold stage of fever.

WHEN the febrile cause begins to act, a sensation of coldness is immediately experienced, a circumstance which occurs in other acute diseases as well as in intermittents. But in continued fevers the progress and violence of the cold stage are widely different from what they are in those of an intermitting type. There are indeed some continued fevers of a malignant character, which are ushered in by a severe and dangerous chill. But in general it neither lasts so long, nor is so troublesome to the sick. This serves to apprise the practitioner of the nature of the impending fever, and enables him to distinguish it from other diseases, even before the hot stage is formed. For it may be laid down as a general principle, that fevers which commence with the greatest rigor, are to be classed with those whose course is marked by stated paroxysms.

The rigor or cold stage of fever can be attributed to no other immediate source than an impression or irritation made on the nerves by some hidden cause exciting them to action. That this is the case appears from various examples that occur in practice. Thus, for instance, the irritation of a biliary calculus on the *ductus choledocus*, sometimes excites the most severe rigor throughout the whole body. The same effect is oftentimes produced by a catheter touching the bladder, and even by an enema thrown into the rectum, when greatly pained by a hemorrhoidal affection. A similar rigor arises from certain visceral complaints, such as a strangulation of the intestines, and also from the formation of pus in any of the cavities of the body. I once saw a soldier who, in consequence of a large abscess of the liver, died of a chilly fit which lasted two days. There is no doubt, therefore, but the cold stage of intermittents may be produced by a stimulus acting on some part of the body.

The access of the chilly fit is usually preceded by various phenomena. These are, a general lassitude and heaviness, a sense of anxiety, a yawning and stretching, a paleness, and sometimes a disposition to sleep; then succeeds the chilly fit, which puts on a variety of forms; sometimes, for instance, beginning at the feet,

at other times about the scapulæ, and again in the back, it runs through the whole body, in a manner resembling small streams of water, poured irregularly in every direction: hence horripilations, shiverings, and repeated rigors, as if cold water were dashed over the limbs.

The shiverings and rigors are oftentimes so great as to produce a continued tremor; the hands, arms, and other members begin to shake; the lower jaw in particular is seized with a very quick and alternate tremulous motion, which rises at times to such a pitch of violence and force, that the teeth clash against each other with a considerable noise, and are even said to be sometimes broken. The motions being convulsive and involuntary cannot be checked, notwithstanding the greatest efforts of the patients for that purpose. Agitated by such concussions, the sick are unable either to sit or stand: they, therefore, are forced to lie down, and to draw themselves together in such a way that their limbs may press on and support each other.

It frequently happens that all parts of the body are not alike affected by the cold fit. I have oftentimes seen the lower parts extremely cold, and the upper ones parched with heat. Mention is made of a patient who had one side cold and the other hot. I myself had a person under

my care in fever, who felt a coldness only in one arm. There are other circumstances not less rare, which variously affect the duration, strength, and appearance of the cold stage. But as these do not very frequently occur, it is inadmissible to dwell on them at present. Those things which deviate from the common course of nature, do not fall within the province of art.* Besides, these anomalies are usually connected with spurious fevers, not with true intermittents.

Varieties also occur in the cold fit which precedes intermittents. Thus it varies in degree, being sometimes light, sometimes moderate, and at other times very severe. It attacks principally the extreme parts of the body, and but rarely reaches, or is felt in, the internal parts. It varies also according to the age and temperament of the subject. It is much more severe in old and relaxed subjects, than in such as are youthful and vigorous. Its duration is also different in different cases, as it sometimes lasts two and sometimes three hours: I have known

* That is, stated rules cannot be laid down for anomalous occurrences. Under the pressure of such occurrences, the practitioner has nothing to depend on but his own sagacity and discernment. Could rules be laid down, or predictions be formed respecting them, the events would cease to be anomalous and become regular.....

it to be protracted even to the fourth and fifth hour.

When the cold fit is longer than usual, this circumstance is not to be considered as always portending a more obstinate and severe paroxysm. In general, indeed, the violence of the hot stage of fever corresponds to that of the cold:* but I have oftentimes observed, that a tremor of but short duration was succeeded by a most intensely severe paroxysm of many hours continuance. On the other hand, I have been surprized to find a long cold fit sometimes followed by a short and light attack of fever.

The cold fit is not alike troublesome in all the paroxysms of the same disease. Sometimes it is scarcely felt by the patients, when the disease has run on to a considerable length: nor is it indeed, at times, less inconsiderable even in diseases of recent origin. There are some of these which begin with a chill only at first, or at most in two or three of the subsequent pa-

* Our author alludes here to the *intensity*, but not to the *duration* of the hot stage. It is certainly true that a very severe cold fit, accompanied by a chattering of the teeth, and what is called, in common language, a *general shake*, for the most part ushers in a high state of febrile action. But this state is seldom of long continuance. A copious perspiration soon comes on, and terminates in a short time the increased heat and arterial commotion.....*Trans.*

roxysms. After this the access of the paroxysms is announced by a very slight chill, if by any at all. But in true intermittents, unless they have degenerated in consequence of the lapse of time, the case is otherwise; these do not in general deviate from the usual rule.

When the paroxysms are so protracted as almost to run into each other, the cold fit is generally less evident. Nevertheless, most persons are admonished of the approach of the fever by a slight degree of chilliness. Sometimes the coldness occurs only in the feet, and at other times it is not attended to by the sick at all; while in other instances again, an opposite state of things occurs. Thus, in fevers, as in other movements or processes of nature, there is no absolute stability. Some fevers do not steadily pursue the course or type with which they commenced, and others deviate from the common laws of similar diseases.

It is not to be wondered at, therefore, if in irregular intermittents, some unusual symptoms should manifest themselves in place of the cold fit. I have accordingly seen some patients who complained of a fixed pain in some part of the body, resembling true rheumatism. There are others again, who, on the approach of a paroxysm, are seized with a sleepiness. Indeed so great is this

sleepiness, that it sometimes resembles real coma. A certain female patient could scarcely be roused up; and when she was roused, immediately fell asleep again, and lay as if deprived of sense: from hence it appears how easily the mind may be affected. I once knew a woman who, just before the paroxysm, became very loquacious, nor was the approach of the disease announced to the by-standers by any other sign.

CHAP. VI.

Of the effects of the cold stage of fever.

THE cold stage of fever produces many effects on the system at large. To speak first of those that occur exteriorly, the arteries are contracted. Nor can this be attributed to any other cause than the action of the nerves on them. Hence the pulse becomes small and frequent. It begins, for instance, some little time before the cold fit, to be depressed and to beat more slowly. Afterwards it becomes more frequent and irregular, particularly in persons advanced in years. In such subjects it is often rendered tremulous and uneven. In those that are more youthful, it is not usually either so much depressed or so irregular; but of these things we will treat hereafter.

From this contraction of the arteries arises a paleness, which shows itself in the nails, the lips, the countenance, and the other parts of the body generally. To this even a livid colour is oftentimes superadded. I once saw a woman whose

nose, during the cold stage of fever, was suffused with something of an azure cast. At times the skin is checkered with spots of a brownish and bluish colour. The blood having passed from the arteries, is collected and detained in the fine net-work formed by the incipient branches of the veins. This appears from injections of the blood-vessels, by which small specks or petechiæ are sometimes formed. But these phenomena occur more rarely in the cold stage of fever, though they often show themselves in parts rendered livid by the action of external cold. In this latter case, the blood stagnating in the incipient venous branches, assumes a blue or violet colour.

But a contracted state of the parietes of the arteries is not of itself sufficient to produce a stagnation of the blood. These vessels, even when thus contracted, may possess great energy. The blood must, necessarily, therefore, be thrown into them with difficulty, during the cold stage of fever. At this period that fluid is collected in the larger veins, and the vena cava in particular is overcharged and oppressed by it. The right auricle and ventricle of the heart are both turgid at the same time, and may, therefore, be considered as in a kind of press formed by their own contents. Hence the contraction and dilation of the ventricles are necessarily much con-

fined. From this source arises that convulsive motion and palpitation of the heart, which sometimes occurs in the cold stage of fever. Finally, to the same cause must we attribute that great anxiety, and occasional syncope, experienced by some persons at the commencement of a paroxysm.

But wherefore is the blood collected in the cavities of the heart? Observation proves that such a collection actually takes place. As to the cause, it appears that the blood, being forced by the violence of the cold fit from the external, is driven to the internal parts of the body, and is then by the various succussions or agitations of the different parts directed towards the larger veins. But not being able to pass immediately through the lungs, it must necessarily be collected in considerable quantity in the pulmonary artery, as well as in the right ventricle and auricle of the heart.

Several causes co-operate in producing a stagnation of blood in the lungs. First, the texture of the viscus itself presents a constant barrier to the blood, as it issues from the heart: hence that fluid is necessarily accumulated in the pulmonary vessels. Secondly, the state of respiration, during the cold stage of fever, contributes to the same end. The acts of inspiration are

artial and contracted: but when the vesicles of the lungs are not properly expanded, the fluids cannot find their way through them without difficulty, and must, therefore, be unavoidably accumulated in their vessels. It is not to be wondered at, then, if patients sometimes expire in the cold stage of fever, and if, after death, their lungs are found distended with dark and grumous blood.

Nor ought it to appear more strange, that, seeing the viscera are thus turgid with blood, the patients should suffer a burning heat within, while the external parts of their bodies are freezing with cold. When the hands and feet are almost frozen in winter, the armpits and groins generally retain the degree of heat that is natural to them. But the same thing occurs in the cold stage of fever. Indeed the surface of the body being chilled at the commencement of the paroxysm, the action of the viscera is thereby rendered more intense, whence the heat in them is necessarily augmented.

The degree of this internal heat may be discovered in some measure from the intensity of the thirst: for thirst is most troublesome when the viscera are raging with heat. As in such a state the fauces are drier than usual, we may presume the same thing to be the case with respect

to the surface of the œsophogus and stomach itself. But it is no less certain that thirst is sometimes troublesome without any preternatural increase of heat. It is excited in such cases by acrid aliment, and by that saburra which accumulates at times in the *primæ viæ*; thus bile accumulates in these passages, the nature of which is apt to be greatly vitiated in febrile affections. I once saw a woman labouring under a hepatic affection, who suffered great thirst as often as the bile flowed in large quantities into her stomach.

That bile contributes to the production of thirst, is further confirmed by the nausea and vomiting to which patients are subject, during the cold stage of fever. In the beginning of paroxysms, in particular, large quantities of bile, sometimes tough and at other times more liquid, are discharged by vomiting: that fluid is even observed at times to be fœtid. But although this cause may be a powerful one, others of no less moment may be combined with it. The liver is affected, as we have already intimated: in the region of the stomach spasms arise, which are to be attributed to the stagnation of blood and the irritation thence arising. Nor is it necessary for inverting the motions of the *primæ viæ* that the cause of intermitting fever be present. Pleurisy, nephri-

tis, and affections of the uterus are accompanied by vomiting. The agitation of certain nerves is sufficient for inverting the action of the stomach.

This vomiting, or effort to vomit, is marked with some variety. It generally occurs at the onset of fevers, and is violent and troublesome in proportion to their severity. In vernal intermittents it is less violent than in autumnal ones. Even in the latter season it becomes milder after a certain continuance of the disease. It finally disappears altogether, and leaves nothing behind it but the cold fit. From this subverted motion or evacuation of the stomach, no relief whatever is to be expected. It is evidently a morbid affection; and notwithstanding the vast quantities of offensive saburra thus spontaneously discharged, there always remains a residuum behind that ought to be thrown off by an emetic.

When by the force of the cold fit the action of the nerves is thrown on the stomach, and even the intestines themselves are constricted, it is not surprizing that the fibres of all parts of the system should be velicated and suffer some degree of violence. Therefore it is, that on the access or during the prevalence of the cold stage of fever, various pains are so often felt through-

out the whole body. Sometimes the joints ache, and the limbs are so painful, that they seem to be affected by rheumatism. At other times again, the pain is situated in some internal part. I have seen cases in which the intestines themselves were tortured with pain. In general, however, wandering pains and a kind of painful pricking sensations are more frequently experienced throughout the whole or in certain parts of the skin.

But notwithstanding the pains excited at times by the cold stage of fever, yet when that affection is very severe, it renders sensation much less acute. Under such circumstances, if a slight wound be inflicted, no pain whatever is experienced. There have even been patients who were not sensible of the heat, when their feet were moved close to the fire. For the same reason purgatives do not act on the intestines if exhibited during or just before the cold fit. The stamina or constituent fibres and smaller vessels of the parts are constricted by the action of the cold; the blood and vital principle cannot circulate through their usual channels; there is, therefore, a deficiency of motion, which is the principle of sensation, or, at least, that condition without which all things languish and decay.

Hence we see what disorders may arise in the functions of all parts of the body. The organs of respiration are affected : the brain itself is sometimes a sufferer : the secretions are disturbed : perspiration is obstructed : the urine becomes coloured, is thin, watery, and in small quantity : as the renal tubes are constricted by the action of the nerves, none but the more fluid parts of the urine can pass off, for when the motions in these small vessels are necessarily diminished, the grosser particles can neither be separated from the others, nor pass off through such narrow channels : whence they must either remain in their proper strainers, or be carried elsewhere.

CHAP. VII.

Of the hot and sweating stages of fever.

AFTER the cold fit has continued for a time, it begins to abate, and is succeeded by a degree of heat which spreads gradually throughout the extreme parts, and is marked by considerable variety. It is more intense, for instance, if the cold fit has been very severe. The thirst still continues, with dryness of the mouth and skin, pains in the joints, and not unfrequently great disquietude, tossing, and anxiety. The whole body is now flushed, particularly the countenance, the urine is of a red or flame colour, &c.

To arrive at some knowledge of the cause of this heat, let us attend to the circumstances and mode of its occurrence in certain cases. When a person is immersed in a cold bath, he generally experiences soon afterwards a degree of feverish heat. When the hands, already stiff with cold, are rubbed with snow, a heat and redness are excited in them, and a vapour or

smoke arises from them. When any one exposes himself for a considerable time to a very cold wind, or a freezing atmosphere, his face begins at length to glow and be flushed. The same thing takes place, accompanied also with pain, in every part of the body which has experienced an intense degree of cold.

Cold ought therefore to be considered as an irritating cause :* in those parts long exposed to its action a pungent stimulus remains, and the small vessels being contracted in their diameters, the fluids are accumulated in them and made to stagnate. In this state of things the impression of the cold either alone, or assisted in its action by the irritation of the nerves, rouses

* Be the essence of cold what it may ; whether it consist simply in the absence of heat, or in the presence of an ætherial fluid of equal subtilty with the matter of heat, it is unquestionably, as our author pronounces it, an *irritating cause*. In more fashionable medical language, it is certainly a *stimulus*. This is a point as susceptible of clear and satisfactory proof, as any one in the science of physiology. We must necessarily bestow the name of stimulus on whatever is capable of exciting in us motion or sensation. But a moment's reflection will convince us that cold is capable of producing both. A current of cold air produces a blush and a glow of heat on the face, by exciting action in the cutaneous arteries of the part. If a person be in a deep sleep, a lump of ice or a ball of snow applied to his skin, will awake him as instantaneously as the application of hot water, or even of a burning coal. Innumerable other instances of the stimulant power of cold might be adduced ; but it would be equally improper and impracticable to dwell on the subject in the limits of a note. Besides, the above instances are deemed sufficient for my present purpose.....*Trans.*

the vital energy of the part : the blood being incessantly urged forward with more violence than usual, acts forcibly on the vessels that oppose its passage : but from this constant motion and distraction of the fibres, an increase of heat must necessarily result.

There is no doubt but a similar cause operates in the case of intermitting fever. The blood being accumulated by the violence of the cold fit, stagnates in the cavities of the heart, in the lungs, and in the mesenteric vessels. The constant stimulus of this volume of blood excites the vital energy, or the action of the nerves : hence necessarily follows an increase in the motion of the arteries, and a corresponding increase of heat. In the mean time, the greater the contraction of the parts and the consequent stagnation of the fluids, the greater in general will be the degree of heat. Yet, at times, so great has been the extent of this contraction, that the vital power being oppressed and suffocated, as it were, has been incapable of being roused, and death has consequently ensued.

But we do not attribute so much to this cause as to alledge that the hot stage is produced by it alone. There can be no doubt whatever but fever arises from other causes besides a cold fit. This is evident from those intermittents

which come on without a previous chill, at least without a chill of any severity, and which are notwithstanding at times extremely violent. Besides, in continued fevers, in pleurisy, and other similar affections, a cold fit generally introduces the disease; but afterwards there remains an irritating cause or inflammation, on which the succeeding hot stage and the whole course of the fever depends. Lastly, I have myself seen a periodical cold fit, which was not succeeded by any appearance of febrile heat.

What seems to render it probable, that the hot stage ought to be attributed to the preceding cold one, is the effect of certain remedies. It is observed, for example, that by these remedies both the hot and cold stages of fever are prevented. But if they have succeeded when taken before the commencement of the cold fit, who will venture to assert, that they did not exert their influence alike on the proper cause both of the cold fit, and of the hot one? That this is indeed the case, innumerable circumstances concur to prove, as we shall demonstrate when treating of the cure of fevers.

The heat of the body in intermitting fever rises higher than might perhaps on the first view of the subject be imagined. It even surpasses the heat that usually occurs in some very acute

fevers. It sometimes rises as high as the 39° of Reaumur. Hence we see how great the heat must be in those ardent fevers which oftentimes partake of the nature of intermittents. It will be the more intense, for instance, in proportion as there is a greater quantity of blood accumulated in the *vena portæ*, the region of the heart, and the lungs. It is in these parts, therefore, that patients experience such a burning heat, for the same reason that, in other diseases, other parts suffer a similar heat, as the head, for example, in *phrenitis*, and the fauces in *argina inflammatoria*.

Sweat is a phenomenon of febrile heat. As it flows, for the most part, copiously, when the body is agitated by violent exercise, so it also issues in abundance, when the action of the arteries is somewhat increased. If, however, the fever and heat be very violent, the pores of the skin are not opened, but, on the other hand, the texture of all parts of the body is constricted, or thrown into a state of spasm. Under these circumstances a burning heat and dryness prevail over the whole body, and must be expected to continue till the fever abate: then the cutaneous fibres and excretories being relaxed, the perspiration breaks forth on every side, and is promoted by the degree of fever that remains, the

relaxation of the surface of the body, and the fulness of the cutaneous vessels.

The reality of these causes of the flowing of the sweat is obvious and well established. That there is a relaxation induced, towards the close of the fever, cannot be doubted. By the febrile impulse the fibres are overstretched and weakened, for we know that flesh is rendered more tender and soft by heat and motion. The fluids, therefore, can pass more easily through the pores, and that the more especially, as the cutaneous vessels are kept distended by the force of the circulation being greater than natural. The flowing of the matter of perspiration through the pores of the skin, is much facilitated by the change that occurs in the crisis of the blood. It is evident that that fluid is in some measure dissolved in those persons who have suffered an attack of fever: for such subjects become pale, and, as it were, bloodless, and are yet subject at times to hemorrhages: they even fall occasionally into a scorbutic diathesis in consequence of the vitiation of the blood.

Hence it appears that great variety may occur with respect to the sweating stage of fever. In some patients, for instance, the sweat begins to flow at the very commencement of the hot stage: in others it is more tardy, not appearing

till a little after the body has become hot ; while in others again it breaks out at a still later period : it continues also to flow for a longer or shorter time, and is sometimes profuse and at other times in smaller quantity. These circumstances are necessarily varied according to the cause of the disease, the affections of the viscera, the varieties that occur in the hot and cold stages, and the temperament of the patient. Hence the perspiration is at times unusually copious. I once saw a person labouring under intermitting fever, who experienced such a deluge of sweat six times a day, that he was forced to change his linen twice or three times every hour.

As the action of the hot stage on the organs of perspiration is various, the same thing is true with regard to the other organs of secretion ; hence the urine assumes a red colour. This fluid is thin during the prevalence of the cold stage ; for, during that period, all the secreting tubes being constricted or affected by a spasm, and the motion of the fluids being languid, none but the finer particles can pass through the secretory vessels of the kidneys, while the grosser ones remain mixed with the other humours. But as the febrile action increases, the urine acquires a flame colour ; this colour arises from bilious and oily particles being mixed and incorporated as it were with each other, and is mark-

ed with some variety of appearance ; that is, it is sometimes deeper and sometimes lighter. The colour of the urine is rendered deeper by profuse sweating, because, in such a case, the more subtile and limpid fluids pass off by the pores of the skin, whence the urine is necessarily robbed of them, and its redness becomes consequently more concentrated and more deep. Thus, when any one has used severe exercise and perspired plentifully, the urine which he discharges is hot and in small quantity, but is at the same time frothy and has its surface covered with a thin pellicle : in this case, when the force of the paroxysm has abated, a two-fold sediment is deposited, namely, a lateritious one, and a smooth white one. The first of these, of which we will treat elsewhere, is a symptom of disease, but the other a sign of solution or returning health. Respecting these sediments the ancients have written much, but I would not vouch for the authenticity of their observations and opinions. By modern writers the subject appears to have been too much neglected.

At the very commencement of intermittents, Galen was in the habit of predicting their termination from the appearances of the urine. According to him, the solution is to be looked for after the fourth paroxysm, if the urine be red or yellowish, and emit a smell ; after the seventh,

if the urine be only red, and after the third, if on the first day of the disease a smooth and even sediment be deposited. This subsidence is indeed of great moment, particularly in quartan fevers, but, as we will elsewhere demonstrate, is subject to great variety.

CHAP. VIII.

*Of the state of Apyrexia, or freedom from fever,
which succeeds each paroxysm.*

AFTER the sweating stage an apyrexia or freedom from fever succeeds, and all things seem to be restored to their natural state. But the course or progress of this period during which fever lies dormant is various, and many things occur in it worthy of notice. As far as our senses are capable of investigating the subject, the intervals might indeed be considered as perfectly exempt from disease (for they are scarcely marked by the shadow of a complaint :) but it is hardly possible that so very rapid a transition could be made from health to disease, and from disease to health. Hence Galen expresses some doubts respecting a state of perfect apyrexia. He could not be induced to believe, that the intermediate days were perfectly free from fever.

With many persons the nights preceding the paroxysms are restless and uneasy, and, if the

matter be carefully examined, it is evident that some slight symptoms of disease remain during the days of intermission : at least it may be laid down as an established point, that it is during the middle portion only of the intervals between the paroxysms, that the system can be free from all preternatural action. Even during that period the tranquillity and health of the system cannot be complete, because the fomes of the disease still remains, and must, from one paroxysm till another, act the part of a preternatural stimulus. Besides, health cannot be considered as sound, while disease still remains pictured in the countenance, while the urine and fæces put on unnatural appearances, and while the appetite is for the most part defective, and the digestion imperfect.

As the stated hour of the paroxysms approaches, a commotion or disordered action more or less perceptible is necessarily excited in the system. The access of these paroxysms generally falls on the same hour of the day. Not unfrequently, however, their order is interrupted. They sometimes anticipate, for example, the usual time of their invasion, so as to occur before it, sometimes by very short and at other times by longer spaces. This is an evidence that the disease is acquiring strength, and hastening on to a continued form. But if, on the other

hand, the fever makes its attack at a later hour, this is a proof that it is losing strength. Each postponing paroxysm is milder and shorter, whence a hope may be derived that the disease is inclining to a speedy and favourable termination.

But there are other circumstances besides the time of their invasion or commencement, in which the paroxysms differ from each other in different fevers. The intervals between them, for instance, are sometimes longer and sometimes shorter. Hence tertians are divided into two kinds, the legitimate or true, and the bastard or spurious. The paroxysms of the legitimate kind are said to last twelve hours, but those of the spurious somewhere about eighteen. As to the first, namely, the legitimate or common tertian, its paroxysms are scarcely ever observed to continue so long as twelve hours, at least such a thing has not occurred to me during a practice of forty years continuance. We learn from daily experience, that the paroxysms are limited to five, six, seven, or eight hours. From this rule, however, we must sometimes except the first few fits of the disease, which, in certain constitutions, are protracted occasionally to a greater length.

It is supposed that the course of the paroxysms has many things in common with continued fevers. Some are of opinion, for instance, that, as certain continued fevers terminate in seven days, so a tertian fever is to be limited to seven rounds or paroxysms. But it ought to be remarked, that a continued fever rages both day and night for the space of seven days, whereas, an intermittent continues only from five to eight hours out of twenty-four. Besides, there are some continued fevers, which terminate on the eleventh, fourteenth, or twenty-first day; on what principle, then, can these be referred to any description of intermitting fever? can they be referred, for instance, to the quartan which is of longer duration than the tertian? Let us suppose that the termination of this disease falls on the sixtieth day, a position which is altogether doubtful: there will occur during this period fifteen accessions or fits, each one of six or eight hours duration: but, on the other hand, the continued fevers run on throughout the whole of the fourteen or twenty days without any intermission.

If there be any point of similitude between intermittents and continued fevers, it lies exclusively in the circumstance of their remission or abatement. They both, for instance, are marked by exacerbations and remissions occur-

ring at stated times. But the fever is permanent, and even its remission extremely short, and at times scarcely perceptible; while, on the other hand, the intermittent ceases or appears to cease entirely for one or two days. But there can be no real affinity between fevers that continue without intermission for a long space of time, and those which alternately appear and disappear at stated times.

CHAP. IX.

*Of the cause of the disappearance and recurrence of the fever at stated periods.**

WHENCE is this alternate disappearance and regular return of the fever at stated periods? If indeed it be practicable to fathom this subject

* The physician who undertakes to account for the periodical recurrence and termination of the paroxysms of an intermittent, may be truly said to "*attempt the bow of Ulyssis.*" As there are few subjects more curious and interesting, so there are none more difficult, in the science of medicine. Although our author fails entirely in his attempt to explain it, I am unable to direct the reader to any writer who has been more successful. The matter is as much an *arcanum naturæ* now, as it was in the days of the father of physic. Nor does it seem at all probable that the thick veil which has hitherto concealed it will be shortly removed. This veil is of too strong a texture, and is too firmly secured in its place, to yield to the lilliputian efforts of hypothesis. It resists with equal ease the torpor, and the accumulated excitability of Darwin, and the debility, spasm, and consequent re-action of Cullen. Although the rapidly progressive state of physical science convinces me that it will yet be removed, I am equally confident that its removal must be reserved for a much more enlightened period than the present. Without the least expectation of shedding any additional light on the subject, I will submit to the reader the following remarks.

Intermitting fever arises from a local affection, produced by an aeriform poison which gains admission by the mouth. This affec-

at all, the solution of the question must be sought for in the phenomena and analogies of the febrile cause, and in the alternate movements or states of action of various parts of the body, and of various affections. We must first, therefore, enquire into the varied march or progress of the febrile cause.... Why it breaks out or manifests itself at one time and lies dormant at another, a subject in itself both intricate and obscure.

Of the nature of this cause we are entirely ignorant : this only we know, that it possesses

tion has its seat in some part of the *primæ viæ*, most probably the stomach. After it has existed for a certain length of time, it brings the whole system into sympathy, thereby producing a paroxysm of fever. But to explain why this paroxysm terminates within a given time, and returns again at a stated period, "*hic labor, hoc opus est.*" When we have arrived at this point, we may be truly said to have reached the "*ultima thule*" of the present state of pathology.

In the mean time, I have little doubt but the regular returns of the paroxysms of an intermittent at the same hour of the day, are intimately connected with solar influence. The disposition of the subjects, when cured, to relapse at weekly periods, bespeaks also the subjection of this disease to lunar influence. It appears highly probable, then, that the two great heavenly luminaries, the regents of the day and of the night, which exercise such an extensive and well known agency over the ocean, the atmosphere, and the vegetable kingdom, will be yet found to act a very important if not a principal part, in producing the periodical recurrences and other phenomena of intermitting fever. It must be recollected that the human system when debilitated by disease, is very readily and greatly affected by causes, which make no sensible impression on it when in a state of health.....*Trans.*

a power of stimulating and inflaming, or, at least, exciting heat; that it attacks and greatly oppresses the vital principle, until being itself at length subdued by the increased motion and heat which it excites, it seems to act as a remedy against itself. Here the circumstances and mode of action are somewhat similar to those that occur in a case of surfeit, where the stomach is oppressed by a super-abundance of food, and where a fever which is forthwith excited by this oppression, subdues, concocts and throws off from the system all hurtful matters that had been mixed with the blood. But the fever excited by a surfeit differs from an intermitting fever in this, that the former perfectly cures itself, and does not recur again, unless re-produced by a fresh error in diet.

The seeds of intermitting fever still remain in the system after the paroxysms, and, therefore, when at stated times they break out and show themselves in fresh paroxysms, this must arise either from their power increasing and diffusing itself like a ferment in every direction, or from a collection and concentration in some one part, of that which was before dispersed throughout the body. But if these seeds of fever exert their powers in consequence of their energies being increased or concentrated, how is it that they remain or appear to remain wholly

inactive during the time they are acquiring strength by such increase or concentration? In this respect, the power of the febrile cause to excite inflammation or heat resembles the inflammable property of gun-powder, which, when left to itself is altogether inert, but explodes as soon as it is brought into contact with fire.

When, therefore, the seeds of intermitting fever lie dead as it were during the days of intermission, they want a cause to excite them to action. But to determine what this cause is, is a point of no small difficulty. Many things indeed seem suited to excite the fever; but these cannot be subjected or made subservient to any particular type. It follows, therefore, that, at stated periods, the febrile cause must break out of itself; and these periods are separated from each other by longer or shorter intervals, according as the cause derives strength from extraneous and surrounding circumstances.

But what seems truly surprising is, that the febrile cause, while still lurking in the system, may be prevented from exciting real fever, though not from producing other morbid affections. By the exhibition of certain remedies, for instance, the paroxysms may be completely suppressed, and yet the whole system continues to be disordered. Thus, there are sick persons

in whom the suspension of fever is succeeded by a sense of general heaviness and debility, a swelling of the abdomen, and a loss of appetite, symptoms not to have been expected, had the paroxysms continued. Sometimes the patient is relieved from all these complaints by a renewal of the paroxysms, so that his cure seems to arise from a return of the febrile affection.

At other times, what is still more surprising, after all the symptoms have disappeared, the febrile fomes still remains behind perfectly harmless. It acquires strength in secret, or rather lies hid like embers concealed by ashes. In this state of things, if any error in diet be committed, if the body be exposed to cold or humidity, or if the functions be deranged in any other way, then the fever, which had lain dormant for a month or longer, returns and rages with as much violence as at first.

Nor can the disease be said to originate from these causes: for there is nothing in them calculated to produce intermitting fever rather than any other affection. The original disease is renewed, therefore, only because no other form of fever can then occur. If the original complaint was a tertian or quartan, that which breaks out afresh, as here stated, assumes the very same type. The same cause, therefore, still remains,

without having sustained the slightest change in its nature.

This same constancy or immutability is observed to exist even in cases of re-duplication. When these happen in a tertian, the disease becomes a double tertian; and when in a quartan, a double quartan is the result: the paroxysms still pursue the same order, and correspond to each other every third or fourth day. Even in cases of anticipation, intermittents not unfrequently preserve a certain order; thus, at times, the paroxysms precede the stated hour of accession every day by an equal period.* Lastly, in their decline and disappearance, these fevers do not depart from this order. In a double tertian, for instance, one of the diseases sometimes terminates, while the other still remains with all its usual characters. The same thing is observed in double and even triple quartans.

It must not, however, be supposed that the nature and form of fevers are so uniform and immutable as not to admit of a tertian being changed into a quartan, or (a circumstance which more rarely occurs) a quartan into a ter-

* This is a point of which the practitioner should never lose sight, as it is calculated to serve him very materially in his attempts to break the course of an irregular disease.... *Trans.*

tian or a quotidian. Hence it appears, that each of these forms of fever arises from nearly the same cause, or, at least, that they are closely allied to each other. But the tertian is apt to be the most irregular; it oftentimes undergoes such changes, that it retains nothing of its primary type, and can therefore scarcely be distinguished. Perhaps the most remarkable of these changes is, when it assumes the form of a hectic fever, and clothes itself in symptoms totally different from those that are common to it.

Intermittents when somewhat on the decline are extinguished at times by a single blow as it were, nor can we discover how the causes that thus destroy them possess such an influence over them. They are removed by great and sudden emotions of the mind or body, as terror, for instance, has been known to cure a quartan ague. The same thing has been effected by anger, intense heat, violent exercise, and great commotion of the internal parts of the system. But, what is less to be wondered at, these same causes are capable of rousing into action the hidden and dormant fomes of intermittents. Thus the mere appearance of an unusual object, the sight of a dormouse, for instance, has been sometimes known to renew the disease with the utmost violence.

What is perhaps more singular still, intermittents are removed by various remedies, which are even sometimes opposite to each other. Whatever these remedies may be, the diseases are cured by them on nearly the same principle on which poisons are counteracted by their antidotes. At other times the febrile poison leaves the system spontaneously, as it were, without any previous commotion whatever. But, what is more to our present purpose, after the fever itself has ceased, certain vestiges of it frequently remain behind. Thus there are morbid affections which show themselves about the same time of day at which the paroxysms usually occurred. These affections consist in a heaviness or pain in the head or body, or in a certain disagreeable sensation which affects the whole system. If certain authors are to be credited, an intermitting fever, when it recurs even after a long suspension, or interval of health, usually attacks the patient at the same time or about the same hour of the day, at which its paroxysms had formerly occurred.

CHAP. X.

Whether or not any thing occurs in other morbid affections, or in the action of the various parts of the body, to enable us to discover the cause of febrile periods.

LET us now return to the question formerly proposed, namely, whether or not any thing arises out of the foregoing considerations, that can enable us to explain why the cause of intermittents acts and lies dormant in the system alternately? Here it must be acknowledged, that the preceding history of the phenomena of intermittents, instead of illustrating the matter, tends to render the laws and principles by which this cause is governed, more uncertain and intricate. Let us see, therefore, whether or not any thing can be deduced from other affections calculated to shed light on this obscure subject. In these, many things occur which may be well applied to intermitting fever: even in those affections which are dissimilar to each other, certain phenomena take place, from which we may discover, or at least form some idea respecting,

the causes of alternate motions or states of action in the system.

Some writers, in their enquiries after the cause of febrile periods, have considered the different parts of the bodies of animals so constructed and disposed, as to be capable of being brought into subjection to certain arbitrary laws; thus, for instance, any person may, at pleasure, say they, so regulate the alvine evacuations, as to make them occur at a stated time; the appetite for food may be so regulated as to be felt only at certain hours; sleep may also be circumscribed within given limits, for we can accustom ourselves to awake regularly at the same hour in the morning: But what are we to conclude from hence? Surely it cannot be said that in intermitting fever the different parts of the system become by habit accustomed to alternate rest and motion; because from the very beginning of the disease, they assume that state of action which they are to continue till its close.

There are certain motions or states of action both natural and preternatural, which approach nearer to the movements of intermitting fever. The catamenia, for instance, appear only at stated times; the same thing happens not unfrequently in hemorrhoidal affections. In both these cases we can attribute the phenomena to

no other cause, than the volume of blood, which, increasing for a time, makes its way at length through the outlets of the uterus, or through the patulous mouths of the hemorrhoidal vessels. To a similar cause may we attribute the efflux of bile, saliva, perspirable matter, and sweat, which sometimes observes stated periods. The same thing may be said respecting the urine, which, at times, is discharged more copiously than usual, at stated periods.

Somewhat similar is the disposition of certain tumors, which are accustomed to pour forth periodically, a quantity of blood. These tumors, when carefully examined, exhibit veins changed by a great dilatation into large canals: the blood being poured from the arterial capillaries into these canals, increases to a considerable volume, and at stated times bursts the barriers opposed to it, and escapes. I have seen occasionally another example in various tumors when cut through the middle: from these, a periodical hemorrhagy has taken place, on account of a collection of blood in some cavity.

There are other periodical affections which cannot be deduced from the same cause: such are different forms of hemicrania, and pains sometimes extremely acute, which appear and disappear alternately, and as it were in a certain

routine or regular order. There are many other movements or states of action that occur in the animal machine, which may be likened in some measure to the ebbing and flowing of the sea. Even continued fevers themselves are marked by remissions and exacerbations. They are generally worse at night and better in the morning.

But from what cause can these things be deduced with more probability, than from some kind of matter, the quantity of which is increased or diminished, or else which becomes alternately more acrid and more mild in its qualities? May not an argument in favour of this opinion be drawn from continued fevers that terminate by an imperfect crisis? A large quantity of morbid matter is expelled, and therefore tranquillity is restored to the system for some time: but the morbid matter still remaining behind, is collected afresh, and recovers strength, and hence a relapse is apt to occur.

Something similar appears in gout and epilepsy. In gout, in particular, there can be no doubt but there is present a certain morbid matter which gives rise to the disease: for a long time this matter circulates through the system without producing either commotion or injury: it is collected or accumulated, at last, in certain places fit for its reception: but when i

has become thus collected, and is by any means set in motion, an attack of gout is the immediate consequence.

As to epilepsy, that disease also appears at times to originate from a collection of morbid matter. When, for instance, it arises from a particular spot that has been bruised or wounded, does there not appear to be in that spot a certain collection of particles by which the nerves are at length irritated and roused to morbid action? and is not this much more evidently the case when the cause of the disease consists in a retropulsion of miasmata? for if the pores of the skin remain open and these miasmata be expelled through them, the disease is brought to a termination, and a collection of the miasmata thus prevented.

These remarks are applicable, at least in part, to intermitting fever, in as much as there are many circumstances which are common to it and the diseases just mentioned. Thus the cause of gout, like that of intermitting fever, can lie dormant for a given space of time; it is sometimes roused suddenly into action, either spontaneously as it were, by passions of the mind, or by errors in diet; it produces at times a fever not unlike intermitting fever; it may be repelled into various parts of the body, and there

give rise to various diseased affections; it is at length subdued or rendered inactive by pain and length of time; besides all these points of likeness between intermitting fever and gout, when the accumulated matter of the latter disease is dissipated and ceases to act, the fomes still remains behind in the system, perhaps unchanged, and towards autumn, but oftener in the spring, comes again into action and produces the complaint anew.

Notwithstanding the dissimilitude of epilepsy and intermitting fever, these diseases exhibit certain characteristics which are common to both. Epilepsy is sudden and unexpected in its attack; it irritates the nerves and draws them into consent or sympathetic and synchronous action; it is sometimes regularly periodical; it is excited by passions of the mind and errors in diet, and its cause is subdued or expelled, by internal and external motions or states of action; still, however, there remains behind a fomes by which similar attacks may be afterwards produced.

An attack of hysteria bears also some degree of resemblance to an attack of intermitting fever. That affection arises from a turgescence of the uterus, and is sometimes sudden

in its occurrence, like epilepsy, from which it does not greatly differ; it disorders the stomach, produces coldness, and excites other troublesome commotions in the system. In this case the nerves are irritated and continue under this irritation till the menstrual evacuation takes place, and the congestion of blood is removed.

If, then, it be allowable to indulge a conjecture on the subject, it would appear from the foregoing considerations, first, That there exists in intermitting fever a certain noxious or morbid matter generated within the body or introduced from without, capable, as we have already said, of being diffused throughout the whole system. Secondly, That this matter is particularly hurtful to the liver, that it is accumulated in, and exerts its action on that viscus. Thirdly, That after this matter has attained to a certain state of accumulation, and acquired a certain degree of power, it irritates the texture and nerves of the liver, like a foreign stimulus, retards the progress of the blood, and renders that fluid acrimonious and vitiated in its qualities. Fourthly, That this matter by its powerful action on the nerves throws the whole body into commotion, and is at length, by the fever that ensues, expelled

and dissipated as it were both from the place primarily affected, and from every other part of the system. Fifthly, and lastly, That a fomes still remains behind, which, gaining strength by degrees, may produce a recurrence of the same commotions.

CHAP. XI.

Of the diversified action of the febrile cause.

BUT whatever conclusions may be formed relative to the preceding points of discussion, it at least appears obvious what a great variety may occur in fevers, or what various appearances these diseases may assume. The febrile poison may put on forms altogether different from each other. So greatly at times do the fevers which it induces appear to differ from one another, that some writers have considered them as belonging to different species: yet the actual difference between them is not so great: diseases arising from the same source may pursue dissimilar courses, or be accompanied by different symptoms.

Some authors contend that they can prove by many arguments, that vernal and autumnal intermittents are not of the same kind. Vernal

intermittents, say they, are of salutary effect; they require little or no medical aid; they usually terminate with the seventh paroxysm; they are not accompanied by malignant symptoms; they are not characterized by such a degree of nausea, vomiting, and burning heat; the urine in them is not so high coloured, nor does it deposit such a lateritious sediment; the sweats attending them being less copious, the strength of the patients is not so much exhausted; vernal intermittents do not commence as quartans, nor do the tertians assume that form; finally, autumnal intermittents are eradicated by vernal ones, and vernal ones by those of autumn.

But arguments of this kind are altogether inconclusive. What proves at once that these diseases are in reality of the same nature, is, that during the course of the same *epidemic* prevalence, they do not differ from each other in appearance. If, for instance, an epidemic intermittent occur in the spring, it abates or entirely disappears in the course of the summer, but, on the approach of autumn, oftentimes breaks out again, is attended with the very same symptoms, and assumes the same character.

Nor, indeed, are vernal and autumnal intermittents more dissimilar to each other, even when they are not epidemic. Both their symp-

toms and their type are precisely the same. Their only difference consists in this, that the vernal intermittents happen at a time best calculated to effect their solution or cure. At that season our bodies are renovated as it were, perspiration is free and active, and hence it is that those autumnal intermittents which run on till spring usually terminate then.

It appears then that there is only more or less difference in the *effects* of the febrile poison, its *nature* being always the same. The most striking difference in its effects is that which forms the different types of disease, such as tertians, quartans, &c. These affections, however different from each other in appearance, are the same in their nature, for they are sometimes changed into each other. Every experienced practitioner must have seen tertians changed into quartans, and quartans into tertians: besides, the same symptoms are common to both forms of the disease: in both, the cold, the hot, and the sweating stages succeed each other in the same order: if any difference whatever occur in the causes of these affections, it consists in their being more or less powerful: but how it happens that the poison comes into action and excites disease every third or every fourth day, is a question that cannot be determined.

There are notwithstanding, in the opinion of many persons, certain points in which tertians and quartans differ from each other. If we may give credit to certain writers, it is even practicable to foresee from its very commencement what type the disease will assume. Tertians, for instance, are marked by a shivering and a great coldness, but quartans most frequently by a chilliness or shivering alone: if a real coldness does occur in quartans, it is not pungent and pricking, but a more dull sensation, as if the bones were bruised; the cold stage is also, for the most part, of longer duration, particularly in persons advanced in years, to whom, as we have already remarked, it proves somewhat dangerous.

If we can give credit to certain observations that have been made, the pulse exhibits a difference no less striking in these two forms of disease. Thus, at the accession of tertians it is said not to be much slower than natural, but is considerably more so at the commencement of quartans. In the latter form of disease, as in old age, it is slow and hard; in many cases tremulous, obscure, and very unequal; after having been quick, frequent and small, the pulsations oftentimes become stronger, and are marked by considerable intermissions. In con-

firmation of what we have here advanced, Galen has remarked, that the pulse seemed confined, almost as much as in the case of an ossified artery.

The hot stage in quartans is not so intense and burning as in tertians. The flowing of the sweat is in some cases less and in others more profuse. The urine also assumes different appearances in different cases: according to Galen, it is crude and pale in the beginning, but becomes higher coloured as the disease advances: it then deposits a kind of settling which is white, not red or lateritious. Some physicians, however, have witnessed phenomena altogether different from these. They have seen the urine saturated or turbid at the commencement of the paroxysm, and afterwards depositing a laudable sediment. On the days of intermission they have observed that fluid to be more thin and limpid; but, what is of greater moment, it became turbid and black previously to the solution and termination of the disease.

There is no doubt, indeed, but these phenomena have been observed; but they must not be considered as constant and uniform. As far as my experience and observation have gone, the difference between tertians and quartans

is in general not so great. The appetite is indeed, for the most part, stronger and better in quartans than in tertians; the cold fit also lasts longer; but the shivering and agitation of the limbs are not so great; the pulse is more depressed and unequal; the febrile heat is less intense; the paroxysms are shorter; the sweats are more protracted, but less profuse, and occur not unfrequently at night even during the periods of intermission; the urine is of a lighter colour, and if the intermission happen to be longer than usual, becomes oftentimes thinner and more limpid during the continuance of it; not unfrequently however, it is observed to contain a lateritious sediment.

A greater difference exists between tertians and quartans with respect to their course, solution, and cure. Quartans are of the longest duration, running on for a year and sometimes longer. When they continue for a greater length of time, they are cured with more difficulty. They are said to have oftentimes yielded to the hemorrhoidal flux. But on these several points enough and even more than enough has been already advanced. We will intentionally pass over other circumstances which ancient writers mention as peculiar to these fevers, but which, though they may be true, are not

perfectly conformable to our own experience. It is of most consequence to have a thorough knowledge of those circumstances that are most frequently met with in practice ; the more rare occurrences are not so much the objects of art.

CHAP. XII.

Of febrile affections which, though different from intermittents, assume their external appearance.

INTERMITTING fevers, the course and nature of which we have endeavoured to define, are, in general, very easily distinguished from other diseases. But we meet occasionally with certain febrile affections, which, though altogether different from intermittents, assume notwithstanding their external appearance and character, and fallaciously seem to be of the same species. Febrile affections of this description are numerous, and arise from various causes. It becomes an object of consequence, therefore, to point out the mode of distinguishing them from genuine intermittents.

In certain catarrhal affections, the fever lies dormant or intermits during the day, and comes on at the approach of night, being preceded by a chilly fit. After various pleuritic affections, when the patients have been tolerably well

throughout the day, paroxysms occur towards evening, which give us cause to suspect the existence of an abscess or some other relic of the disease. In those fevers to which lying-in women are subject, something like an intermission takes place. Even in continued fevers, the system is oftentimes in some measure cool and tranquil in the morning, but night brings along with it a paroxysm sometimes of greater and at other times of less severity, and which for the most part is not preceded by a cold fit. These fevers disappear in general by degrees, and that without the assistance of febrifuge medicines. Finally, hysterical affections are marked at times by an appearance of febrile paroxysms : towards night the pulse oftentimes rises, and an inexperienced practitioner would consider the patient as affected by a true fever : but in a short time this commotion of the arteries ceases or abates, nor do these sudden glows of heat continue as long as real febrile paroxysms.

Again, there are other affections truly febrile, which physicians call quotidians, because they are plainly marked by daily recurrences or paroxysms : they come on particularly in the afternoon or towards evening : they are frequently ushered in by a little chilliness or a very slight shivering : sometimes, however, these symptoms are entirely wanting, and then the

heat is neither intense nor dry and burning, but moist, moderate, and unequally diffused. The pulse is small, or at least but little elevated, varying, however, in this respect, in different cases. The paroxysms are sometimes longer and sometimes shorter, they do not go off by a plentiful sweat, nor do they in general terminate in a complete apyrexia: some vestige of febricula still remains. The urine is not lateritious, but thin and transparent in the beginning, and oftentimes continues so throughout the whole course of the disease: at other times, however, as the disease advances it becomes thick and turbid.

These febrile affections, which are so very frequent, are observed to occur in those persons who labour under some obstruction, particularly of parts situated in the abdomen. They attack, for instance, such subjects as have diseases of the liver or stomach, and also such as are worn down by long watching, passions, or laborious exercises whether of body or mind. Fevers of this description occur also in persons who indulge in frequent debauches of the table, as well as in those who waste their spirits and consume their strength in pursuit of criminal pleasures. Lastly, affections of this kind take place also in females who labour under obstructions of the uterus or ovaria, and in such as suf-

fer greatly from a want of the menstrual discharge. Even persons in very early life are not exempt from these fevers. Girls of about twelve years of age, or who have arrived at that period of life when the catamenia are about to appear, are particularly apt to suffer from them.

But although these fevers resemble intermittents in their type, they are in reality altogether different from them in their nature. They cannot be considered as either double tertians or triple quartans. In the former of these, the alternate paroxysms, as we have already observed, accurately correspond to each other. But in the quotidians now under consideration, the case is otherwise: besides, in the course of these diseases, no positive apyrexia occurs; nor does the urine, in general, assume a lateritious appearance: there is also an absence of certain other symptoms which we have mentioned as being attached to every genuine intermittent. Finally, when the cure of these affections is attempted by specific febrifuges,* the remedies either produce no effect, or prove injurious. By such treatment a hectic fever is sometimes pro-

* The term "febrifuge" occurs very frequently in the course of this work. It is made to denote tonic remedies in general, but more particularly the *peruvian bark*. It is seldom used, I believe, by our author, without some reference to this latter article.....
Trans.

duced, which nature alone, or the use of gentler remedies can subdue.

But, as quotidian fevers sometimes resemble intermittents, so true intermittents assume occasionally the appearance of quotidians. In those subjects who have been long harassed by tertians, or who have had their diseases removed by an unskilful mode of treatment, a certain fomes still remains, by which, as evening approaches, a kind of febrile paroxysm is produced. But here obstructions for the most part exist, occupying various parts of the abdomen. This fever, therefore, which arises from the relics or remaining fomes of intermittents, approaches very near to the nature of quotidians. It is generally rendered worse by the use of febrifuge medicines, particularly if they be possessed of heating or stimulating qualities: nor indeed are remedies of this description admissible at all, unless the functions of the affected parts be first restored.

Having stated the foregoing observations, which are founded on actual experience, it would be quite superfluous to go into the consideration of all those circumstances which the ancients have attributed to quotidian fever. Respecting this form of fever nothing is to be found in the genuine writings of Hippocrates.

Celsus, on the other hand, has given a tedious account of it, and has described it as sometimes regular and sometimes irregular in its type. Galen who is more accurate on the subject, has mentioned some of its peculiarities which he had become acquainted with in a long course of experience. That writer was induced by various examples to attribute its origin to visceral obstructions. Yet I apprehend that in some points he exceeded the bounds of experience; for the disease does not occur as frequently as the writings of certain physicians would lead us to believe.

Mercurialis never saw this disease during a most extensive practice of forty years duration. Riverius very judiciously remarks, that out of six hundred patients who sustained daily accessions of fever, scarcely one experienced a real quotidian: in the mean time he mentions some of the characters and properties of that disease. Thus, according to him, it produces a tension of the præcordia, and may be protracted to the fortieth day, or even to the expiration of the second or third month: it is accompanied by various symptoms, and degenerates at last into some other disease, such as cachexy, dropsy or lethargy.

CHAP. XIII.

Of affections, the mask or external character of which is sometimes put on by intermittents that have degenerated from their own nature.

BUT if there are certain fevers which assume occasionally the mask of intermittents, so there are also other affections, the mask of which intermittents themselves at times put on. Sometimes the fomes or active cause of an intermitting fever may lie hidden or be accumulated in a certain part, so that that part may appear to be the only or principal sufferer : at other times it may give rise to peculiar symptoms, in which the whole force of the disease appears to be concentrated : and, lastly, it may counterfeit other diseases, which pursue a course peculiarly their own, exhibiting no resemblance and possessing no affinity whatever to intermitting fevers.

We will first adduce a few of the most simple and familiar examples on the subject. Some-

times, without any perceptible change in the pulse, the most acute pains take place, and return at stated periods. Thus I have frequently observed an excruciating affection of this kind situated above the eye, unaccompanied by any other symptom. The commencement of this pain is sometimes attended by a sort of palpitation around the affected part. I have also met with a kind of periodical ophthalmia, which uniformly made its attack at a stated hour. Although an inflammation of this kind does not usually disappear in a short space of time, yet in the affection under consideration the eye was soon restored to its natural state.

We meet occasionally with cases of excruciating periodical hemicrania, which are the offspring of intermitting fever, or, rather, which are intermitting fevers converted into hemicrania. The whole head is also at times attacked by a pain arising from the same source. I once saw a person so dreadfully tormented with a pain of this kind, as to be rendered almost insane. At first view the nature of the affection was not clearly discovered; but, on a closer examination, it was completely unveiled; for it always made its attack towards noon, raged for a few hours with great violence, and then remitted.

But the febrile cause fixes itself not only in the orbit, and in the eyes themselves, but also on the external surface of the head. Indeed it is capable of attacking every part of the system separately. So true is this, that in some patients certain parts seem to suffer from fever, while all the others are exempt from it. Some of these parts are periodically affected by a sense of coldness or heat; others by convulsive or tremulous motions, so various are the forms under which the disease appears.

But, what is not less surprising, pains arising from a febrile cause, yet unaccompanied by any external signs of fever, oftentimes attack the internal parts of the body. I remember to have seen a case in which a very acute pain in the stomach, marked by periodical recurrences, was at length cured entirely by febrifuge remedies. This pain was accompanied by no change in the state of the pulse, no preternatural heat, and during its continuance the functions of all the other parts of the system were unimpaired.

In general, however, things assume a different aspect. When the febrile poison pervades various parts, it usually produces in them more or less fever. This poison is sometimes confined, as to its sphere of action, to a few parts

of the body, and at other times attacks a greater number of them; it even occasionally passes in succession from one part to another. I once saw a patient who in the course of the same paroxysm experienced the most acute pains in the following order: they commenced in the legs and thighs, then ascended towards the abdomen, and finally to the head, producing a kind of apoplexy. There are still other and very dangerous forms of disease, under which intermitting fever sometimes masks itself. Most of these differ so widely from its natural form, that in putting them on, it would seem to have changed its nature, and cannot even be detected without difficulty.

This change or transformation of intermitting fever may arise from various latent causes. Whatever these causes may be, the febrile poison is, under such circumstances, more active and deleterious, and is diffused from its own fomes over various parts of the body. This diffusion appears from the erratic or wandering nature of the poison, in as much as it may lie hidden or be fixed in various places. These observations are confirmed by troublesome obstructions which originate from the febrile poison, and remain after the fever itself is subdued.

But when, by the influence of these causes, the attacks of the fever take on unusual and dangerous symptoms, these do not generally appear at the very commencement of the disease, but show themselves, at furthest, in the third or fifth paroxysm. In this stage of the disease, either the cold fit cannot be removed at all, and the patients sink under it; or else a slight degree of warmth takes place, but soon afterwards the extremities become cold again. The functions of the viscera are now variously disordered, some more, others less, to which succeeds sometimes an inability to move, or else a tossing and perpetual anxiety. Either of these states denotes the utmost danger.

It is necessary to remark, that the pulse is almost universally so small and frequent, that it can scarcely be felt. I say, *almost universally*, for there are some cases in which it possesses more strength. Thus when a determination to the head takes place, and the patients are attacked by lethargic or comatose affections, the arteries act with greater force. Their action is equally strong when the disease assumes a rheumatic form. We must not be surprised at this variety in the force of the arteries, since the febrile poison exerts its power so variously. Sometimes, for instance, this poison attacks cer-

tain parts of the body like a caustic, corrodes them, and even draws from them discharges of mucus and blood. In other parts again it excites spasmodic motions or convulsions. This latter mode of attack is very frequently met with in practice.

The fever thus masked under such a foreign or counterfeit form, may pursue a variety of courses, and depart entirely from the common fashion or type of paroxysms. Sometimes those symptoms which have so unexpectedly taken place, run on in form of a continued fever. At other times, and that more frequently, they continue only for a few days, abating sooner or later in different subjects. Under these circumstances the nature of the fever cannot be easily discovered, for its symptoms do not perfectly either remit or intermit. The oppressed parts do not recover their proper tone, nor are their functions restored to health.

But not unfrequently the febrile poison, even when thrown on particular parts, preserves its nature and acts conformably to its proper laws; for it still attacks and remits periodically in the form of paroxysms. Hence it appears that this poison may be *in some measure* subdued or dissipated and exhausted, even without intense fe-

brile action or any remarkable increase of heat : I say, *in some measure* subdued, for there still remain behind certain vestiges of these local affections, which, in a subsequent paroxysm, produce for the most part symptoms of a more general and worse nature. But, what is more unusual, after a perfect intermission of several days, the disease sometimes breaks out afresh.

We must not suppose that the force of the febrile poison, when wandering about and thrown on certain parts of the body, manifests itself at all times in the same way, or proves in every case equally injurious. When the paroxysms have been broken by the operation of febrifuge remedies, it sometimes happens that the poison or its relics are thrown on the external parts : these parts are then attacked by pains more or less severe, which are removed in no other way than by a recurrence of the fever. But more frequently the poison is thrown on the internal parts ; in this case the abdomen swells, or the functions of some of the viscera become disordered. But, in order that all things may be restored to their natural and healthy state, it is still necessary, in certain subjects, that there should be a return of real fever : at least, in these subjects, nature not unfrequently cures such

diseased affections in that way. Hence it appears how greatly motion and heat contribute to the subduing or elimination of febrile poison.

CHAP. XIV.

Of the malignant form of Intermittents.

AFTER what has been premised, we are now prepared to enter on the history of malignant intermittents. Oftentimes almost the whole force of these diseases falls on the brain: the patients become comatose; the mind is disordered; a lethargy is induced, and, at times, even a true palsy and apoplexy follow. In some cases, (though this is a rare phenomenon) a kind of catalepsy has been met with. We must not be surprised, then, at the occurrence of convulsive motions, subsultus tendinum, tremors, defects of vision, hearing, and other senses, or, finally, an entire prostration of the vital principle.

All these symptoms, so very unexpected, are marked by variety in their origin, progress, and decline. They sometimes proceed from a slight and at other times from a serious and dangerous beginning. In some cases their violence is such

from their commencement, that they appear to be idiopathic, that is, altogether foreign from the nature of an intermittent. But their true nature becomes at length unmasked, for after a certain time they usually remit, and then proceed in the form of paroxysms. In different subjects the remission is more or less complete. Some persons during the remission remain heavy and almost senseless; others labour under a total loss of memory: but, what is less frequently met with, some patients who in the second paroxysm appear to be entirely free from danger, experience, on the recurrence of the third, all the alarming symptoms of the first. Even when a perfect intermission has lasted for several days, all apprehension for the future is not to be abandoned; for, as we have already observed, a relapse many times occurs, and the whole phalanx of dangers breaks forth anew. But these threatening symptoms may be subdued either by the powers of nature or by proper remedies. At times they are carried off by a diarrhœa or a copious discharge of urine. For the most part, however, they yield to certain remedies only.

The febrile poison falls not only on the brain, but also on the organs of respiration. It less frequently, however, attacks these latter parts, nor indeed is the reason of this sufficiently un-

derstood. When it does attack them its mode of action is not always the same. It mostly excites spasms in them, which are at the same time communicated to other parts of the system. But from these spasms, or from the irritating and almost corrosive action of the poison arise various pains. These sometimes attack the diaphragm, and settle there, raging with the utmost severity. At other times they become fixed in the sides, and occasion such torture to the patients, as to render them unable to change their position.

No wonder, then, if from these causes respiration becomes confined and difficult, attended with cough, panting, and shortness of breath. Indeed, at times, the disease assumes something of the form of suffocative catarrh or asthma, from a congestion and oppression of the lungs by means of a thick mucus. But it, occasionally, appears in another shape no less formidable, namely, that of a severe pleurisy or peripneumony. The patient is then affected by a spitting of blood, a fixed and lancinating pain in the thorax, and a depressed pulse. This latter symptom does not well agree with the preceding one.

The stomach is apt to be a very distinguished sufferer from the action of the febrile poison.

Sometimes this organ becomes the seat of the most intolerable anguish ; at other times of a sharp and gnawing pain : you might suppose it to be affected by inflammation or even erosion. Hence arise nausea, and forcible, though fruitless efforts to vomit. In this state of the disease, the occurrence of deliquium animi, the face and whole countenance being bathed in sweat, a dimness of vision, a small and feeble pulse, and a coldness of the skin, seem to threaten approaching death. Nor indeed is it possible for the patients to survive, if these symptoms continue long, increase in force, or recur in several successive paroxysms.

In the midst of these troublesome and dangerous symptoms, a distressing vomiting oftentimes occurs. The matter evacuated in this way is bilious, yellow, porraceous, foetid, sometimes bloody and black, and is thrown up with great force. In some patients similar evacuations occur by stool, although the epigastric region alone suffers pain and anguish. In the mean time it is not in the stomach and bowels alone that the force of the disease manifests itself. The tongue is scurffy, and the urine is secreted in small quantity, owing to the spasms that affect the kidneys. These spasms are communicated to the external parts and produce in them various motions and effects. The same

symptoms therefore occur in intermitting fever which take place in cholera morbus. There exists, however, this difference, that in fever these symptoms end when the paroxysm ends ; whereas in cholera there is no such respite.

At times the febrile poison expends its force not on the stomach, but on that portion of the alimentary tube which is situated beneath it. Hence arise excruciating pains, as if the intestines were acted on by a caustic. The evacuations by stool are profuse and various, being either serous, bilious, or mixed. But in some patients the acrimony of the irritating cause is such, that the stools are mucous or bloody as in dysentery : at times they are marked with pure blood, and at other times they resemble the *lotura carnis*, or water in which raw flesh has been washed. To these symptoms great prostration of strength succeeds. The patients are affected with singultus, become cold, and lie almost lifeless. A person inexperienced in the disease, would scarcely believe it possible for them to rise again. But, strange to tell, at the termination of the paroxysm, these terrible symptoms abate, and oftentimes entirely disappear. In various diseases of the intestines, the irritation remains even after the cause is removed, but when the febrile poison is dissipated or

exhausted, it seems to carry all its effects along with it.

The force of the miasmata may fall on the external as well as on the internal parts of the system. Thus, papulæ or pimples of various kinds occur at times over the whole surface of the body, and yield to the use of febrifuge remedies. At another time the skin is suffused with a deep red, which is lighter however in some parts than in others. But more frequently a kind of *Sudor Anglicanus* breaks out. In many cases this flows abundantly from the forehead and breast; it is every where warm; and the more plentifully it flows, the more intense is the fever. After a certain space of time, sometimes longer, sometimes shorter, the sweat becomes cold; the pulse is depressed and in some cases creeping. Under these circumstances, some patients experience a tightness and oppression about the præcordia, others a sense of heat and burning in the stomach, while all are affected with restlessness, tossing, and a suppression of urine. The appearance of the body itself bespeaks impending danger, for the flesh becomes of a livid or blueish colour.

When the fever is ushered in by a severe chill and shivering, the patient is usually attacked

by pains in various parts of his body. Hence it appears, that in whatever form the febrile poison makes its attack, it may ultimately produce the same kind of affection. In those profuse sweats of which we have just spoken, the sick sometimes experience in their legs and thighs such sharp and excruciating pains, that the parts would seem as if pierced with a sword. In certain cases a kind of rheumatic pain is diffused throughout the whole body, in others it settles in some particular part, and in others again wanders about from place to place. Though this pain seems to be the leading symptom, yet it is accompanied by various others. In some patients it produces *deliquium animi*, in others spasmodic affections, and is not unfrequently attended with inflammatory local affections, which shift from one part of the body to another.

But if the febrile poison may prove injurious to certain parts, and even become fixed in them, it may also attack the vital principle itself, and derange the whole economy of the system. This is the case in those persons who labour under an alarming syncope during the paroxysms of the disease. Under these circumstances the countenance is cadaverous, the eyes are closed, the respiration is laborious, and every thing seems to threaten immediate dissolution.

But there are cases in which the principle of life and motion does not seem to be so immediately attacked as the source of heat. Sometimes when the paroxysm is ushered in by a cold fit, no hot fit succeeds; at other times, after the hot fit has commenced, it is gradually extinguished again. The external surface of the body has then a marbled appearance, the countenance a leaden cast, the extremities are livid, and, to embrace every thing in a few words, all those symptoms occur which are met with in the malignant *causus*.* There are also at times accidental symptoms which do not uniformly prevail, such as intense thirst, a dullness and feebleness of intellect, a diminished flow of urine, &c.

In the proteiform course of intermittents many things occur different from all we have laid down on the subject. But we thought it best to mention nothing except what has fallen within the limits of our own experience. Our observations are confirmed by those of the celebrated Morton, and also by those of the very learned and accurate Torti. But there is another more ancient and very respectable physician, who has considered with no less discernment

* A name given by the Greek physicians to ardent or inflammatory bilious fevers.

the metamorphoses or irregularities of intermitting fevers. I allude to Salius Diversus, who has paid the greatest attention to these diseases, and from whose writings it will not be uninteresting to extract the following paragraph.

“ In the commencement of some intermittents, says he, while the patient experiences a slight chilliness or shivering, such a great retrocession of heat occurs, that the skin becomes quite cold, the countenance like that of a person in a dying state, and the pulse so small and feeble as to be scarcely perceptible. As the hot stage comes on the pulse increases a little, but is still small, unequal, frequent, and weak : the thirst is obstinate and distressing, with great anxiety, dejection, and restlessness : the sense of heat to the patient himself is intense and burning, while to the touch of another person it is either imperceptible or very slight : there is a great debility or alienation of mind, with cold sweats, palpitation of the heart, and trembling. As the febrile paroxysm declines all these alarming symptoms abate, and at the very commencement of the decline of the paroxysm, the pulse rises, and the heat returns. The paroxysms of these fevers continue at times for sixteen or eighteen hours, and I have observed that, on the nights preceding the paroxysms, the patients though not feverish are restless and uneasy.”

Valesius has also had occasion to witness the deleterious power of similar fevers, and has expressly denominated them *malignant*. Louis Mercatus has given their history in a very able and definite manner, laying down with great clearness and precision their diagnosis and prognosis, and delineating their proteiform nature and various appearances with such accuracy, as to render it evident that there is no form of disease which they cannot assume. Deriving his knowledge on the subject from his own extensive experience, not from the writings of others, that author omitted scarcely one of all those symptoms that are apt to deceive physicians or prove destructive to patients.

CHAP. XV.

Of the change of Intermittents into Remittents and continued fevers.

OF the foregoing description are oftentimes those affections, the form of which intermitting fever assumes; but that disease can also put on, and lie concealed under, the mask of other fevers, which seem to be equally foreign from its nature. That physicians may be able to detect it under every possible mask or disguise, we make a few further remarks on its various appearances and various courses or types.

Most physicians are of opinion that an inter-mittent may be joined or associated with other fevers: almost every one, for instance, thinks that he has seen it joined with a true quotidian; but a true quotidian very rarely occurs, and it is extremely difficult to distinguish it from other forms of disease. How, then, can any one

ascertain, in a satisfactory manner, that it is joined to a single or double tertian? Must it not lie concealed under the symptoms of its associate diseases? All the ancients, and many modern physicians who lived before the time of Harvey, were too much devoted to theory. They fancifully believed in the existence of a commixture or conflict between phlegm and bile, and asserted that as the one or the other of these gained the ascendancy, fevers of various descriptions made their appearance.

The association of an intermittent with certain other fevers is a matter of less uncertainty. It is occasionally joined with pleurisy, and preserves its regular remissions and exacerbations. I have also seen it, at times, go on in the same regular periodical course, when associated even with small pox; but its junction with real continued fevers, which is so often spoken of, is a circumstance not so easily discovered. Galen very properly acknowledges the difficulty of arriving at certainty on this point. For my own part, I am inclined to believe, for reasons which appear to me satisfactory, that such an association is not only oftentimes suspected to exist when in reality it does not, but that its existence is even contrary to the principles of nature.

Opinions on these subjects should be drawn from observation and reasoning. That an intermittent may indeed become a continued fever cannot be denied. When it assumes a type that is not natural to it, the time of its continuance in that form is various and uncertain. It runs on for eight, eleven, fourteen, or even twenty days. It is the form, however, and not the nature of the disease that is changed. It is still marked by paroxysms more or less evident, and which return at stated hours. Besides, it terminates for the most part in a true intermittent, namely, in a single or double tertian. Whence it appears, that there is no new disease induced, but that the former one, which was a continued fever, has lost one part of itself, or is divided into two distinct parts by means of an intermission.

Nor does this change consist less with reason than with experience. For, when the power of the febrile poison is great, the paroxysms must necessarily be of longer duration: they may even be so protracted as to touch or run into one another. In such a case they assume the appearance of a continued fever. But, in as much as the violence of the disease increases at stated hours, and there is a regular periodical recurrence of certain symptoms, the intermittent form and habit are still retained and manifested.

Besides, the paroxysms become daily shorter or longer, sometimes so very long as to run into each other. Still the disease is distinguished by the violence with which the paroxysms commence, and by a previous remission or sense of coldness.

But that we may not be thought to digress in pursuit of uncertainties, we will decline any further disquisition on this subject. It is enough for us to know that intermittents do assume the appearance of continued fevers, that they resemble them more or less closely, that a greater or a less number of paroxysms succeed each other without an intermission, and that the remissions may be more or less evident and striking. There is also a great diversity in the circumstances or symptoms that usher in, as well as in those that terminate, the paroxysms. In some cases a chilliness occurs, while in others the patients are entirely free from it; the same thing is true with regard to sweating, for sometimes the discharge by the skin flows plentifully, sometimes very moderately, and at other times not at all.

Hence we may understand what is meant by remittents, subintrants, and double tertians continued. A remittent is a disease in which, after a paroxysm has continued for a time it abates, until at or near to a stated hour another pa-

roxysm takes place. A subintrant is a disease in which the first paroxysm has not terminated when the second commences, so that each preceding paroxysm seems to run into each succeeding one.

Hence it appears that subintrants and remittents are diseases of the same kind, differing only in degree; or rather, that they differ only in name, being in reality the very same. As to double tertians continued, they are diseases which run on in a continued form, but are marked besides by daily exacerbations occurring at stated hours. Hence it is easy to see that they are of the same nature with remittents and subintrants.

Nearly allied to these is the semitertian, which was so much dreaded by the ancient physicians. This disease, according to Hippocrates, commences with a shivering, and is continued and acute, but is lighter and more severe every other day alternately. According to Celsus it occupies thirty-six hours out of forty-eight, and does not disappear entirely during the remission. In the mean time it has such frequent accessions, that it might be taken for a disease of a different kind. But Galen has more accurately said of it, that it is a continued disease, but is marked by an exacerbation and a chill

every third day; he says that it consists of two fevers, a tertian, and a continued quotidian, and occupies forty-eight hours in its period.* In some things, indeed, that writer seems to contradict himself, and this is particularly observable in what he has here and there written on the subject of the semi-tertian.

From these circumstances, or rather from the hidden nature of this form of fever, many disputes have arisen respecting it among more modern writers. Some have endeavoured to ascertain clearly the sentiments of the ancient physicians on the subject; to these many have added something of their own, derived either from opinion, or observation. Some, for instance, have conceived that two paroxysms occur on the same day; this was the case with Riverius, who even makes mention of a quadruple-tertian being joined with a continued quotidian. Others have suspected the continued fever to arise from an inflammation of some viscus, and have derived from thence the shiverings that sometimes succeed each other. All these writers, however, agree that the disease is a compound of a tertian and a continued fever, and have attributed

* The word "period" as used in this place, includes both the paroxysm and the succeeding interval of remission. These two terms of time added together make up the space of forty-eight hours.

to the joint influence of these two, certain inequalities and irregularities by which it is marked.

Feeling but little interest in these controversies, we will not enquire into the minutiae of the sentiments of former writers respecting this disease, but only how their general sentiments agree with what we derive from observation. The *febris hemitritæa* or semitertian fever, then, we consider as a continued double tertian. Such however is the peculiarity of its type, that one of its paroxysms is ushered in by a cold fit, while the next is not, and so on alternately. It is also accompanied by wandering and uncertain rigors and shiverings, which occur more or less regularly at stated hours. Hence it appears that the hemitritæa or semitertian fever is a disease of a malignant aspect, and approaches somewhat to a malignant causus.

In the same point of view was this disease considered both by the ancients and their immediate successors. Hippocrates pronounces it fatal, and says that it is accompanied by vomiting, tremors, and a sense of burning at the stomach. Galen represents it as extremely dangerous: the pulse in it, he observes, is slow and crawling, the heat forsakes the extremities and retreats to the central parts of the body, particu-

larly to the abdomen and thorax, and it is attended with a comatose disposition, or with delirium and watchfulness. By Rondeletius it is denominated *febris syncopalis*. By Schenklius it is described as of a pestilential nature. Spigelius declares it to be a real pestilence. Forestus was accustomed to meet with it during the prevalence of malignant fevers. Valæus considered the rigors and tremors, with which he generally observed it to be accompanied, as strong evidences of its malignity.

No wonder, then, if the several descriptions of the semitertian, as given by medical writers, should differ widely from each other. All the symptoms which we have enumerated do not occur in the same case of fever. In some cases more of these symptoms are manifested, in others fewer, and in others again symptoms altogether different appear. At times the disease is introduced by a severe chill, at other times by a slight chill or shivering. In some instances cold and hot fits succeed each other alternately, and the exacerbations or paroxysms are numerous and frequent. Whatever symptoms are unfavourable in intermittents, (and we have already said that the symptoms of this description are various,) are dangerous when they occur in the semitertian. Hence the signs and evidences

of malignity in these two diseases are alike plain and intelligible.

Of nearly the same kind are the *febres tri-taiophiæ*, a sort of tertians so called by Galen, but which nevertheless approach nearer to remittents, and are therefore more mild. Yet even these are oftentimes dangerous, particularly when they have irregular and inordinate exacerbations. But there are other fevers closely allied to these, which are no less dangerous, namely the *febres ardentes*, or *causi*, of the ancients. These, as Galen observes, carry with them conclusive evidence that they are tertians in disguise: in this alone do they differ from common tertians, namely, that they are not ushered in by a cold fit, nor do they perfectly *intermit*. It is certain, however, that they terminate in tertians or true intermittents, from which, if we regard the name, they appear notwithstanding to differ very widely.

CHAP. XVI.

Various observations adduced in confirmation of the foregoing opinions and doctrines.

HENCE it appears, that intermittents may be masked by and of themselves, as is the case when they put on the form of continued fevers or remittents. But, that their disguise, however various, may be more readily detected, and their nature more accurately understood, I will endeavour to give a faithful history of those that have fallen under my notice in certain epidemic seasons.

The summer of a certain year having been warm and dry, fevers prevailed extensively in the autumn. These fevers took on, at first, a continued form, but retained it for only five or six days: they resolved themselves then into true intermittents. In the autumn of the following year, the fevers generally commenced with the type of double or single tertians, but

soon degenerated into continued fevers of fifteen or twenty days continuance. During this period various paroxysms occurred, in some cases at stated hours, either at night, early in the morning, or, not unfrequently, in the afternoon. Occasionally the paroxysms were lighter, and more violent on alternate days. It was not uncommon for the sick to suffer three exacerbations on the same day, or on alternate days.

Seldom in these fevers were the exacerbations preceded by a regular cold fit. Yet some patients experienced at their commencement, a slight sense of chilliness: in such cases, the fever did not rage with so much violence, as in others, where the paroxysms were not introduced by a chill. Ultimately, however, these fevers were for the most part changed into regular or irregular intermittents. Some persons remained tolerably well during the day, but were attacked by fever on the approach of night. Many others experienced various symptoms, which it would be altogether superfluous to enumerate at present.

Two years afterwards another epidemic prevailed, in which the diseases assumed the form of triple tertians. In these, the exacerbations were preceded by a cold fit, which furnished sa-

tisfactory evidence of their being of the nature of intermittents.

In this epidemic, however, the fevers did not always assume the same type: their symptoms were also different; I saw many cases where the disease, without any previous cold fit, ran on like a continued fever till the eleventh, fourteenth, or twentieth day. In these cases nothing, in general, occurred till towards their close, from which it could be inferred that the disease was of the nature of a remittent; then it seemed to abate at stated times, and to be marked by lucid intervals. Still, however, the violence of the paroxysms was such as to threaten the sick with the utmost danger.

In the spring of the following year, fevers assumed a different aspect. Most of them were slight in the beginning: for the first six or ten days they pursued a continued course, without manifesting any thing of an intermitting or remitting type: the paroxysms were severe, and not preceded by any cold fit, unless perhaps in certain cases, where the patients experienced a slight chilliness accompanied by something of a cough: this disclosed to us the nature of the disease. At times the fever took on the form of an irregular intermittent from its very com-

mencement. The same type was assumed by those attacks of disease which began as continued fevers and changed to intermittents; they became at last a kind of double tertians.

In these continued fevers I have observed an appearance different from any yet mentioned. In many persons several remissions and exacerbations occurred on the same day: in others a sense of heat and cold continued to succeed each other alternately, for several days. At length, however, these fevers were changed into true remittents or intermittents, as well as the others of which we have treated. But there were cases in which, without this alternate vicissitude of heat and cold, the fever continued to rage with great violence for three or four days or more: a remission then took place, which lasted one day or perhaps longer: after this the fever returned again, and raged without intermission for three or four days longer. Most frequently, however, these remissions and exacerbations succeeded each other in such a way as not to constitute any regular type of fever.

Hence it appears that all these epidemics may be reduced to the following kinds or descriptions of disease. 1. Genuine intermitting fevers. 2. Fevers which are changed into remittents. 3. Fevers which assume at

first a continued form, although they originate from the real cause that produces intermittents.

4. Others which, from having been intermittents, become continued fevers. 5. Fevers which run on in a continued form for five or six days or even more. 6. Those of the same nature that run on as continued fevers for fifteen or twenty days. 7. Fevers marked by remissions longer or shorter, more or less conspicuous, and sometimes not even obvious to the senses. 8. Fevers with exacerbations sometimes preceded by a cold fit, and sometimes not. 9. Fevers altogether irregular both as to exacerbations and remissions.

CHAP. XVII.

Further observations setting forth the variety and danger of such fevers.

AMONG the most remarkable epidemics within my recollection, I will mention one which originated from a very extensive pond filled with putrid substances. Previously to the disease to which I allude, the neighbourhood where it prevailed had been infested by fevers such as we have just described: but there occurred at length a remittent inclining to a continued form, in the paroxysms of which the head was greatly affected. This disease was, for the most part, marked with great oppression at the breast and about the precordia, delirium, and convulsions: it oftentimes assumed the appearance of true apoplexy, but more frequently that of lethargy: at times the sick lay motionless, deprived of the exercise and power of their senses; not unfrequently the paroxysms commenced with severe head-ache, and the most excruciating pains in the

joints. On the remission of the fever all these symptoms abated, and sometimes the sick appeared to be quite out of danger.

At other times the disease assumed an aspect somewhat different; the febrile symptoms ran high, with an acute pain in the side: the breast, as in peripneumony, was oppressed with a heaviness and a difficulty of breathing: in some cases there was a continual and very distressing vomiting: in others, suffocating sensations, pains in the bowels, and such like symptoms, raged with great violence during the whole course of the paroxysms: besides spasms and convulsive motions, many of the sick were subject to syncope; most of them to such extreme debility, that they seemed ready to expire; some of them indeed lay as if already dead; during this great prostration of strength, the surface of the body was cold and of a marbled appearance.

In all these cases the force of the pulse was various. At times the violence of the symptoms was so great, as to break in on the regular course of the paroxysms and render them obscure; the pulse was then contracted and weak, as if there had been a deficiency of vital energy; but at other times, and that most commonly, the febrile symptoms were high; under these cir-

cumstances the pulse was strong and very frequent ; in some instances, however, it was less elevated, and struck the fingers with less force : still it was sufficiently forcible to show of itself that the fever was very high.

In the following year a fever of the same kind became prevalent. It was a double tertian and continued subintrant. In this disease apoplectic and lethargic symptoms came on at the very commencement of the cold fit, and, such was their force, that they continued throughout the whole course of the paroxysm ; but as the paroxysm passed off, the sick revived as it were from this deplorable condition, and returned to the exercise of their senses and their intellect : you would have sworn that they had suffered no injury. So great was the remission of the fever and the intermission of the bad symptoms, that, provided the subjects were young, they did not at first view appear to be sick : but when advanced in years, their situation was much more dangerous, and unless art came opportunely to their relief, they soon fell victims to the disease.

Three years afterwards I met with another epidemic of the same kind with, or at least not very dissimilar to, the foregoing ones. This disease prevailed throughout the summer and

autumn, and proved extremely fatal in its course. But that its symptoms may be the more clearly comprehended, I will describe a few curious cases of it: from these it will be easy to judge of the great variety that may occur in the effects of febrile poison. It will appear, in particular, how dangerous this poison may be, even in cases where the sick entertain the most sanguine hopes of a recovery, and where no danger can be apprehended from the violence of the disease.

A young woman was attacked by a remitting fever. In the third paroxysm she became insensible; her lungs were oppressed, her breathing became stertorous, and in eight hours she died. The fate of my next patient was no less unfortunate and melancholy. He had been attacked by a double tertian fever. During the third paroxysm he fell into a delirium which continued for three days. During the day his fever was moderate, but it increased on the approach of night, and put a period to his existence.

Another person was attacked by a remitting fever, somewhat inclined to become a continued one. On the fifth day, he fell into a lethargy or coma, and an oppression of the breast coming on, he expired. In a certain female subject, a

disease of the same kind assumed a different appearance, and pursued a different course. The patient was attacked, for instance, by a genuine intermittent; but on the fourth or fifth paroxysm her mind became deranged....she continued in that state, without much fever, for six days, and then recovered her senses; but the fever again encreasing, she was carried off by the next paroxysm.

A certain gentleman ill of a remitting fever, put himself under my care. He had daily a rigor and shivering: at length on the fifth day, he fell into a lethargy which continued for twenty-four hours. By degrees, however, he recovered his senses, and was of a sound and firm mind for one day, but a shivering and paroxysm occurring again, he died of a kind of asthmatic suffocation. No less unexpected was the fate of several other patients, who, after moderate paroxysms, became cold on the surface of the body and were seized with faintings; their strength then failed entirely, and, after suffering great oppression, they expired.

It appears from the foregoing circumstances, that these fevers attack more particularly the brain, the seat of the intellect, but that they also do great violence and injury to the lungs. Nor are the præcordia less affected, and even

the heart itself is a great sufferer. In a word, even the vital principle is attacked and overwhelmed, as it were, by the febrile poison, and from hence are to be deduced the dangerous symptoms which the sick experience: these symptoms are so violent, particularly in persons advanced in years, that, unless the greatest attention be paid to them in the commencement of the disease, they run on to a fatal issue. Youthful persons more readily recover; yet many even of them are carried off either through a neglect of remedies, or by the force of the disease proving superior to the resources of art.

It may be thought singular in these diseases, that sometimes from so slight a beginning, the danger should become so urgent and threatening in the course of a few days. But it is a problem no less difficult to solve, how a cause which so disorders the brain, and so oppresses the lungs, can of its own accord give the system a temporary respite, or cease for a time to act. Thus, after the third or fourth day the action of this cause is suspended, and for a day or more the patients seem free from disease. Other maladies do not pursue such a course; in them the affected parts recover only by degrees; and after they have recovered, or appear to have recovered in the space of a day or two,

the life of the patient is seldom brought into danger again by a sudden return of the disease ; at least this is not generally the case, as it is in malignant intermittents.

Hence may be deduced a rule or conclusion of no small moment in acute diseases. It appears, for instance, that there may be great disorder in the functions of the body without either real inflammation or any fixed disease in the solid parts. Many patients are delirious, raving, and appear to labour under a peripneumony, others suffer the most excruciating pains, while others again have their stomach and bowels greatly disordered; they appear, indeed, to be in as much danger as if they were labouring under the greatest inflammation, under a wound, or some strong irritation about to extinguish the vital principle; yet those parts which had experienced such deep and distressing affections, may in a short time be entirely relieved. Hence it appears that these terrible symptoms may arise from some wandering stimulus, which flies off and returns, or acts and lies dormant, alternately; and that they are sometimes more alarming in appearance, than dangerous in reality.

CHAP. XVIII.

*Of the method of detecting or distinguishing Intermit-
tents when disguised under the mask or appearance
of other diseases.*

HAVING thus delineated the different phases or appearances of intermittents, and given an accurate history of the symptoms under which they are usually masked, it remains that I should mention the signs by which the nature of these masked diseases may be detected. They possess, for the most part, such violence, that unless their nature and tendency be well understood, they may prove highly dangerous to the persons whom they attack.

The origin and nature of these fevers may be known from their modes of attack: if they have intermitted or only remitted, and afterwards returned and run on with unusual symptoms, there is ground to suspect that they are masked diseases. This suspicion will be con-

verted into certainty, if the exacerbations should be ushered in by a cold fit. But should there be nothing but a slight chilliness, recourse must then be had to other signs, for the disease exhibits only the appearance of a continued fever marked by periodical exacerbations. But there are many fevers of this description, that have no affinity to remittents.

But if fevers, which are even not ushered in by a cold fit, be marked by paroxysms suddenly occurring, if the patients, when apparently well, be attacked instantaneously as if they had received a blow ; if stretchings and pains of the head, instead of a cold fit, precede the paroxysms, under these circumstances, there is good reason to believe that the disease is an intermittent under a masked form.

The same conclusion is to be drawn relative to the nature of the disease, when it has paroxysms that are succeeded by a striking remission. So great, at times, is the violence of these paroxysms, that they are accompanied with real danger, whereas during their remission, which is quite a lucid interval, the patients seem to be in no danger whatever. Under such circumstances, there can be no doubt but the disease is a remitting fever wearing the mask of a continued one.

The nature of the fever is equally manifest, if the exacerbations terminate in a copious sweat; if the paroxysms return about the same hour; if they exactly correspond with each other every day or on alternate days; if there occur very violent and alarming symptoms which appear and terminate periodically, such as delirium, fierce ravings, lethargy, most acute pains in the head, a failure of strength, tormina of the intestines, &c.

Lastly, masked intermittents, may be no less certainly detected, as was formerly observed, by the colour of the urine. In that disease the urine is very often lateritious, which is a sign, almost infallible, that the disease belongs to the family of intermittents. But the urine is lateritious only during the remission; whence it ought to be attended to and examined with the utmost care.

The following instances will show with what confidence these signs may be depended on, and how readily the disease may be detected amidst the various and unusual symptoms that attend it and render it obscure. I once attended a female patient, who was thunder-struck, so to speak, by hysterical affections, tormented with pains shooting through her whole body, and appeared indeed on the point of dissolution. Du-

ring this prostration of strength, some paroxysms suddenly occurred, which convinced me that the disease was an intermitting fever in disguise. I, therefore, had recourse to febrifuge medicines, which soon restored my patient to health.

I once attended another female patient who laboured under an hæmopthisis: she had an acute pain in her side; and was reduced to a state of extreme danger by means of various and repeated exacerbations. But when I was informed that the disease had commenced with a chill, and that some of the earlier paroxysms had terminated in a sweat, I immediately determined on the exhibition of febrifuge remedies, which in a short time removed the fever, and all the symptoms that had appeared so formidable.

A gentleman whom I once attended in a very severe pleurisy, experienced unusual and periodical exacerbations. These exacerbations came on not by degrees, but very suddenly. Besides, during the paroxysms there was a copious discharge of blood from the mouth, a symptom which is extremely rare. In this state of things I conceived an opinion, that all the unfavourable appearances of the case were owing to the latent cause or fomes of intermitting fever, and that a cure was to be accomplished only by febrifuge medicines. This practice was accordingly adopt-

ed, and the patient who had been in the utmost danger, was in a short time restored to health.

A gentleman accustomed to hunting was attacked by a fever of extreme violence. In a short time he fell into a fierce delirium, and experienced a burning heat, and a restlessness that nothing could restrain. But as these symptoms alternately increased and abated in violence at stated periods, I began immediately to suspect that the disease was a masked intermittent. Recourse was had without delay to febrifuge remedies, to which the disease soon yielded, although it appeared to have been aggravated by other modes of treatment.

A young female was attacked by a continued fever somewhat inclined to remit: but the remission was so short and slight as to be scarcely perceptible. In the mean time the danger was extreme. Such was the violence of the paroxysms that the patient seemed ready to expire. Alarmed at this dangerous state of things, the first lucid interval that occurred although it was very short, I exhibited febrifuge medicine in large quantity, and that not without advantage, for all the symptoms were rendered much milder.

Other examples of the same kind might be adduced, but the foregoing are sufficient for our

purpose. I must not, however, omit to mention, that during the prevalence of an epidemic intermittent, I am pretty generally led to suspect that all cases of fever partake more or less of the nature of intermittents. When there is no general prevalence of intermittents, the periodical return of exacerbations, the disease being one day milder and the next more severe, an evident remission however short it may be, and a sudden recurrence of violent symptoms....these circumstances, I say, furnish me in general with satisfactory evidence that the fevers are intermittents in disguise. On such occasions the urine retains in many cases nearly its natural colour.

CHAP. XIX.

Of the consequences to be apprehended from the leading symptoms of the fevers under consideration.

FROM masked forms of fever let us return to true intermittents, and enquire into their effects and dangerous relics or consequences. Those relics or consequences which we shall enumerate are not uniform occurrences, for such are the nature and powers of the animal economy, that the fever itself generally returns, and does away all danger. But the dangers which we are about to mention in this place are not to be considered as necessarily attached to every case of intermitting fever; they are only such as do or may occasionally take place in the course of this disease.

We have already enquired into the immediate effects of the cold fit, and cannot, therefore, be ignorant of the dangerous consequences to which

it is likely to give rise. There is no doubt, indeed, but from the constriction which it induces, and the consequent stagnation of blood in the lungs and liver, these parts are pre-disposed to various obstructions, and irregular states of action. Hence the liver is so often diseased. From the constriction of that organ, the bile does not pass freely through the ducts: the patients become livid; the digestive powers of the stomach are weakened; and some of the other viscera are injured in a similar way, and rendered unfit for the performance of their functions.

But the greatest violence may be done to the heart. Its ventricles together with the vena cava may be much enlarged. Hence the palpitations and polypous concretions, to which those persons are subject, who have laboured under severe and long continued intermittents. The mass of blood stagnating in the lungs may prove equally injurious. It produces occasionally a spitting of blood, or a kind of asthma. These symptoms do not, indeed, very frequently occur. It is sufficient, however, that they may occur.

There is still, as we have already intimated, another point of view in which the power of the cold fit proves highly dangerous. It depresses the vital principle in such a manner as to render it at times incapable of re-acting: hence this

principle is, sometimes, so completely overwhelmed, that the patients die under the influence of the cold fit. Nor is this, indeed, to be wondered at, when the pulse either ceases to beat, or becomes small and frequent, when respiration is disturbed, and, lastly, when the fluids stagnate in the brain and in various other parts of the system. Hence the sick are in real danger, in cases where the cold fit is of long duration. I have seen many persons reduced to such an alarming state, that without medical assistance, they would necessarily have expired. To patients who are in the prime of life the cold fit of an intermittent is not so often dangerous; but to persons advanced in years it is very frequently so.

The danger arising from the hot stage of fever is not so great. As soon as a sick person has escaped from, or passed over the cold stage, he is usually considered as safe. But is there not a secret taint introduced into, or generated in the system, which increases by degrees, and at length breaks out when not expected? In an intermitting fever, a tertian for instance, the heat of the body rises as high as the 39° of Reaumur, and higher still in compound fevers. But if in a person in health the temperature should rise equally as high, every day, or every other day, and continue at that degree for six or eight

hours, would he be free from danger, even although he should enjoy the usual temperature of the human body during the remainder of the day and night ?

On this point we may form some opinion, from the effects usually produced by a high degree of heat. What a rarefaction takes place in the texture of the softer parts of the body ? What a distraction or laceration of the more tender fibres ? What a change in the fluids, which are the source of heat ? In as much as men and other animals are oftentimes destroyed by passing through high degrees of heat, it is wonderful that sick persons are not more injured by the great burning that occurs in intermitting fever.

But however patients may seem to escape danger, when parched by a strong febrile heat, the organs of the body and their functions are necessarily injured by it. Some patients are subject to great agitation and tossing during the hot stage of the fever : others again suffer the most distressing anxiety about the region of the heart. The burning heat that exists in the lungs proves equally troublesome and oppressive. The head itself feels as if on fire, and there is no doubt but the very tender medulla of the brain suffers from this intense heat.

How great then is the injury that may be done to these and other parts of the system, which are burnt up, as it were, by this febrile fire? Were we to trust to theory alone, the danger would indeed seem to be great and immediate. But experience and observation teach us, that the powers of nature are such as ought to prevent us from despairing of the fate of the sick in these scorching fevers. Unquestionably, however, the system must suffer much from the intense heat of the paroxysms, and their frequent returns must pave the way to many diseases.

In summing up the causes that tend to the injury of the system, we must add the action of the vessels, which corresponds to the degree of heat, and which, during the course of the paroxysms, is so great, that the frequency of the pulse is doubled, and the degree of heat greatly increased. Hence we may infer, in general, what the vessels themselves suffer, both the larger ones, and the capillaries which terminate in a tender pulp. The texture and function of the glands and other parts are necessarily injured. From the increased rapidity and force in the motion of the blood arises a most acute pain of the head, with a more frequent and difficult respiration. But a circumstance still more dangerous is, that there is a kind of congestion formed in the vena portæ and liver; for it is not practicable for

the blood to circulate through the intricate windings of that organ, as rapidly as it flows from the arteries into the veins.

Sweats, even when profuse, do not portend the same degree of danger. But although they contribute greatly to the relief of the system when the paroxysm is declining, they do not entirely remove the cause of the fever. Even the relief which they afford tends to exhaust the sick. Suppose, for instance, a person in consequence of some error in diet, or after a debauch in eating should sweat very profusely for three or four hours every other day; could such an event ultimately contribute to health? or would it not rather be attended with danger, since it is known by experience that five or six pounds of the fluids of the body are discharged through the pores of the skin during that space of time? There can be no doubt as to the effect on the system in the case of febrile sweats, when profuse, long continued, and frequently repeated.

Nor are the fluids discharged by the skin simply aqueous, although if they were, even then their loss would be injurious: the thicker juices themselves, which are destined to the nourishment and reparation of the system make their escape; whence the vital organs are necessarily debilitated. Sick persons are sometimes

so greatly disposed to such discharges from the skin, that they flow copiously without any known cause, particularly during the night. Even after the fever is removed, this disposition to sweat frequently continues, and can scarcely be checked. But, what is of more consequence, there still remains, under such circumstances, either some fomes of the disease, or else a local affection of some particular part of the system.

The thinner parts of the fluids, in particular, having escaped by the cutaneous pores, it is evident that those which remain in the vessels are more gross; a circumstance which seems to threaten no small degree of mischief to the system. On this theory, however, too much reliance must not be placed. The grosser parts of the blood are at the same time dissolved or made thinner, a circumstance which, taken in conjunction with the influence of the febrile heat, tends to keep it in motion. This dissolution is greatly promoted by acrid and alkalescent bile, which, being regurgitated into the blood, is diffused throughout the vascular system. The other humours of the body are also rendered acrid, as appears from pustular eruptions which occur about the mouth. Hence patients who have laboured long under fever, appear bloodless and pale.

The change in the humours appears also from the urine itself. During the febrile action, that fluid is flame-coloured, as already mentioned, but, as the paroxysm declines, becoming thick, frothy and very red, it puts on at length a brick-dust colour. This colour appears in particular in the sediment which is generally copious. The sediment is nothing but a red-coloured earth, as I have oftentimes ascertained by experiment. This earthy sediment is apt to lodge and create a temporary obstruction in the vessels of the kidneys.

This kind of urine belongs so peculiarly to intermitting fever, that, provided the disease be genuine, it is seldom wanting. Indeed there is no solid reason to believe that the system is free from the fomes of the fever, while the urine retains its lateritious colour, or is in any measure tinctured with red. This phenomenon does or can prove fallacious only in cases where the sick labour under some hepatic affection. If at any time the urine should exhibit a white matter settling copiously to the bottom of the vessel, this is to be considered as a favourable symptom, and even a sign of a crisis in the disease. I must confess, however, that this phenomenon has but seldom fallen under my notice.

In some intermitting fevers the urine does not assume a lateritious colour. I allude particularly to certain vernal intermittents, or to those that change into continued or remitting fevers. Even in these, however, the urine does exhibit something of a lateritious appearance during their remissions. At those times, when the secretory vessels of the kidneys are suffered to relax, in consequence of an abatement of the febrile spasm, the grosser and red coloured particles are allowed to escape. Whence it appears, that at the commencement of the disease, if it be very severe, the urine does not depart from its natural colour, but assumes a red and lateritious cast when the symptoms abate.*

* Physicians, like other characters, are apt to fly from one extreme to the other. In former times the appearances of the urine of sick persons were, perhaps, on all occasions, too closely and too credulously consulted; at present they appear to be too much neglected. Such a copious and important excretion must very generally exhibit certain characters, that might serve as something of an index to the state of the system. By paying a proper attention to the appearances of the urine, I am persuaded that physicians might oftentimes discover and predict the crises of diseases, much to their own credit, and to the benefit of their patients..... *Trans.*

CHAP. XX.

Of various affections attendant on Intermittents.

WE have now seen what is to be apprehended from each leading symptom properly and necessarily attached to intermittents. It remains to ascertain what those affections are, which, not being attributable to any of the symptoms in particular, must be referred to them all collectively, or rather to the disease itself, taken as a whole. These affections are not indeed perpetual, or uniform, because they may either occur or be wanting: but it remains to be enquired what injury they may do, when present, to certain organs of the body.

It is very common in intermitting fever, for patients to experience pains in the head, sometimes slight and at other times extremely acute. It would seem, at first sight, that the violence of these pains is to be attributed to the impetus of the blood against the brain. But that is not the

cause to which the mischief is to be always referred. The blood circulates, at times, with extreme violence without producing any such affections of the head. We have already mentioned that the febrile poison oftentimes attacks the seat of the intellect, producing convulsions, lethargy, and even madness. For the same reason it stimulates the membranes of the brain. Hence arises the most excruciating pain, which usually rages during the actual continuance of the fever, and ceases during its intermission.

Other patients are heard to complain of affections of the stomach. That organ is affected with nausea, vomiting, and loathing of food, or with a sense of heaviness, burning, and tightness. Some patients experience in it at the same time pains of different kinds. But a symptom which occurs no less frequently, and is of no less importance is, a distension or swelling of the stomach. This symptom is sometimes met with even in intermittents that have not been of long duration, and continues in many cases after the febrile symptoms have terminated: but it occurs most frequently in those which have been of long continuance, or which have been treated in an injudicious manner.

But we more frequently meet with a swelling of the abdomen or lower belly, which as-

sumes a variety of appearances. It is sometimes soft, and at other times the integuments appear like dry parchment; but most frequently the abdomen is very much distended. On some occasions its hardness and resistance to the touch are so great as to resemble marble. Notwithstanding this, it is as true as it is surprising, that on these occasions, there can be nothing found in the abdomen but air distending the intestines by its elastic force.

All these symptoms proceed, for the most part, from some derangement in the functions of the liver. The secretion of bile, for instance, is either checked or diminished, or that fluid becomes acrid and unfit for the business of healthy digestion. If the fever be of a higher grade, the sick sometimes complain of a sense of heaviness and anxiety thence arising, or of severe pains in the right hypochondrium. Some persons suffer a slight attack of hepatitis. Hence we plainly perceive why the countenance becomes yellow or livid, and how readily an intermitting fever may be succeeded by a jaundice, a circumstance which frequently occurs in certain epidemics.*

* Attacks of jaundice were uncommonly frequent among the citizens of Philadelphia during the winter of 1793-4. The pre-disposition to that complaint had been produced by the malignant epi

There are many other troublesome symptoms which originate from the same source. It is not to be wondered at if such a serious affection of an organ so necessary to life should prove highly injurious to the surrounding parts; if it should render the intestines tumid, and cause even the external parts of the body to swell. In some epidemics I have seen this swelling occur as early as the eighth or ninth day of the disease. In general, however, it makes its appearance later, and arises, like dropsy, from some morbid affection of the viscera.

But the liver proves the cause of still further evils in the course of intermitting fever. Within the texture of this viscus the blood accumulates and there stagnates. That blood which is

demic of the preceding autumn. In its future occurrences the malignant fever was not productive of jaundice to the same extent. The explanation of this fact does not appear very difficult. During the epidemic of 1793, but few of our physicians treated the disease by copious blood-letting and purging. Hence hepatic congestion was not in general sufficiently removed. Of this remaining congestion jaundice was a natural consequence. On all subsequent occurrences of the malignant fever, copious blood-letting and purging were more generally adopted in practice. Hence the liver was unloaded and consequently obstruction and jaundice prevented. I believe it may be laid down as a principle to which there is no exception, that proper and timely evacuations will always prevent bilious affections of every description from terminating in either jaundice or dropsy.....*Trans.*

thrown into the vena portæ cannot go forward : the other parts of the abdomen therefore must necessarily become turgid, because the blood which flows constantly into them, is subject to a similar stagnation or delay. The spleen in particular becomes turgid, and is oftentimes greatly increased in bulk : the parietes of the stomach and intestines become thickened, and the mesentery also is subject to tumefaction. From this state of things arise obstructions, putrid diarrhœas, dysenteries, and dangerous discharges of blood. All these symptoms frequently occur in certain epidemics and in fevers of long duration.

Hence it appears that the force of flatus not only distends the abdomen, but also increases the size of the viscera. The blood and other fluids being accumulated and made to stagnate in certain internal parts, are converted into solids and thus augment the bulk of these parts. The truth of this will be demonstrated by the dissections of which we shall speak hereafter. We must not be surprised, therefore, at finding the abdomen to appear uneven, filled as it were with tumors, and much harder than in a natural or healthy state. From the irritation of the fever some degree of rigidity cannot fail to occur in this part.

It is much more surprising that, during the existence of this abdominal tumefaction, the fever in many cases not only remits, but even ceases altogether or changes its nature. When the febrile poison exerts its force on the viscera of the abdomen, it appears to desert the other parts of the body, or rather to act on them in a different way. The same thing takes place in swellings of the lower parts, of which we will treat presently. When such swellings occur, the fever disappears or gives ground to hope that it soon will disappear. But this exemption from fever is not universal. In some subjects the fever continues, even when the abdomen, the lower extremities, and other parts of the body are greatly tumefied. Under such circumstances a new disease is superadded to the original one.

Although the foregoing effects of intermitting fever are very distressing, we must not consider them as necessarily fatal. Youthful persons who are most subject to them, and who are sometimes so reduced by them that death appears inevitable, do, notwithstanding, oftentimes recover from them, and that sometimes by the powers of nature alone. In adults also, when the functions of the abdominal viscera are so much diseased, that it seems scarcely practicable for the relics of life to be continued any

longer, remarkable recoveries sometimes occur. Many persons by the proper administration of remedies, and many others by a change of climate, and even by the approach of summer are restored to such perfect health, that no one would suspect them to have been indisposed.

From these circumstances it would seem that the obstructions arising from intermitting fever are of a peculiar kind, and not so dangerous as those arising from other causes. Hence remedies may be administered and hopes indulged even in cases of the most unpromising aspect.

CHAP. XXI.

Of affections which remain after the febrile form of the disease has been removed.

SO much for those affections which occur during the course of intermittents. But there are many others, and those of no inconsiderable moment, which remain after the febrile form of the disease has been cured. Thus, some patients are subject to a most acute and distressing pain in the head. To such a height does this pain sometimes arise, that the whole original disease would seem to be changed into it. The patients sometimes declare that the head feels as if it were cleft asunder in the middle. Under such circumstances it cannot be supposed that the whole of the febrile poison is eliminated from the system. In some instances, however, after having given rise to such excruciating pains,

it is dissipated either by the spontaneous powers of nature, or by the aid of diluents alone.

At other times, after the febrile symptoms are gone, the whole body seems as if it would melt away. At night, in particular, the sweats are so profuse and oppressive, that they exhaust in a short time the strength of the system. During this deluge, it is a great error to suppose that the fever is cured: the febrile cause seems to be only thrown on the skin. At times, indeed, sweats may occur from mere debility of the system; but they never flow in such abundance, unless some morbid cause be acting on the viscera. By such a fomes the discharge by the skin is rendered so profuse that it can scarcely be restrained; and if it be restrained by an unskilful mode of treatment, the step proves always injurious to the patient, as I have learnt from repeated observation.

Of all the complaints that remain or can remain after the fever is removed, by far the most troublesome are the morbid affections of the viscera. Indeed when we consider the great power which the febrile poison sometimes possesses, we cannot be surprised at certain vestiges of it remaining in the system for a considerable time. These show themselves more particularly in the liver, and from that organ arise many

affections, from which the sick are with great difficulty relieved. There are also other parts of the system in which very troublesome and grievous relics of the disease remain : the pancreas becomes indurated ; the spleen is enlarged ; the intestines with difficulty recover their healthy functions ; the appetite is weak ; the strength is exhausted ; and the countenance is overcast with a livid or yellowish hue.

Hence it appears how readily this disease may be succeeded by a watery swelling in various parts of the body. As soon as the violence of the fever abates, the feet and legs in many cases become œdematous. This effusion into the cellular membrane takes place, partly from the obstructions that remain, and partly in consequence of the force of the febrile poison being determined to the lower extremities. Hence the occurrence of a watery swelling of this kind may be considered as a sign that the fever is declining. Youthful persons are not so subject to swellings of this nature. Indeed such affections occur most frequently among persons in indigent circumstances, either because these subjects are deprived of the advantage of able medical aid, or because their bodies, being worn out by fatigue, are thereby rendered more liable to obstructions.

This swelling of the feet and legs oftentimes degenerates into true and general dropsy; and oftentimes into an anasarca only. But it occurs in certain epidemics more frequently than in others. Last year, for instance, was remarkable for swellings of the feet, legs, arms and hands: the lungs themselves were oppressed by the effusion; sometimes the difficulty of breathing was very great: the sick were harrassed by a troublesome cough, particularly in cases of general anasarca. These affections occurred more frequently as the consequences of irregular intermittents.

Occasionally, however, they are produced by simple intermittents. A man aged thirty, was lately ill of a tertian fever. The disease having been neglected for several months, assumed an irregular type. It was at length succeeded by a general anasacra, which no remedies could remove. What seemed most surprising in this case was, that on dissection scarcely any disease was discovered in the viscera, which could be considered as the cause of the anasarcaous swelling. Hence it appears, that an universal diffusion of the febrile poison can produce an universal and fatal effusion into the cellular membrane.

CHAP. XXII.

Of relapses in Intermittents.

FROM these affections of the viscera in intermittents, it is evident that the febrile poison may, for a long time, remain in the system, and produce frequent and unexpected returns of the fever. So subject are patients to relapses in this disease, that, in the opinion of some persons, great precautions ought still to be used on the day and at the hour of its usual occurrence. It has been observed by certain writers that after the entire solution of the fever, and even after a long intermission of its paroxysms, those paroxysms are apt to recur about the same hour of their original commencement, in case any imprudence be committed about that time. I will not vouch for the perfect accuracy of this observation.

Be these circumstances as they may, it appears from actual experience, that if the fever be not radically cured, it does not give a respite of more than fourteen or fifteen days.* This, however, is not always the case, but it is to be considered only as a general rule. Sometimes the disease grants a much longer respite; thus, for example, the patient is not unfrequently exempt from it throughout the winter, and attacked by it again in the spring: it disappears a second time during the summer months, but returns again in the autumn, unless prevented by proper remedies. In the intervals between those periods the disease is oftentimes excited into action by various causes.

But as these causes are various, so are also the febrile relapses which they produce. Oftentimes when the prospect of a recovery is very flattering, all the symptoms return as at first: the paroxysms for instance recur with various

* Intermitting fever has certainly a strong disposition to return at *weekly periods*, for a considerable time after the suspension of its paroxysms. The knowledge of this fact is of much importance both to physicians and their patients. By using proper precautions at these periods, the return of the disease may be easily prevented. As a week is about the fourth part of a lunation, some physicians have attributed this hebdomidal recurrence of intermittents to lunar influence. Conformably to this opinion, they contend that the disease manifests the strongest disposition to return about the full and change of the moon. Be this matter as it may, there appears to be but little reason to doubt the reality of at least some degree of lunar influence on the human system....*Trans.*

degrees of force and duration ; in a certain time they cease again and are again renewed, but sometimes with more irregularity than before. The disease now and then assumes the form of a remittent or a continued fever, and afterwards returns to that of an intermittent. Thus it oftentimes runs on for a great length of time, harassing the sick by various and irregular symptoms.

These circumstances may occur at any time, but they happen most frequently during the prevalence of epidemics. I have met with these alternate appearances, and with this alternate cessation and return of the complaint, more especially in those fevers that rage in marshy situations. When these diseases have continued for a certain time they scarcely admit of a permanent cure. Relapses happen on the most trivial occasions. Oftentimes when the patients seem to be nearly restored to health, that is, relieved from the paroxysms, they are suddenly carried off by the disease. Others drag on with difficulty a wretched existence from autumn till summer. Nor are they all freed from the disease even then : many of them are only somewhat relieved. In the mean time relapses are very apt to occur, in consequence of the relics of the fever that remain in the system, and the various symptoms by which the sick are affected.

In these relapses the appearances are various. The paroxysms recur indeed at stated hours and on stated days, but without a perfect intermission intervening. On the days of intermission some degree of fever still seems to prey on the internal parts of the system. In some of these cases, the sick are scarcely able to sustain themselves, having at the same time a pale and yellowish appearance. The fever is a kind of continued one, although marked with paroxysms that pursue the usual order. Hence there seems to be a two-fold cause of the disease or febrile action; one of these consists in a diseased affection of the viscera; the other in the presence of the miasma, which constitutes the fomes of intermitting fever.

In some instances, these diseases seem to incline more to the form of hectic fever. The regular periodical paroxysms cease, but the pulse rises in the night, without either a cold or a hot fit of any consequence. The intermediate days are never free from some degree of fever, particularly in those patients, who have been treated unskilfully. Relics of the same kind are met with in those who suffer frequent relapses in consequence of an affection of the viscera, or of the force of the febrile poison.

We will proceed no further in considering the various kinds of relapses. But although in

certain cases they are so frequent and diversified, it is still the opinion of some writers, that persons who have once laboured under intermitting fever, and been perfectly cured by a true crisis and proper remedies, are in general less liable to it during the remainder of their lives than they were before. There are at least very few persons who have been subject to frequent attacks of quartan fever. I do not mean by this, that those who have been once subject to intermitting fever have nothing to apprehend from epidemics, or from those places in which epidemics of the kind usually prevail: for when their bodies are surrounded by febrile miasma, that poison cannot fail to make some impression on them, notwithstanding their being less pre-disposed to receive its action. The meaning of physicians on this subject appears to have been, that those persons who have once experienced the effects of the poison of intermitting fever, are not, in general, so susceptible of them again.

Be this matter as it may, it appears from what has been said, that there are two points of primary consideration with respect to the relics of intermitting fever. Either the febrile fomes remains in the system and re-produces a regular intermittent; or some principal and important parts of the system suffer serious local affections.

In these cases relapses are to be dreaded, and when they take place do not easily admit of a cure : or if the intermitting form of the fever be removed, still the patients are apt to continue infirm and sickly during the remainder of their lives : in particular, obstructions of the viscera remain, which greatly impede the performance of their functions.

CHAP. XXIII.

*Of the morbid appearances discovered in the dissection
of the bodies of those that have died of Intermittents.*

IN the dissection of dead bodies the foregoing obstructions and local affections are discovered. It is not my intention to treat of those that are found in bodies that have died of a compound remitting fever. In that disease the vital principle is overwhelmed or extinguished by the force of the febrile poison; the head is severely attacked; other parts suffer great injury; the whole system is thrown into commotion by spasms and irritation, and hence death is produced in the same manner as in continued fevers.

But simple intermittents, or those that degenerate into hectic or such like fevers, leave various vestiges of themselves in the body. Certain

parts, however, they attack with more violence than they do others. The head, for instance, seldom exhibits any morbid appearances, although it sometimes experiences the most excruciating pains.

But the organs of circulation and respiration suffer greatly, as we have already mentioned. The auricles of the heart, and the pulmonary vessels are turgid with black blood. A great congestion takes place in the minute lobules of the lungs, and there is water effused into the cavity of the thorax. In some cases the pericardium is distended with water. This latter circumstance is particularly observable in those who die of intermitting fever in maritime situations.

As the stomach is so often affected with vomiting, it is no wonder, as already mentioned, that it should be found greatly distended with flatus. The distension and the irritation from whence this distension arises, sometimes proceed so far as unquestionably to prove the cause of death, by occasioning in many cases a spasm of the parietes of the stomach. I have seen persons who, when apparently free from fever, have been destroyed by overloading their stomach at supper. In these cases the stomach was wonderfully distended either with flatus or

with water, or was overpowered by the quantity of food taken in.

But the deepest ravages are found in the liver. That organ is for the most part pale, bloodless, and somewhat wasted away. At times, however, it is enlarged in its size, indurated, and variegated on its surface with small yellow glands; at other times again it is turgid with blood, and that very black. In some patients I have found an abscess of the liver after tertian fever; while in others, again, I have seen the vena portæ converted into a very large tube. Many other affections of the liver are mentioned by medical writers; it has been found very remarkably enlarged; the ducts distributed throughout its substance are entirely obstructed. The gall-bladder is also found obstructed, and distended with bile.

The pancreas is also subject to the ravages of intermitting fever. In some dead bodies only certain parts of that viscus are found obstructed; in others its whole mass is either schirrous or greatly enlarged; some physicians have seen it in a state of suppuration; for this reason, as I have elsewhere observed, they have considered it as the great repository of the fomes of intermitting fever. It is not, indeed, to be wondered at, that obstructions should occur in

this viscus, since the blood stagnates, or at least moves very slowly in the hepatic veins.

For the same reason the spleen has been subject to the same charge. Its bulk, for instance, is sometimes greatly enlarged. I have even known it to acquire this increase of bulk in a short space of time. But, what seems more surprising, that viscus has returned to its natural state again, by the exhibition of febrifuge remedies alone. But the spleen not unfrequently suffers another kind of morbid affection: it is filled with black blood resembling tar or pitch: it then runs into something of a gangrenous state. A woman laboured under a neglected quartan; being destitute of the common comforts of life, she died suddenly. In the dissection of her body, the spleen was found in somewhat of a dissolved state; and a large quantity of blood was effused into the abdomen.

Hence it appears, as mentioned on a former occasion, how liable to disease the peritoneum and mesentery are; in these parts schirri and abscesses have been found. Having oftentimes examined these parts, I have plainly observed the glands of the mesentery in a diseased state. In very young people, in particular, I have seen these glands obstructed and greatly increased in size. In the duplicature of the peritoneum va-

rious tumors occur, which either produce a congestion, or are the effects of one. The fluids in consequence of stagnating become consolidated, and firm, and thus form a kind of steatomatous substance.

In the intestines certain appearances are observed, which may be attributed to the fever; these parts, as we have already observed, are greatly distended; but as they are distended in some places, they are constricted in others. In the colon, in particular, I have found various contractions of its diameter, especially where it passes over the left kidney, and dips down again, previously to its terminating in the *intestenum rectum*. From these contractions or narrownesses many consequences arise, which I shall not mention at present, as they may be readily foreseen by every medical reader.

There are still other morbid affections which take place after intermitting fever. These, taken in conjunction with such as have been already mentioned, enable us to judge whether or not intermittents ought to be ranked among the salutary processes or states of action of nature. That this is the case, many writers have attempted to prove, both by argument, and by the authority of the ancients. But can a disease be of itself salutary, or can it be considered as such in

its nature and real tendency, when, during its course, so much local injury is done to various parts of the system ?

Theory is too oftentimes nothing more than the visionary offspring of the imagination : it is experience alone on which we can finally depend. Many physicians seem to be convinced by experience that quartans contribute much to longevity. This only, in my opinion, can be maintained on the subject, namely, that intermittents may sometimes cure certain other diseases. There are, for example, relaxed or debilitated bodies in which the motions and actions of the internal parts of the system are too weak : there are also certain nervous and convulsive affections which may be removed by adding strength to the motions of the internal parts: by this increased motion, stagnations are removed; new power is bestowed on the vital organs; noxious humours are thrown off by perspiration; a new crisis or constitution is given to the blood; and the whole habit of the body is changed.

A certain description of febrile paroxysms, therefore may restore or confirm health. But if these paroxysms be very severe and long continued, they not only will not prove salutary, but will do mischief, and that the more dangerous in its nature, in proportion as the system is more

weak and delicate, or more affected by other diseases. Persons subject to jaundice, cough or any other pulmonary affection, have no advantage to expect from an attack of intermitting fever. This at least is generally true, nor can it indeed be otherwise, unless there be in the system certain noxious humours, which produce these affections, and which may, by the action of the fever, be changed or corrected.

BOOK SECOND.

OF THE

TREATMENT OF INTERMITTING

AND REMITTING FEVERS.

CHAPTER I.

*Of the difficulty of curing Intermitments, and wherein
that difficulty consists.*

IT now remains to consider the treatment and cure of intermitting fevers. To many it will seem scarcely necessary to touch on this subject; for there is no one who does not consider himself competent to the cure of these diseases. A firm belief has hence arisen, that few or no persons ever die of intermitments. These fevers sometimes terminate spontaneously, or are in many instances easily cured; nostrums for that purpose are in the hands of every one, and are even publicly sold under the sanction of medical characters. Whatever precepts and modes of practice, therefore, may be laid down on the subject, will be considered by many as an ostentation of learning.

But intermitting fever is sometimes extremely dangreous, and in many cases difficult to be removed. The mode of cure itself may prove injurious ; and numerous controversies have arisen respecting the proper mode. As there is no opinion, however ridiculous that has not originated with or been supported by some philosophers ; so there is no remedy, however absurd and injurious, that has not been the secret nostrum of some physician.

Nature herself appears to us to act capriciously in the cure of diseases. Thus, fevers are sometimes cured alike by heat and by cold ; in some cases acrid substances, in others demulcents, effect a cure ; in some, wine and ardent spirits, in others, copious draughts of water ; even poisons themselves have become celebrated for various cures ; finally, there is scarcely any thing whether noxious or innocent, that has not cured intermitting fevers. Even when these diseases have been attacked to no purpose in a rational mode of practice, it has not unfrequently happened, that they have been completely subdued by a very preposterous and perverted mode.

The road, therefore, which leads to the cure of intermittents, instead of being plain and easy, is, on the other hand, extremely difficult and la-

borious. The greater the number of remedies appears to be, the easier it is to err in the choice of them. That an opinion may be the more readily formed respecting them, we will premise a few considerations.

Those things that are not consistent with themselves, or which do not generally succeed in effecting a cure, cannot be considered as remedies; but of this description are many things that are carried about and sold as antidotes. Much more ought we to reject whatever may be attended with any degree of danger, such as acrid and heating substances, which are almost always hurtful, even when they effect a cure. The same thing must be said respecting remedies of opposite powers. Of two remedies possessing contrary qualities, one must be hurtful, particularly if their action on the system be powerful.

From so many cures, which are attributed to these remedies, it will appear that nothing can be deduced, if we enquire into their true cause. Such are the nature and principles of the febrile cause, that at times nothing seems necessary to the cure of intermitting fever, but some striking and sudden change; hence fear or terror suddenly induced sometimes eradicates the disease. The same effect is produced by great heat, ex-

ercise, the use of acrid substances, &c. but these are not certain and well established remedies; for, though they may succeed in one case, they fail in many. Besides, if they do not hit their mark, and destroy the fever as it were by a single blow, they are sure to render it more obstinate and dangerous.

Nor can even the remedies proper in intermittents be safely exhibited unless with the utmost circumspection and care. There are some remedies which may remove the disease, and prove at the same time hurtful to the patient. Hence the dissensions between physicians of different countries; they trust and distrust certain remedies, and that, at times, for reasons alike unsatisfactory. Those physicians who even use the same remedies, are scarcely able to agree respecting the proper method. Thus the lives of their patients are sometimes exposed to danger by their controversies.

Amid so great a variety of opinions, it is a matter of no small moment to select the best method of cure. This method consists in the proper use of two kinds of remedies, namely, those which are called general, or common to other diseases, and those that are specific, or peculiarly suited to intermitting fever. The general remedies, such as evacuants, diluents, and ape-

riants, are the most powerful ; by their use the body is reduced nearer to its natural state. The circulation of the blood is easier, the several parts of the system perform their functions better, and the depraved juices are altered or ejected. Specific remedies, therefore, may be administered most certainly and safely, after general remedies have been premised. By these latter remedies the way is paved for a cure, while by the former the cure is accomplished.

CHAP. II.

Whether or not all Intermitments are to be treated with the same remedies? Whether or not, when left to themselves, they terminate or come to a crisis spontaneously? and whether or not an attempt should be made to cure them at their very commencement?

WE must now enquire whether or not every intermitting fever ought to be treated in the same manner. There is a wide difference between vernal and autumnal intermitments: their nature is indeed the same, but the febrile poison seems to be milder in the former than it is in the latter: this, however, is not always the case, for we sometimes observe vernal intermitments to be possessed of a malignant character.

But, in general, these diseases of the spring are easily removed. After having run on for a short time, they very frequently terminate of their own accord. An attention to regimen

alone is adequate to the cure of them. If they require any remedies, neutral salts and other aperients are for the most part sufficient. It would seem that if there be any fevers of a salutary tendency it must be these ; they open the vessels and pores that have been obstructed during the winter ; they communicate motion to the stagnating fluids, and, by means of febrile action, either change them or discharge them through the different emunctories.

Fevers happen also at other seasons of the year which are by no means obstinate or difficult to be cured. This arises either from these diseases attacking persons of favourable habits of body, and not abounding in depraved humours ; or, what is very common, from the febrile poison being extremely weak. In attempting the cure of such diseases, but little can be done ; at least a few remedies are sufficient, such as diluents, aperients, and mild purgatives. If specifics be necessary, it is not requisite that they should be exhibited with such great precaution. Thus the method of cure ought to be suited to the character of the disease.

Here a question of great moment arises, namely, whether or not, if intermittents be left to themselves, they admit of a spontaneous cure ?

Some writers believe that they terminate after the seventh paroxysm, and that they have a fixed period of duration as well as continued fevers. I am, indeed, of opinion, that if in intermitting fever the patients be confined to a strict regimen, such as is usually prescribed in acute diseases, the intermittent will soon come to a close. Several examples have occurred to convince me of the truth of this. But to do away every remaining doubt on the subject, it would be necessary to confine a certain number of sick persons to this regimen alone without any other remedy.

But, (a circumstance which is less doubtful) if, during the observance of such a regimen, gentle remedies be administered, these diseases are in general very easily cured, provided they be not marked with great violence; and provided there be no serious epidemic prevailing. But there is a necessity for using the remedies just mentioned, because there is frequently too much blood in the system; because the primæ viæ abound with depraved humours; and there is sometimes a great accumulation of bile. All these impediments must be forthwith removed, in order that nature may be able to do her work spontaneously, and by her own inherent powers.

If nature be thus dealt with and regulated, she usually brings about a kind of crisis in the disease. The third paroxysm is more severe than the two preceding ones, but the sixth is the most severe of any. The seventh, which is generally the last, grows milder, but is succeeded either by a gentle sweat, or a diarrhœa, or the morbid cause is carried off by both these modes of evacuation occurring at the same time. Sometimes these efforts of nature occur several days after the seventh paroxysm. It must be acknowledged, however, that in many cases no critical evacuation can be observed. This happens more particularly when the system is disturbed by a multiplicity of remedies, or the febrile symptoms subdued at once by their specific power.

There arises another question of no less consequence relative to the use of both general and specific remedies in these diseases. It is enquired, for instance, whether or not it be best to attempt the cure of intermittents immediately on their commencement, or to suffer them to run on unmolested for a certain length of time?

We do not here allude to those patients on whom intermittents may have a salutary effect.

If these complaints are likely to eradicate some other disease, they may then, indeed, be left to nature for some time. But if they attack persons in health, will they, under these circumstances, prove serviceable to them? and whether will it be better for those attacked to be relieved from them, or to suffer the poison of them to rage through their systems? We are persuaded from every view of the subject, that the poison ought to be eliminated from the body as soon as possible.

I am in the habit of paying particular attention to the force and character of the fever, and, as soon as I discover that it cannot be subdued without difficulty by the powers of nature, having first prepared the system in the proper manner, I have immediate recourse to specific remedies. Nor have I ever, in the course of many years, known any mischief to arise from this mode of practice. Even fevers of a bad aspect have been removed without leaving any vestiges of themselves behind. On this circumstance alone the issue of the matter entirely depends, namely, that the medicines be skillfully administered, and the system properly prepared for them by a diluting, cooling, and opening regimen. I acknowledge, indeed, that if physicians have recourse immediately to fe-

brifuge medicines, and those of heating qualities, they will, in many instances, do mischief; but it does not follow from thence, that intermittents ought for a certain time to be left to themselves. When thus neglected they generally take deeper root and become more obstinate and difficult to be cured.

CHAP. III.

Of Blood-letting.

THE first remedy that presents itself is blood-letting. Yet it must be confessed that this alone is not a cure for intermitting fevers. It is, therefore, that it is so often spoken of unfavourably, and accounted altogether useless: if some writers are to be credited, it is even to be considered as injurious. Perhaps this opinion has been derived from the effects of very copious hemorrhages, which, at times, have appeared to add strength to these fevers. It does not, however, follow from thence, that blood-letting is to be entirely rejected, as if incapable of doing good in such diseases.

On this subject nature and experience furnish us many things worthy of notice. I have oftentimes seen double tertians converted into simple tertians by a single blood-letting. Half

of the disease, therefore, may be removed by the loss of blood. But, what is of no less moment, I have learnt from certain and repeated observation, that the paroxysms are rendered much milder by it, and made to recur at a later hour. Besides, after blood-letting, the febrile heat is less distressing, the sweats are less profuse, the pain in the head is milder, and all the functions of the body go on with more regularity.

It may be laid down, therefore, as an established principle, that if venesection does not absolutely cure intermittents, it paves the way for other remedies, and is on that account highly necessary. It remains, therefore, only to be determined, whether or not it be necessary in all cases, whether it may not be, or rather ought not to be omitted in some, and, finally, what are the limits that ought to be set to it?

It would, indeed, be absurd to have recourse to blood-letting in every febrile affection. There are cases in which it is allowable and even necessary to abstain from it; these are such as are mild in themselves, or such as attack persons already very much exhausted and debilitated. Fevers of this description stand the less in need of such a remedy, in as much as many of them, and those of a serious aspect, have been occasionally cured without blood-letting. But these

few examples ought not to divert our attention from the precepts of reason and the result of experience. It is safer to have recourse to blood-letting even when not absolutely necessary, than to neglect it when it is necessary.

It would be particularly injurious to omit blood-letting in cases where the blood-vessels are turgid, the fever intense, and the patients distressed with a burning heat, or, an extremely acute pain of the head: by such an omission the fever would be rendered worse, and the various functions of the system probably injured. To the neglect of blood-letting is the obstinacy of fevers to be generally attributed; from this source must we oftentimes derive the failure and even hurtful effects of febrifuge remedies. It appears from the best founded experience, that a fulness of blood, an impetuous circulation, and the febrile heat thence arising are unfavourable to the success of such medicines.

How far blood-letting ought to be carried, it is impossible to state. This depends on the constitutions of patients, and the violence of their symptoms. In as much as these circumstances may be various, so may the amount of blood necessary to be drawn; at times, indeed, it must be large. The nearer the fevers approach to a continued form, the more frequently must

recourse be had to the remedy of blood-letting. This precept, which is founded on experience and reason, shall here be illustrated by a few examples.

In an epidemic constitution which once prevailed in this place, the fevers were double tertians, and many assumed even the appearance of continued fevers. In these the sick experienced no relief till after three or four blood-lettings. In many cases the pulse was so hard, and the pain of the head so acute, that the practitioners were obliged to repeat the blood-lettings five or six times. If this remedy was neglected, the heat was intense and burning; the pains of the head were intolerable; and the disease generally put on a true continued form. But after the tone of the system had been reduced by blood-letting, all the symptoms soon remitted, and left an opening for the exhibition of other remedies.

In tertian fevers of a spurious and violent kind, I have oftentimes met with a similar occurrence. When blood-letting was used too sparingly, the symptoms were usually rendered worse; it was in vain that relief was looked for from other remedies. But when practitioners, urged to it by the obstinacy of the disease, had recourse again to blood-letting, after having used it too sparingly at first, the state of the sick was

immediately changed for the better, the heat abated, and the paroxysms became more mild. Other remedies which had before been exhibited to no purpose, now succeeded in producing a cure.

In the mean time, in simple intermittents, and even in double tertians, provided they do not assume a continued form, one or two blood-lettings will be generally sufficient. Nor ought the practitioner to go beyond this, in case the apyrexia between the paroxysms be perfect, and the fever during the paroxysms so moderate that it can to appearance be borne, without any material injury being done to the functions of the body.

But, under what regulation shall blood-letting be used, in those intermittents which disappear for a certain time, and then recur again? must it be had recourse to as often as they thus make their appearance? It would seem useless and improper to continue to lose blood in cases where it has been frequently lost already; in cases where the disease has oftentimes disappeared for a few days, and then returned again; where its long duration has brought on a cachectic habit of body; and where, from the summer or autumn it has been protracted to the midst of winter. Finally, to include every thing

in a few words, the strength of the system ought to be such as to be able to bear blood-letting, nor should we ever have recourse to it unless compelled by the violence of the symptoms.

We have already observed that blood-letting does not eradicate the cause of the disease, but merely curbs its violence. But what benefit can be derived from such a check, in cases where the vital energy is already too languid? The objections which we here raise can serve only to restrain imprudence. No one but a madman will, in treating a febrile complaint, persist long in attempting to overcome it by very profuse blood-letting. To this practice, when carried to excess, the king of Spain is said to have fallen a victim, and from the same cause several others have, to my certain knowledge, shared the same fate. I do not mean, by what is here said, that blood-letting is to be rejected in every case of fever of long standing. If the pulse demands or admits of it, if the febrile symptoms run too high, it becomes unsafe to neglect this remedy.

CHAP. IV.

Of cleansing the primæ viæ.

BOTH before and after blood-letting, a very light diet must be strictly enjoined, and that even on the days of intermission. This is necessary, at least in the beginning of the disease, and must be considered as laying the foundation for a perfect cure. At the same time diluents must be used, in order that the system may be properly cleansed; for evacuating medicines do not act with success, unless aided by a plentiful use of aqueous drinks. The use of such drinks is particularly necessary to persons inured to exercise, and such as are plethoric, bilious, and of a dry temperament. In addition to these diluents, recourse should be had to injections, for the purpose of evacuating the lower intestines.

These things being done, measures must now be taken to cleanse the primæ viæ, and the

whole intestinal tube. The fomes of the fever does not indeed reside in this part of the system: but the disease may be rendered much worse by depraved, putrid, or bilious humours: by such humours the blood is vitiated, an acrimony is created in it, and heat and irritation are produced; at least from them arises some impediment to the efficacy and success of febrifuge remedies. Experience bears testimony to the truth of this, because, while the stomach and intestines are overloaded with crude humours, the cure of intermittents continues to be difficult. Affections which may be easily removed after proper evacuations, take deep root and become obstinate if such evacuations be omitted or neglected.

But with which ought we to begin, emetics, or cathartics? It will perhaps to some seem best to refrain from emetics, because, at the commencement of the paroxysms, the sick are subject to painful and repeated vomiting. Add to this, that whatever offensive matters remain in the recesses of the stomach, must be necessarily expelled by the efforts and kind offices of nature. But experience has taught us that such efforts are useless; for the fever continues, notwithstanding, extremely violent, and recurs at stated periods. This febrile vomiting, therefore, not only is not useful, but even does mischief, be-

cause in the commencement of the fever there is a general constriction of all parts of the system; hence the stomach cannot be properly evacuated; it is only affected by a morbid irritation, which distresses it, and subverts its action.

The cure of the disease, therefore, calls for a vomiting to be excited by art. It has been already demonstrated that the liver is very particularly affected: it becomes the seat of a collection of vitiated bile: the blood stagnates in the branches of the vena portæ; and unless this stagnation be removed, it will operate in conjunction with the vitiated bile like a second fomes of disease, which readily produces fever. But we cannot with more certainty remove this stagnation and bilious congestion, in any other way, than by emetic medicines: for when these excite vomiting, the liver is, as it were, in a press, where it is agitated by alternate and repeated concussions. By such pressure and concussions the blood is forced out of its small vessels, while the bile is pressed into the intestines, and from thence with the other juices of the stomach discharged by the mouth.

This medicine appears particularly necessary in certain fevers, or in certain epidemic constitutions; for the sick throw up vast quan-

ities of green, tough bile, similar in consistence to very thick oil. But what is truly surprising, or at least of great moment, so rapid is the formation of this bile, that to vomit once is seldom sufficient; for after a short time, such a fresh accumulation of bile takes place, that another paroxysm of vomiting occurs as plentiful as before. But as often as this redundancy of bile returns, so often does fever also recur; whence it can be made to appear by many arguments, that the disease is actually kept up by the bile, a fluid in other respects so necessary to the system.

Nor is there any doubt but stagnations also occur in other parts of the body. That this is true, appears from the power and influence of the cold fit, and also from the irregularity and increased force of the circulation. The same thing may be inferred from the obstructions that so often follow intermitting fevers. But the circulation of the fluids is greatly promoted by the influence and operation of emetic medicines. These medicines rouse the nervous energies, and throw into action the capillary vessels throughout the whole system. Hence the fluids which had begun to stagnate and grow solid, as it were, in the extreme vessels, are again urged onward in the course of circulation.

All these things are confirmed by innumerable experiments. Emetic medicines are, indeed, so efficacious in intermittents, that they oftentimes bring them to a close as it were by a single blow. Should they even survive, their force is much diminished. But, what is of the utmost moment, the system is thus prepared for the use of other remedies, which would have been administered in vain, and even to the injury of the patient, had they not been preceded by the operation of emetics. A very material object, then, in the exhibition of emetics is, to pave the way for the safe and certain use of febrifuge remedies.

It is a circumstance no less certain, that when emetics are neglected, the disease is apt to become stubborn and tedious. In such a case it can be successfully combatted only by emetic medicines. This is an argument greatly in their favour. I have learnt from innumerable experiments, that there is no hope of a recovery without copious vomiting. So efficacious has this remedy appeared to me to be, that I have considered it practicable to prevent impending fevers by its proper use. Nor, indeed, have I been deceived in this opinion. I have kept many persons free from intermittents, though strongly inclined to them, by the repeated use of emetics.

Young persons and adults are alike benefited by the operation of emetics. Nor is the use of tartarized antimony to be considered as hazardous to the former. Experience has taught me that the action of that medicine is milder in children than in persons further advanced in years. Many times, however, to avoid alarming my patients or their friends, I have administered Kermes mineral instead of it, and that with a happy effect. In the case of a female child three years old, who laboured under a tertian fever which also at times assumed the quartan form, I remember to have used this latter remedy. As often as vomiting was excited by it, so often did I obtain for my patient a respite of eight or twelve days. In this manner did the disease continue to the great distress and eminent danger of the child, from autumn throughout the winter, and even to the following summer, when the powers of nature and the change of the season effected a cure.

But it is necessary that vomiting be excited either by this or some other medicines. For if, as sometimes happens, their action be directed to the bowels so as to produce a purging, their effect is not equally salutary. I have remarked this in many cases of disease, but particularly in a certain epidemic constitution, in which medicines usually passed off by the bowels. From an

intestinal evacuation, however copious, the same benefit was not derived, as commonly resulted from vomiting. In this case it appeared to me that ipecacuanna was preferable to tartarized antimony, because it produced with more certainty an evacuation of the stomach.

If it were requisite to confirm these things by the authority of others, arguments might be drawn from sundry medical writings. Vomiting is necessary, says Celsus, in all cases where the paroxysms are introduced by a coldness and a shivering. Galen makes mention of many persons being perfectly cured by vomiting alone. Paulus and Aetius speak also in praise of emetics. Some more modern writers attribute also great efficacy to these medicines. Among these Riverius extols them greatly: in his opinion they are more certain and useful in their operation than any other remedy: he considers them particularly beneficial when administered for three mornings in succession. Such a practice must not, however, be ventured on but with great caution.

There are some physicians who fly to wild spikenard, as the only sheet-anchor of safety in protracted intermittents. Others, according to Jacotius, cure them with salt of vitriol. Some have recourse, and that successfully, to the *aqua*

benedicta of Rulandus; while others do not shrink from the adoption of more powerful medicines, such as red precipitate, and other preparations of mercury. But the human mind is so fluctuating and unsteady, that it cannot without great difficulty be brought to rest at any fixed point. Tossed on the uncertain tide of opinion, it is constantly borne about in pursuit of new discoveries. Hence it is that physicians will neither tread in the footsteps of the ancients, nor be led by the observations of others, to repeat the experiments on which those observations were founded.

CHAP. V.

Of the use of Purgatives.

I WOULD not, however, be understood to mean, that no intermittent can be cured without the use of emetics. Many diseases of the kind are removed or terminate of themselves without any previous vomiting. Some of them are too slight to stand in need of such a powerful remedy. Besides, impediments sometimes occur which forbid the use of emetics. In many cases, for instance, the stomach cannot bear their irritating power. They are particularly hurtful in affections of the lungs. They are also hurtful to cachectic patients, who labour under local affections of other parts. Finally, it would be unreasonable and absurd to harass the sick with emetics, on each return of long continued intermittents.

But when this remedy cannot be called to our aid, purgatives must by no means be omitted. If the stomach only be evacuated by the emetic, or the bowels, as often happens, be but slightly moved, they must be solicited to further discharges. Some practitioners, therefore, are in the habit of employing emetics and cathartics combined together. To me, however, it would seem better to exhibit, first, some gentle purgative, and afterwards when it has begun to operate, to administer an emetic. In this way both the desired effects are obtained. The cleansing of the bowels by means of purgative medicines is so necessary, that, unless it be previously attended to, other remedies are very frequently employed to no purpose. This position can be established by numerous arguments.

It may be laid down as a general principle that a plethora, of whatever kind it may be, is hurtful in fevers. It is necessary, therefore, to expel, as soon as practicable, all depraved and putrid juices from the intestinal tube. This cleansing of the alimentary canal is of the more consequence, in as much as it relaxes the surrounding parts, makes the blood circulate more freely, and opens the secretory and excretory ducts. In consequence of this relaxed state of things, the bile, which acts an important part in

intermittents, will pass off with more ease. The urine also, the free secretion of which is of such moment, will pass more copiously through the kidneys.

Certain remedies, besides their purgative powers, are also possessed of other properties no less useful. Many of these not only act on the intestines, but are truly aperient; they stimulate the liver for instance, and produce a flow of bile from it. Thus, when that viscus is obstructed, laxatives are prescribed, such as burdock-root, vitriolated tartar, and *arcantum duplicatum*: senna itself is also given at times in certain doses, of the effects of which we have satisfactory evidence.

But to speak more particularly of intermitting fevers, it is well known that they have been cured by certain purgatives, and those not mild and lubricating, but stimulating and acrid. Scammony, hedge-hyssop, the powder of cornachinus, the pills of sagapenum by Quercetanus, and the antimonial preparations of Bontius, have been of service in many quartans. The preparation of Riverius composed of calomel and jalap has produced the same happy effects. I am acquainted with a popular or vulgar remedy, which has cured vast numbers of people in the country; it is a powder composed of scam-

mony, turpith mineral, jalap, senna, cream of tartar, rhubarb, cinnamon, and ginger. Similar effects have been produced by another remedy of the same kind, devised by Helvetius, and since his time vended about as a secret. The strength of this nostrum resides in the gum which it contains.

But whatever be the strength of these remedies, it is best that they be not too acrid, else they will prove injurious to those whose stomach and bowels are tender and irritable. Besides, milder remedies are sufficient for the cure of intermittents. In the mean time it is not sufficient that they be administered once; in various diseases of the kind frequent recourse must be had to them, in order to pave the way for a certain cure. This is particularly necessary when there is an accumulation of bile, when the intestines are loaded with a collection of offensive and ill digested humours, and, lastly, when the febrile action is high.

An open habit of body is peculiarly necessary in the course of the cure. It is certain that if the discharge from the bowels goes on gently and as it were spontaneously, and the bile be thus drawn off, the fomes of the fever will be the more readily eradicated. The truth of this is confirmed by several of the phenomena of the disease.

There are many persons, for instance, to whom febrifuge remedies had been exhibited for a long time without any advantage : but while these remedies, when given alone, were useless or perhaps hurtful, they oftentimes removed the fevers, when laxatives were joined with them. After the fevers are thus overcome, they are for the most part ready to return again, in case a costive habit occurs. Nor can the evil be prevented in any other way than by the exhibition of some mild purgative joined to febrifuge remedies.

I know that the sentiments here advanced are contrary to the opinions entertained by many physicians. These consider it wrong to open the bowels in the cure of intermittents. They assert that, after the disease has terminated, it will even return again, in case a purgative medicine be administered. Experience is adduced in confirmation of the truth of this by many writers, and even Sydenham himself sanctions it by his authority. But the circumstances which led him and others to the adoption of this opinion, are wholly unfounded.

It is certain that if at any time purgative medicines, when used in the cure of intermittents, have seemed to do mischief, the circumstance has been owing to some error. Either some necessary preliminaries have been neglect-

ed, or the evacuation of bile itself has not been attended to. When that fluid has begun to accumulate, evacuants too heating and irritating, or such as evacuate but imperfectly, have been administered. It may also have happened that they were not joined with febrifuge remedies, or that they were given in improper doses. No wonder, then, that the fever appeared to increase. But the fault lay in the physicians, not in the purgatives.

As to those fevers which have terminated, and which seem to be cured, their poison may, as formerly mentioned, lie dormant for a long time. It may even be silently accumulated, and thus gather strength. If, when things are in this state, the body be much disturbed by an ill-timed purge, it is not to be wondered at, if the fever which had lain in ambush, as it were, ready to break forth, should suddenly and unexpectedly make its appearance. The febrile poison would not have acted thus, had it been subdued; and had the purgative been administered with the necessary precaution, it would have eradicated the last relics of the poison. The proper use of purgative medicines does not, then, pave the way for relapses.

CHAP. VI.

Of the use of Aperients.

BUT although the necessity for purgatives is great, it does not follow that no intermittent can be cured without them. But we must direct our attention to those occurrences and principles which are most common, and not suffer ourselves to be diverted from them by such as are much less common. In general, therefore, as we have already observed, it is absolutely necessary to have recourse to purgatives in the cure of intermittents.

There are, in the mean time, cases in which the evacuation of the intestines can be less readily dispensed with than in others. If, for instance, the disease be of very long standing; if the abdomen be tumid or hard; if the skin be tinged with bile; if the urine be thick or high coloured; finally, if the habit be cachectic in

consequence of obstructions ; if, I say, any or all of these circumstances exist, the medicines called specific febrifuges are of no avail ; the cure must not be attempted with them, until the impediments be first removed by a discharge of the vitiated humours.

But, for the complete discharge of these humours the evacuation of the bowels is not alone sufficient. Impediments exist in many other parts of the system, which must also be removed ; thus, the various secretory and excretory passages or ducts must be opened ; motion must be restored to the stagnant fluids ; their fluidity which is partially lost must be restored again, and the bile must be recalled to its own proper ducts, and to the cavity of the intestines. Recourse must, therefore, be had to diluents, aperients, refrigerants, and saponaceous medicines, and to these must be added some purgative medicine, for the purpose of keeping the bowels open.

The effects of the juices of herbs properly prepared in removing obstructions of the abdominal viscera are truly surprising. This may be inferred from the influence of green herbs on the bodies of horses, cattle, &c. These animals are purged, and become lean in the spring ; their fluids are made to circulate more freely, and

their secretions are rendered more free and active. The same thing may be done by a physician, if to aperients and deobstruents he adds a mild purgative just sufficient to move the bowels.

What I have found best for unlocking the passages of the liver is a purgative decoction or beverage, made for the most part of wild burdock, succory, hart's-tongue, and other herbs of the kind. To this I have mostly added some purgative salt, such as sal glauberii, or arcanum duplicatum. This beverage will generally remove the obstructions unless they be uncommonly obstinate. It will never, however, prove entirely efficacious, unless it move the bowels two or three times a day.

These laxatives and aperients are necessary not only in fevers of long standing, and in such as are kept up by obstructions; there are others of recent origin in which the same remedies ought to be used. Some fevers, for instance, attack and run on with great violence; in these the viscera are parched with extreme heat; the liver is particularly affected; the bile is of a deep yellow or green colour, the fæces are highly offensive; the urine is red or of a brick-dust colour; cases of disease where these symptoms prevail resist common febrifuge remedies, and

unless recourse be had to such as open the passages of the body, the febrile poison cannot be readily vanquished.

In cases of this kind, I have derived advantage from putting my patients for a week or longer on the use of aperients and laxatives. To some of these I have prescribed the juice of succory, borage, and bugloss, with sal glaukerii, or some other saline purgative; to others a decoction or beverage prepared from the same or some other herbs, with tartarum vitriolatum in it; and, lastly, cases have occurred to me in which my patients derived the greatest benefit from the use of whey. Whey is a liquid which contains the juices of herbs, prepared and concocted, as it were, in an animal laboratory. It is also impregnated with a quantity of vegetable salts, which sometimes operate actively as purgatives.

This mode of treatment very seldom disappoints our expectations. Such is the extent of my confidence in it, that as often as I have met with an obstinate case of intermitting fever, I have had recourse to the foregoing, or such like remedies. Of such remarkable efficacy have I considered these remedies, that in many cases I have not hesitated, after the exhibition of general remedies, to continue some time in the use

of aperients. In this way the system was the better prepared for the action of febrifuge medicines.

There is yet another remedy in which I place great confidence, when the patients are willing to submit to it. After their bowels are sufficiently evacuated, I put them on a watery regimen for three or four days. During that time, I prohibit them from using any other kind of drink or food. By thus drinking six or eight pounds of water a day, the fever is almost entirely removed. I consider warm water as the most efficacious, yet cold water will answer in the summer season. This method seldom fails of success. It has succeeded with me in removing obstinate fevers, which had resisted every other mode of treatment. If some relics of these fevers still remained behind, they were easily subdued, and that by gentle means. Is it not surprising that we should ransack Asia and America for remedies, when more efficacious ones are every where to be found

CHAP. VII.

At what time the remedies mentioned in the foregoing chapters are to be administered.

IT remains to consider, at what time the foregoing remedies are to be employed. Blood-letting may be practised both during the paroxysm and during the intermission. When employed during the paroxysm, it is intended to break the violence of the fever, and of its concomitant symptoms; when during the intermission, it is used as a prophylactic, to render the succeeding fits lighter, and thus to pave the way for other remedies.

These circumstances are so plain as scarcely to require any directions. But such has been the rashness of some men, that they have ventured to open a vein during the cold fit. This practice is unreasonable and hazardous. When

the pulse is so depressed as to be almost imperceptible; when the blood scarcely circulates; when the vital principle seems to be already overpowered, what benefit is to be expected from blood-letting? Can it be had recourse to without danger in old persons, as such are sometimes known to expire under the violence of the cold fit?

During the cold fit is a time equally improper for the use of other evacuants. Those in particular which act with force are hurtful. Emetics, therefore, cannot be ventured on, although the patients be affected with nausea and vomiting. It is not in this as it is in that vomiting which arises from a superabundance or an acrimony of the humours. In the cold stage of fever, the action of the stomach is inverted by nervous irritation, and an affection of the liver. That organ like all other parts of the system is contracted. It does not, therefore, obey the action of remedies as in a state of intermission or health. These remedies can only produce anxiety and very distressing pains, without being able to excite any discharge from the constricted vessels of the viscera.

It must be confessed, however, that even under such circumstances, emetics do sometimes succeed. Vomiting, says Riverius, excited at

the commencement of a paroxysm renders it milder and shorter. There was lately an English physician, who, during a practice of twenty years continuance, was in the habit of giving an emetic at the commencement of the cold fit. In case excessive tremors forbade this, he usually administered it at the commencement of the hot fit. Somewhat similar to this was the practice of Asclepiades. Celsus more judiciously exhibited only tepid water slightly impregnated with salt, for the purpose of exciting vomiting. Notwithstanding these circumstances, any inverted action of the stomach, unless produced by warm water alone, is to be dreaded.

Sydenham with more propriety timed his emetic so, that its operation might be terminated previously to the access of the paroxysm. So far was he from believing that a tumult excited in the viscera at the beginning of the fever could be beneficial, that he recommended to his patients a gentle anodyne after the operation of the emetic, and immediately before the attack of the paroxysm. Both, however, had better be omitted.

Some practitioners have, with equal indiscretion, administered purgatives during the cold stage, or, what is still hurtful, at the very commencement of the hot stage. They did not, or

would not see, that when the system is constricted in every part with cold, or agitated by heat and motion, the bowels cannot well be opened, and that the application of irritants must excite the greatest commotions. Those physicians have acted with more prudence and discretion, who have exhibited such medicines previously to the commencement of the paroxysm. Instead of four hours before this commencement, as some writers direct, the purgative medicine should be given six or eight hours before it. This is the way to render it useful, as appears from various examples. Some physicians have known the disease to be removed by administering cornachinus in powder, a certain time previously to the paroxysm.

So averse have the more skilful physicians been from the use of purgatives, in the cold stage of fever, that they have, on the other hand, used remedies of a heating nature. Some of these have given three, six, and even twelve grains of pepper: others have had recourse to theriaca, and assert that by these means the fever was removed. Others again have prescribed heating substances and febrifuges combined, and that with the same degree of success. Nor, indeed, does this practice appear, at first sight, so contrary to reason as does the use of purgatives and emetics during the cold stage. When the whole

system is affected with cold and shivering, heating substances would seem rather useful; but they are, notwithstanding, to be rejected. They generally augment the violence of the fever. If, however, the vital principle seem to flag, and the violence of the cold stage be extreme, it is admissible to have recourse to some gentle cordials.

The body, therefore, is not only not to be purged, nor stimulated by heating medicines, during the cold stage of fever; but, on the other hand, it ought not to be disturbed at all; tepid water alone, or mixed with some gentle cardiac should be taken in. Nor ought the system to be in any measure agitated, during the succeeding hot fit. All heating substances and purgatives will be hurtful. Acid, or acescent drinks are better calculated for moderating the febrile heat. Even water alone will suffice, particularly when the sweat begins to flow. Thus, the fluid which passes off by the skin, is restored by the mouth, and the grosser humours are sufficiently diluted. That the aqueous drinks, however, may be the better mixed with the blood, let some syrup be added, such as syrup of violets, syrup of citron-peel, or let some Rhenish wine* be given

* The propriety of adding wine, or any other highly stimulating liquid to the drinks of patients in the sweating stage of intermitting fever, is, at best, problematical. I ought rather to have said, that

to prevent the sick from being too much exhausted. In this way will the sweats be properly regulated; for if they be too profuse, they will prove hurtful; the fever will become worse, and may even assume a continued form.

As to aperients, it is scarcely necessary to give any directions respecting their use. Provided they be lenient, they may be given at any time. Vegetable ptisans holding nitre in solution, and lemonade, are highly useful during the continuance of the fever; so, likewise, are weak infusions of borage, bugloss, and other beverages of the kind. But those articles which are possessed of much activity, and which are intended for the removal of obstructions, ought not to be used before the termination of the paroxysm; indeed their exhibition must even be deferred till the primæ viæ be cleansed by emetics or purgatives. This precept ought to be attended to, at least in the commencement of fevers. But when they are of long standing, or when the sick have relapsed into them, as their character is changed, a change must also take place in the method of exhibiting the remedies. But this subject will be considered in a subsequent chapter.

the practice is hazardous and should not be adopted. On such occasions, mild, diluting drinks are all that are, in general, either necessary or admissible.....*Trans.*

CHAP. VIII.

Of the various methods of curing fevers, and first, of the cure by means of sudorifics.

ALTHOUGH the remedies already mentioned, possess great power, they only pave the way for a cure. We pass on, therefore, to the consideration of others, which have a more particular or specific relation to intermitting fever. There are two methods in which the cure of this disease may be attempted. The first consists in endeavouring to prevent the occurrence of the cold fit by mild sudorifics. To enable the reader to judge the more correctly of these remedies, or their effects, we will premise a few remarks, founded on observation and experience.

Previously to the sick being seized by the cold fit, half an hour for instance before the im-

mediate attack, all the functions of the system go on, at times, without any disorder. The patient does not seem to be at all infected by a febrile poison; nor does he experience any sensation to warn him of the approaching paroxysm. To produce the paroxysm, then, the poison must burst into a blaze, as if fire were applied to it. But cannot this flame be prevented, or, which amounts to the same thing, while the poison is yet inactive, can it not be smothered so as to prevent it from breaking out in the form of a cold fit or fever?

Such a project certainly does not appear unreasonable. On the other hand it seems highly probable, that if a sweat be excited before the attack of the cold fit, it will be entirely prevented. But, in case of its prevention, there will be no congestion or stagnation in the liver, the auricles of the heart, or the lungs. Besides, it would seem that part, at least, of the febrile poison may be dissipated. Thus, if the skin be constricted, the more gross fluids are accumulated in its vessels and excretory tubes; if in this state of things, a very copious sweat breaks out, the obstruction will be removed through the cutaneous pores. But the same thing will occur with respect to the state of the viscera, when a febrile paroxysm is impending. Therefore the febrile

cause if not entirely removed, will be at least greatly weakened.

But in medicine, all reasoning is uncertain, unless confirmed by experience. Even experience itself, teaches us many things that do not precisely accord with what is here laid down. It is certain, indeed, as already mentioned, that those sweats which follow the paroxysms do not always check the febrile action. Yet those fevers where no sweats occur, generally continue longer, and rage with more violence. Those physicians, however, who, with a view to prevent a paroxysm, endeavour to force a sweat by great external heat, or who administer for the same purpose a heating decoction of guaiacum or sassafras, generally render the disease worse.

From these considerations, however, no well founded arguments can be drawn against all kinds of sweats. Those sweats, for instance, which succeed the paroxysms are morbid, or constitute in reality, a part of the disease; for they frequently occur while the bowels are still parched with the febrile heat. It is, therefore, in intermitting fever, as it is in eruptive fevers; sweats oftentimes flow copiously without affording any material relief to the sick. In both cases, the more fluid parts are thrown on the

surface of the body by the febrile action, while the fomes of the disease still remains within.

With respect to sweats excited by too much external heat, or by the force of heating remedies, they are wholly unfavourable to the cure of fevers. Thus, the stimulus of guaiacum is too acrid, and excites by far too great a degree of heat in the bowels. So hurtful, at times, are the effects of that medicine, that I have seen cases of jaundice produced by it. But whatever thus disorders the functions of the viscera, even although it produce the most copious sweats, cannot be a remedy for fever. Let it be laid down then, as a principle, in the cure of fevers, that the body must not be overheated. The force of the disease is necessarily increased, if the heat in the viscera be increased.

Those sweats, therefore, are most beneficial which are not forced from unwilling nature, but which flow at the proper time and in a gentle manner. To procure such sweats, the following circumstances must be attended to. First, too much heat must not be excited: Secondly, aperients should be always mixed with sudorifics: Thirdly, in certain affections of the liver, or of the other viscera, they must not be exhibited any more than they must in the highest state of cachexy: Fourthly, and lastly, where there

is a turgid state of the blood-vessels, or when the stomach is loaded with vitiated humours, a cure by means of sweating must not be attempted.

These things being attended to, and the necessary general remedies being premised, that method will be most salutary and safe, which attempts the cure of intermittents by sudorifics. Yet these remedies will be more useful in the beginning than in an advanced stage of those diseases.

CHAP. IX.

Of the mode of exhibiting sudorifics in the cure of fevers.

AFTER having premised the foregoing general rules, it would seem scarcely requisite to give any particular directions on the subject. But to close up every avenue through which error might find an entrance, we will specify the time most suitable for these remedies; we will then point out the remedies to be selected as most useful; and, lastly, describe the method to be observed in their exhibition. After having gone through these several heads, we will endeavour to make it appear how far this method of cure is to be relied on.

As to the time, the patient must be allowed a sufficient degree of rest to refresh his system, agitated by the fever and debilitated by the profuse sweat. But as soon as practicable, it will

be proper to have recourse to the sweating plan. Yet experience has oftentimes taught me that it will be sufficient to prevent the cold fit, if the medicine be exhibited three or four hours before its access : but if given at a later period, it will be either useless or very nearly so : the humours of the body cannot then become sufficiently impregnated with it, and they consequently, will not be prepared to pass off by the pores of the skin.

Those remedies which appear to me to accomplish the object in view most safely and certainly, are certain medical substances, endowed with penetrating yet mild qualities. The principal of these are sarsaparilla, burdock, bitter-sweet, and male speedwell, all of them aperient remedies. I am well persuaded that other remedies would effect the same purpose, but I am here laying before the reader the result of my own experience only. I do not consider it necessary that all these articles should be prescribed at the same time ; I have sometimes exhibited one or another of them singly, with great advantage, and that in the cases of many sick persons. I will adduce one very memorable example in confirmation of this.

An old man, aged eighty, had experienced two paroxysms of a quartan fever. So violent

had the cold fit been, that he was threatened with certain death in case of another attack similar to the two former ones. Deeply affected at this melancholy prospect, I preferred a sudorific medicine to all others. I therefore exhibited a decoction of sarsaparilla and burdock with sal ammoniac. By this remedy the cold fit and paroxysm were prevented, nor did any vestige of the fever remain behind. Perhaps this cure might, by some, be attributed to the sal ammoniac. But the decoction has at other times succeeded equally well with me, without the addition of that salt.

In the mean time the mode of administering this remedy, may contribute much to its force and efficacy. The decoction must be drank not sparingly, but in large quantities. Five or six pounds of it, for instance, ought to be used on every day of intermission, with this precaution, that previously to the time of the occurrence of the fever, the patient compose himself in bed. These previous steps being taken, the sweat will be brought on the more readily, if the plentiful use of the diaphoretic decoction be still continued. Nor must this remedy be laid aside, even when the body begins to be covered with moisture, but should be persevered for several hours.

However safe this administration of sudorifics may appear, I have been sometimes apprehensive of exciting too much heat by it. To prevent this, it appears advisable to prescribe, immediately after the remission of the fever, a warm infusion of borage or bugloss, which will be rendered the more cooling by the addition of a moderate dose of nitre.

What has established in my mind the utility of this mode of exciting a sweat, is a common and therefore a valuable remedy, of which I have had some experience. When I have been desirous of employing more lenient sudorifics, I have tried the efficacy of warm water. I have directed, for instance, a large quantity of this to be drunk a few hours before the paroxysm. Contrary, in some measure, to what I was prepared to expect, the cold fit was prevented as if by a charm. This result I have witnessed not only once, but frequently, nor indeed have repeated experiments which I have made, left in my mind any doubt as to its reality.

But whatever may be thought respecting these particular medicines, it is certain that the method of removing intermittents by sudorifics, is in various cases absolutely necessary. This method must be had recourse to, if the cold fit be violent, and dangerous; indeed there is no other

way in which the cold fit can be counteracted. I would not, however, assert that this method eradicates the fever so perfectly, as to render it unnecessary to have recourse to any other remedies to complete and confirm the cure. Perhaps the effects of the febrile poison are only kept down by sudorifics, while the poison itself still lurks in the system, and silently pervades all its parts. Those who have been relieved from intermitting fevers, cannot, therefore, be perfectly safe, unless the poison has been thoroughly eradicated by specifics: this, at least, is in general the case.

CHAP. X.

*Of attempting the cure of fevers by specific medicines :
and first, an inquiry what these specifics are, and
whether or not, any emetics or cathartics are to be
considered as such.*

THERE is, therefore, a more safe and certain method for the removal of fevers, namely, that which consists in curing them by peculiar, appropriate, or specific remedies. Medicines of this kind, have been earnestly sought for in every age, and many practitioners have suffered themselves to be persuaded, that such were actually found, when in fact they were still wanting. Physicians, however, left nothing untried in this inquiry. We have already treated of emetics and purgatives : in these remedies certain physicians, and those not of inferior reputation, have reposed unlimited confidence. Some select medicines of this class have even been vended about as secret nostrums.

We have already said, that emetics and purgatives do much towards the cure of intermittents, but that they do this only by paving the way for other remedies. Since, indeed, such is the nature of intermitting fevers, that they may sometimes be removed by a shock, or a sudden change in the natural movements of the system, it may so happen, that they may be cured by the action of emetics or purgatives. Besides, such may be the state of the body, that, after the evacuation of the stomach and intestines, the functions of the several parts may be restored to health. Finally, the febrile poison may be eliminated by a kind of crisis, and, as it were, by a single exertion. But this success is only accidental. These are not the proper remedies for intermittents, nor are they calculated to overcome the febrile cause of themselves.

But although these remarks are true in general, I would not have them considered as applicable to all medicines of the kind. There may be in some medical articles which excite vomiting and purging a power peculiarly febrifuge. No doubt but this may be the case with respect to Riverius's remedy for quartans. The precise nature of that preparation is not known, but it appears to contain both mercury and antimony in its composition.

I am also acquainted with a vegetable substance of a purgative nature, long celebrated in this country as a febrifuge, and which is even purchased up at a considerable price. It is the cuticle or external covering of the sea-lettuce. This, when dried before a gentle fire, and reduced to a powder, is exhibited in doses of a scruple, and continued in this manner for several successive days. Some practitioners have preferred giving it infused in milk.

There is another milder purgative, which was formely a secret nostrum, namely, cream of tartar, exhibited frequently in doses of an ounce. This article is at once cooling, purgative, and antiseptic; whence in the commencement of fevers, it appears to me to be a remedy not to be slighted. The same thing may be said of the nostrum of Mynsichtus,* which has oftentimes cured intermittents when other remedies had failed. I have myself prescribed that remedy sometimes with the happiest effects. It is cooling, purgative, and aperient, and is peculiarly calculated for correcting bile, and removing hepatic obstructions. Hence it is entitled to a respectable rank among febrifuge remedies.

* The formula of this nostrum is not mentioned by our author.

Equally to be esteemed is the febrifuge of Riverius, which is composed of vegetable alkali and sulphuric acid. From the union of these two articles arises a salt* not dissimilar to that which constitutes the foregoing nostrum of Mynsichtus, as appears from a chemical examination of it. But I have ascribed very different virtues to magnesia alba, which some practitioners use as a febrifuge. This, however, is not always alike efficacious. It is sometimes, however, when mixed with cream of tartar, prescribed with happy effects. I once knew a physician who used an infusion of it in wine as a purgative.

But although remedies of this kind do at times much good, we must not in most intermittents trust to them alone. They very frequently disappoint us, or produce only a temporary suspension of the disease. It is of great importance, however, to be acquainted with them, in order that they may be joined with active febrifuges, or substituted occasionally in place of them. There are certain temperaments, and certain irregular fevers, to which remedies of this kind are best suited. The physician, therefore, must be supplied with such a stock of remedies, as will enable him to accommodate his practice to different cases.

* Sulphate of pot-ash.

CHAP. XI.

Whether or not a true febrifuge power reside in certain sudorifics, bitters, aperients, and other remedies.

WE have already treated of sudorifics and the mode of administering them. These cannot be considered as true febrifuge remedies, if they only excite sweat. To deserve to be accounted antidotes to intermitting fever, it is necessary that they should possess a certain peculiar or specific power. In theriaca no such power resides, although it was attributed to it by the ancients. How far such a remedy is to be trusted, appears from Galen himself. That writer remarks, that by the exhibition of it, a simple quartan was converted into a double and even a triple one. He mentions the same thing as having happened to Eudemus the philosopher. It is to be lamented that encomiums are frequently bestowed on medicines of this description, which are not only useless, but even hurtful.

Physicians have had recourse to other remedies, better calculated for the cure of fevers. Even the ancients themselves, suspected the existence of a febrifuge power in bitters. They therefore, made trial of gentian, germander, the lesser centaury, and a species of trefoil, and that oftentimes with happy effects. They have spoken highly of the lesser centaury in particular; but I have observed it to excite very great heat, and not unfrequently to increase the violence of the fever. Yet it cannot be denied, but that, when added to the peruvian bark, it has been sometimes of great service; for it has subdued fevers which had resisted other remedies. It is said, that if the system being first properly prepared for it, a decoction of it be given combined with laudanum, it will be productive of still better effects. The same thing is said respecting an infusion of the flowers of broom.

Respecting other bitters, I can say nothing. Their effects are uncertain, sometimes even hurtful. Thus gentian is not undeservedly blamed on this score, in as much as its bitterness is acrid, and apt to excite heat. What appears no less foreign from the cure of fever, many of them have astringent as well as febrifuge properties. Some practitioners have exhibited alum, others plantain and cinquefoil. Alum certainly possesses some degree of anti-febrile power; for

patients have taken it dissolved in water with advantage. Many have declared plantain to be possessed of the same power, and have exhibited it either immediately before, or about two hours before, the accession of the paroxysm. I have indeed known obstinate fevers removed by a beverage in which the leaves of this herb had been boiled. Cinquefoil has in the mean time succeeded still better, as also the bark of the root of the wild plum-tree. Still, however, these remedies ought not in my opinion to be often used; for when they constrict parts that contain the febrile poison, it is apt to remain in them at a greater depth, and with more permanence.

With more justice are praises bestowed on certain articles possessed of a penetrating power, such as aperients, and saponaceous substances. Among these, burdock holds a conspicuous place, while it is at the same time a sudorific. By this remedy Henry III. king of France, is said to have been cured of a quartan fever. Many other similar instances are mentioned. The herb, speedwell, possesses the same power in an equal degree, according to Cesalpinus, who was a most able and accurate judge of these things. Finally, of the same efficacy and value is the juice of the rape-root, which is so highly extolled by Crato. Notwith-

standing what has been said, daily experience teaches us that we must not rely on these remedies, as true febrifuges. Although they have cured some, they have failed in the cure of many more.

It appears to me that more confidence is to be placed in the aperient salts, of which we have already treated, or in the febrifuge salt of Sylvius, to which physicians, and even the author himself, have given a higher character than it deserves. Purging salts, have, indeed, at the same time a febrifuge power, but this power does not always act with certainty; to these, therefore, sal ammoniac is to be greatly preferred. This remedy, indeed, possesses great efficacy in the removal of fevers which are even highly obstinate. Hence, at times, when other remedies prove ineffectual, we are forced to have recourse to that salt.

Finally, the effects of the salts of Tachenius must be referred to an aperient and penetrating power. The virtues of the plants from which they are extracted cannot still remain in them; for their principles are changed by the action of the fire. They are partly alkalescent, and contain also a portion of thick oil; whence, being of a saponaceous nature, they are extremely well calculated for the removal of obstructions.

But it is not alkaline salts alone, certain earths also possess qualities calculated for the removal of intermitting fever. Thus, burnt eggshells are exhibited with happy effects in that disease. The truth of this is established by many experiments detailed in medical writings. To these earths vegetable alkali is sometimes added, and I once knew a physician who used a mixture of these two articles with very flattering success. These earths first calcined and then mixed with salt of tartar, have been used by Riverius in various cases of disease. The mixture was usually dissolved in simple water, and given to the sick in solution. I have, myself, sometimes used this remedy with success in obstinate quartans. I would not, however, recommend it to general use, as it seems to be possessed of too much acrimony.

There are other remedies, and those sometimes of opposite qualities, which physicians use in practice, such as aromatic antiseptics, which stimulate the system, and narcotics, which act as sedatives. Of the class of stimulants, I shall treat of only two, the efficacy of which is worthy of notice. The ancients themselves spoke in the highest terms of worm-wood, which has been also used with success by a late Italian physician. Chamomile is spoken of as no less efficacious by a physician of Portugal, and Morton considers its

flowers as highly useful. But if these vegetables do possess febrifuge virtues, a circumstance which cannot be denied, it must, notwithstanding, be confessed that they more frequently disappoint our expectations, and even excite a pungent heat, which is very unfavourable to the cure of fevers.

As to narcotics, we must acknowledge with Riverius, that they possess some efficacy in preventing the paroxysms of fevers. Trallian used opium, which, combined with castor and some other articles, he exhibited two hours before the fit as a certain remedy. Heurnius recommends the same, combined with some other medicines, in terms equally strong. I knew a physician who was in the habit of exhibiting it in combination with camphor, with the happiest effects. I have no doubt but opium combined with saffron would be efficacious in removing the cause of fever. Both of these articles possess some febrifuge virtues, besides, that saffron is gently aperient. They ought, however, to be taken with caution.

Finally, that nothing might be left untried, some physicians have had recourse even to poisons themselves. They have exhibited arsenic, and have succeeded with it in the removal of many intermittents. Some of the patients,

however, thus cured, have afterwards died of phthisis. There is a certain vegetable poison, namely, the bean of St. Ignatius, which is less deleterious. I was acquainted with a man who was in the habit of exhibiting it to people in the country with the greatest success. There is also a remedy used by great numbers in this city, and that not without success. Its efficacy depends on its being composed in part of the bean of St. Ignatius, an article which most people dread, and which physicians condemn as a poison.

Inunctions and external applications to the wrists are more in use among the common people than among physicians. Inunctions and frictions along the spine were first instituted to remove the sensation of coldness, which is usually experienced in that part. There is no doubt, indeed, but the friction and motion, as well as the power of the medicine with which the sick are anointed, may sometimes be of service. These remedies, however, are not to be confided in, nor ought their application, indeed, to be opposed, in case any person believing in their efficacy, wishes to use them.

As to applications to the wrists, if any relief be derived from them, it is not to be considered as depending on any power specifically

febrifuge. Certain cures, which are truly surprising, are rather to be attributed to motion excited in the whole or a part of the body by the application of a stimulus. There are certain unguents, for instance, which, if rubbed on a particular part of the body, will produce eruptions in various other parts, and even excite motions in the viscera themselves. The same, or something similar happens in the use of *epicarpia*, or applications to the wrists. If the ranunculus of the meadows be applied to the hands and wrists, heat, pain, and excoriation are the consequences. By the force of this stimulus, and the effluvia making their way to the internal parts, the fever may be eradicated so as not to revive again.

We must not, however, imagine that fevers can be removed by external applications, which possess no stimulant power. Although the effects of such remedies are extolled by writers of high respectability, they are, notwithstanding, very doubtful. If there be any truth in the praises bestowed on them, their efficacy arises from the power of certain subtle effluvia, which make their way into the internal parts of the system. But let those persons believe in the efficacy of such remedies, who have had satisfactory proofs of it.

CHAP. XII.

Of the cure by means of the peruvian bark.

THE foregoing remedies, not very certain, and sometimes, not very safe in their operation, were succeeded by the peruvian bark. This divine discovery was unknown to our ancestors. Nor did our own age come willingly into the use of it. A few physicians were its advocates, but many suspected it of some deleterious qualities. But uniform and successful experience overcame at length their obstinacy and their fears.

I do not mean, however, to insinuate, that all controversies and complaints on this subject are terminated. There are countries in which this celebrated remedy is still in bad repute. Among the Dutch and the Germans, the common people reject it entirely. But all the charges which they bring against it, are to be attributed

to an improper method of using it. Among the Spanish, the French, and the English, it is no longer held in suspicion. Its use is sanctioned by general approbation.

So efficacious and innocent is it, that among all the sick persons to whom I have ever prescribed it, I have heard no well-founded complaints respecting it. It not only suspends the fever for a time, but, if the system be properly prepared, eradicates it entirely. It is in the highest degree friendly to the stomach, promotes perspiration, acts favourably on the blood and nervous system, and is a powerful antiseptic in the *primæ viæ*. But as the mode of using it ought to be accommodated to various temperaments, and various descriptions of fever, there are several preparations of it, with which it is necessary to be acquainted.

Some physicians employ this medicine in the form of an extract, others of a decoction, others of an aqueous infusion, and others again of a spirituous tincture.

But that the febrifuge virtues may be the better extracted, physicians have recourse to another menstruum more suitable for the purpose. The bark, for instance, is infused in some generous wine for the space of twenty-four hours, or

it is exhibited in powder in a glass of that liquid. In this latter case the extract is made in the stomach itself. When the extract is thus prepared, whether within or without the body, it is a remedy of a very active and penetrating nature. It differs greatly in its powers both from wine and spirits, in consequence of the gummy and resinous principles of the bitter febrifuge which it contains.

As to the efficacy of the remedy thus prepared, it cannot be denied that it has been beneficial to many. I can, myself, from experience, bear witness to its activity; but its strength and utility are increased, by adding to it some spirits of wine; whence it would appear that the febrifuge virtue of the bark resides principally in its resinous part; for it is best extracted by a spirituous menstruum. A remedy so heating as this preparation is, ought, however, to be given with caution, else it may at times prove hurtful.

When the bark alone in whatever way it may be administered, appears to be insufficient to remove certain intermittents, physicians have added many things to it as auxiliaries. Some, to increase its efficacy, have mixed aromatics with it, such as Virginian snake-root: others, for the same purpose, have added certain febrifuge medicines to it, particularly bitters: many have

joined aperients with it, that it might thus gain access the more readily to the internal recesses of the system: finally, a very considerable number have, for the accomplishment of the same end, called to its aid certain salts which are possessed of a searching or penetrating power, such as salt of wormwood, and sal ammoniac, the latter of which is itself, as we have already mentioned, highly useful in obstinate intermittents.

Of all these and many other remedies it is not my intention to treat at large. I shall, nevertheless speak of two or three of them, which are certainly capable of being highly useful. If, in some obstinate cases of intermittents, the lesser centaury be added to the peruvian bark, it may prove a very efficacious remedy. It appears that the flesh of the viper dried, reduced to powder, and exhibited with the bark, has been equally effectual. By these mixed remedies many persons have been relieved from intermittents, after having tried all other medicines in vain. But the following remedy which is purchased at a very considerable price, seems to contain the virtues of both the foregoing: viz. Take,

Of peruvian bark, two drachms.

Of millipedes, powdered, one drachm.

Of lesser centaury, do one drachm.

Let this mixture be infused in eight ounces of generous wine, and given to the patient in

bed. At other times the powders are given in honey in the form of an electuary.

But very often the primæ viæ are loaded with vitiated humours, which may serve to keep up the fever. Purgatives are, therefore, in particular, added to the bark. The bark itself, indeed, purges many persons, but, a circumstance which is peculiar to it, it considerably increases the action of other purgatives; hence small doses of them only need be added to this febrifuge. By some physicians a species of the lily, and also the agaric have been used as remedies. The latter article enters into the composition of one of our nostrums, which proves oftentimes efficacious. I have, myself, known it to be exhibited with advantage, to many people in the country. This remedy, however, should be administered with great caution, on account of the heat or feverish action, which is apt to be excited by the irritating quality of the agaric. Persons of tender and irritable viscera ought to reject it altogether.

Some physicians are in the habit of exhibiting peruvian bark, mixed with stronger purgatives, such as *pulvis cornachini*, or jalap; nor can it, indeed, be denied, that this composition has been sometimes found useful. It is, in general, however, better to give the bark in

combination with such doses of arcanum duplicatum, or vitriolated tartar, as may serve to keep the bowels moderately open. I have been in the habit of administering the *pulvis Stablii* in combination with the bark with singular advantage.

But my favourite remedy is, a febrifuge and purgative decoction prepared in the following manner. Take of peruvian bark, coarsely powdered, an ounce, or an ounce and an half; boil it in two pounds and an half of water to two pounds; towards the end of the process, add of the leaves of senna, half a drachm, and of the leaves of the borage and bugloss, of each, half a handful. Instead of the senna, I oftentimes use some purgative and aperient salt, such as epsom salt, or sal polychrest, to the amount of four drachms. This preparation, consisting as it does, of purgative, cooling, aperient, and febrifuge articles, is calculated to answer every indication that can occur in the treatment of common intermittents.

CHAP. XIII.

Of injurious effects produced by the peruvian bark.

BY the mixture of all these articles with the peruvian bark, its efficacy has appeared to some physicians to be diminished rather than increased. By the bark alone, say these characters, vast numbers have been and still are cured. There are places in which intermittents are endemic ; yet most persons who are attacked by them, use scarcely any thing for their removal, but the bark alone. Nor, if we may give credit to report on the subject, was any other remedy necessary in those times when the bark was first introduced into practice. At that period, indeed, this article was of better quality than at present, and not liable to be fraudulently mixed with other substances. Some physicians assert, that if it be carefully selected even now, it will certainly cure intermittents, when given even in

a moderate dose, and that without any medicines either preceding it, or being joined with it.

But these instances must not be considered as universal. The bark if exhibited alone, may be oftentimes hurtful. It is bitter, astringent, tonic, and aromatic. If given, therefore, in certain cases or temperaments, it excites heat, produces dryness over the whole skin, injures the stomach, sometimes occasions pains in it, affects the lungs, and extends its unfavourable influence even to the blood itself.

But this remedy may produce no less injury in other parts of the system. In some cases, after it has removed the fever, pains still remain in the hypochondriac regions. It frequently attacks even the spleen itself. That viscus, as we have already mentioned, becomes enlarged, and even inclines to suppuration. But I have learnt from experience, that this affection is to be attributed to peruvian bark as frequently as to the fever itself.

Another objection against this remedy is, that it is not always certain in its effects. Many fevers, and those really intermittents, cannot be cured by it. Even when it appears to succeed, it not unfrequently happens, that it only suspends the disease for a certain time. Many pa-

tients worn out, as it were, by this remedy, and by an irregular fever, have dragged on a miserable existence during the autumn and winter. Peruvian bark alone, therefore, has been considered as nothing but a palliative remedy, and is accounted only such by some physicians even at the present day.

But a more weighty objection is, that this remedy oftentimes suffers the febrile poison to remain in the system in a latent state. We see many persons who, after the removal of the fever, languish under a pale, tumid, yellow countenance, an enlarged abdomen, and anasarca of the legs and other parts of the system; they appear to have only exchanged their original disease for a secondary one that is much more dangerous: for there are many who recover from it with difficulty, or at least not till after a tedious lapse of time.

We meet with others who experience certain anxieties or uneasinesses at those times at which the paroxysms had usually occurred. Others again fall into a deep sleep, or stupor, about the same hour. Some, having the cause of the disease directed to other parts of the system, are attacked by a diarrhœa or dysentery. Finally, sometimes when the fever is checked, wandering spasms occur in place of the regular

paroxysms, and excruciating pains at the same time attack the limbs, bowels, breast and head.

From the very cure of the fevers, then, an argument of some weight arises against the efficacy of the bark alone. When the preceding symptoms assume the place of the regular paroxysms, a renewal of the fever, as we have already observed, becomes sometimes necessary for their removal; for it has been remarked that they disappear on its return, and vice versa. Some physicians, on discovering this, have sought not for a febrifuge remedy, but for one calculated to recall fever; and they declare that they have found spirits of sal ammoniac to be possessed of that property.

From these circumstances it appears, that the peruvian bark is calculated to restrain the effects of the febrile poison, rather than to destroy the poison itself. For the poison may in fact remain sound and untouched, as it were, even after the paroxysms have disappeared.

No wonder then that some physicians decline considering this remedy as a true antidote to intermitting fever. For, besides the restraining of the paroxysms, which may be accomplished by other remedies, such as astringents

and bitters, it is further necessary that the febrile poison be altered in its nature or expelled; but this expulsion is effected either by the natural action of the system, the force of the paroxysms, or by other auxiliary remedies which do not possess any true febrifuge power.

But if by the peruvian bark the occurrence of paroxysms may be prevented, by an improper and unskilful use of that remedy, simple intermittents may be changed into continued fevers, double tertians or quartans. And if such a change even be not actually effected, still the febrile heat may be increased, all the symptoms may be rendered worse, and their cause may be made to take deep root. Hence the disease will, with more difficulty, yield to remedies; and (a circumstance which no one would have believed, who had not learnt it from experience) the utmost danger will result to the patient.

Sydenham relates the cases of an officer in the army, and of an apothecary, who died in a very short time, in consequence of the use of peruvian bark. The remedy had been administered previously to a paroxysm, whence either the fever was rendered more violent, or, which is more probable, being quite smothered, the febrile poison was thrown on the vital organs, and thus destroyed their functions by its dele-

rious power. Hence arose sudden death, which, perhaps, paroxysms much more severe would not have produced. From what has been said, it will not appear surprising, that, in cases where intermitting fever has been removed by the bark alone, some obstructions should remain behind. The febrile poison which it too frequently suffers still to lurk in the body, may be determined to, and act injuriously on, any or all of the organs or parts of the system. Hence there is no doubt, but the mania which Sydenham speaks of as having succeeded a quartan fever, arose from the relics of the fever, or of the febrile poison, being thrown on the brain.

CHAP. XIV.

Of the precautions necessary to prevent mischief in the administration of the peruvian bark.

FROM what has been said, it follows, that the peruvian bark is not a remedy of such a nature, as ought to be immediately exhibited in every case of intermitting fever. Yet what we have said respecting its virtues, is incontrovertible and certain. Those fatal events which are charged to its account, very rarely occur. All the unfavourable accidents which are urged by the common people, and by certain physicians, as arguments against this remedy, are to be attributed to the imprudence of those who have made use of it; for if it be not taken by the sick till their systems are properly prepared for it, by previous remedies, these accidents are not to be dreaded. We have, therefore, treated of them, only with a view to prevent the use of this excellent specific from being turned into abuse.

Acting on the same principle, we will now lay before the reader, those cautions necessary to be attended to in its administration.

It will be prudent and wise in us, to take nature for our guide, in the cure of intermitting fevers. These diseases occur about the commencement of autumn; as that season advances, they become, as it were, more fixed; they are in their highest state of confirmation, or obstinacy, during the winter; but on the return of warm weather they terminate of their own accord. By the warmth of the season the system is relaxed, and the pores of the skin opened. To effect the cure of intermittents, remedies ought to operate in the same way; or, which amounts to the same thing, the body must be subjected to a kind of summer temperature; medicines of gentle warmth must be taken internally, in order that the perspiration may be promoted. Such is the effect of this cutaneous evacuation, that, provided it be kept up to a sufficient degree, during the exhibition of the bark, a cure will certainly be effected. But, on the other hand, there is no ground to hope for this, if the skin be dry.

But it may be laid down as an established principle on the subject, and as one which embraces every thing necessary in the use of the peruvian bark, that intermittents cannot be cured

by it, unless the functions of the internal parts of the system be in an active and healthy state. If the viscera be in any measure diseased, this remedy will be exhibited in vain. Should the disease even be suspended by it for a time, it soon recurs again with as much severity as before. On the other hand, if the internal organs be in a sound and healthy state, the fever will be so easily removed, that it will be scarcely necessary to join any thing else with the bark. It will in general, under such circumstances, prove sufficient of itself for the cure of the disease.

It must be the earnest endeavour of the practitioner, therefore, to prevent any stagnation of blood in the viscera. Hence arises the necessity of blood-letting, of which we have already spoken in such favourable terms. Equally attentive must the practitioner be to promote the secretion of bile; for while that secretion goes on actively, remedies will the more easily reach the cause of the disease; all the symptoms will be more mild, both the cold and the hot fits will be less violent, the patients will not be exhausted by such profuse sweats, nor will the humours acquire such a degree of acrimony. The several symptoms will be still more alleviated, and the state of the system be rendered more promising, provided the pores be kept open and the skin moist.

The functions of the stomach must be very particularly attended to. If that organ be disordered, or only loathe food, there will be no ground to hope for a cure of the fever by the use of the peruvian bark. On the other hand, the disease even acquires fresh strength from the exhibition of that remedy; a sense of pain and heat is excited in the stomach by it, which is usually extended even to the lungs. But if the appetite be good under the use of the bark, that is an infallible sign that the patient will soon be restored to health. At least very few instances occur, where persons with keen appetites are not soon relieved from the disease.

The intestinal tube is the third part, to the functions of which attention should be paid. If it be not in a healthy condition, the cure of the fever will, as was formerly mentioned, be very difficult. Indeed it is in vain to attempt the cure of intermittents, if the bowels be not kept open. To the peruvian bark, therefore, the practitioner should always add some lenient purgative; lenient, I say, and such as may but gently excite the peristaltic motion of the intestines: for if an acrid and highly stimulant purgative be given, such commotions may be excited, as will greatly augment the febrile heat; or such a profuse evacuation may be occasioned, as will carry off entirely the febrifuge qualities

of the bark, and thus prevent the success of the remedy.

There occurs at times, either in consequence of affections of the foregoing parts, or from some other cause, a state of the system which is no less unfavourable to the cure of intermittents. Sometimes, for instance, in these fevers, the sick are parched as it were, by a very acrid or pungent heat. If, in such a state of things, the peruvian bark be exhibited, it never proves successful. If its use be persevered in, it will even become highly injurious; the febrile heat will be rendered more intense, the humours will become extremely acrid, and the force of the paroxysms will be augmented. The fever may even assume a continued form, or if it be by chance removed, there will be reason to apprehend the occurrence of those other numerous and troublesome symptoms, of which we have already spoken. Nor can we, indeed, while there exists a burning heat in the internal parts of the body, expect any thing else from an astringent and bitter remedy. Its use is adding stimulus to stimulus, and fire, as it were, to fire.

So frequently does this fire or burning heat prevent the cure of intermittents, that as often as I have observed these diseases refusing to yield to the peruvian bark, particularly at their

commencement, I have almost always suspected the existence of such a heat in the viscera. Influenced by this suspicion and by long experience, I have uniformly been of opinion, that, under such circumstances, the use of the bark ought to be laid aside. In cases of this description, I have been in the habit of prescribing cooling and opening injections, by which, in a short time, all the symptoms are rendered milder, and the fever so changed as to be easily removed by the febrifuge powers of the bark. Even in the most obstinate intermittents, this remedy, when properly managed, has seldom failed with me to produce a cure.

Hence, we see, with what little judgment those physicians act, who, in their attempts to cure intermittents, begin immediately and indiscriminately with the peruvian bark, or who throw in vast quantities of that remedy in a short time. Sometimes, indeed, it may prove innocent and even produce a cure. It has removed intermittents when exhibited to the amount of an ounce in six or eight hours. But an attempt to cure these diseases in this way, is not always safe. A sensation of weight and tightness is immediately produced in the stomach; the thirst is rendered more intense; pains arise in the hypochondriac regions; a burning heat is excited. All these symptoms terminate, finally,

in some other disease, such as jaundice, an enlargement of the spleen, or a continued fever, which is sometimes less dangerous than the other symptoms.

From what has been said, it plainly appears, how rash and hazardous it is, to administer bark at the commencement of the cold fit. Sometimes, indeed, this remedy removes intermittents when mixed in wine or spirits of wine: it accomplishes the same object, as we have already observed, when given in conjunction with jalap or agaric. But lest any one should be led into an error by this treacherous experience, let it be held in remembrance, that intermittents are frequently cured by very dangerous medicines. But as it would be the height of madness to trust to such deceptive experiments, so it would be no less irrational to be led by similar arguments, to the exhibition of peruvian bark in the cold stage of fever.

What can be expected from a remedy of this kind, whilst, as was formerly mentioned, the system is, in all its parts, labouring under a constriction; whilst the stomach can scarcely bear even warm water; whilst the blood is stagnating in the vena portæ, in the auricles of the heart, and in the lungs themselves? Surely by the use of such a remedy, under such circumstances,

great anxiety or uneasiness would be produced; the force of the cold fit would be increased; and the violence of the paroxysms augmented. But those physicians have been still more unfortunate, who have ventured to administer essential oils and other more heating substances during the cold fit; for by such practice death has been sometimes suddenly produced.

By this rash mode of treatment, the salutary efforts of nature are necessarily suppressed. We formerly intimated that, the febrile poison is expelled by a kind of crisis. Galen observed this crisis, and asserted that evidences of it manifested themselves in a very early stage of the disease. These evidences appear in the urine; not indeed, in a lateritious and gross sediment, which is always the sign of a violent fever; but in a white and very thick sediment. The cause of the fever is also carried off by the bowels and the pores of the skin.

Many physicians are firmly of opinion, that intermittents are removed by peruvian bark, without any crisis; for that remedy appears sometimes to destroy them as if by a single blow, and that without any evacuations either from the bowels, the urinary organs, or the pores of the skin; at least many practitioners assert, that they have not observed any such evacuations.

But it is very doubtful whether or not they have, in these cases, been accurate observers of nature. When intermittents are cured by the peruvian bark, the crisis is not always very perceptible. But it is certain, that unless the natural evacuations, which had been checked or disturbed, be restored, a perfect cure will not be obtained. But this restoration is a kind of crisis. That such a crisis does, therefore, occur, is a truth which no one will either deny or doubt, who has examined the subject with the necessary degree of attention.

CHAP. XV.

Of the method to be adopted in the use of the peruvian bark.

WITHOUT any further preliminary remarks on the subject, we will now proceed to mention that method for the use and exhibition of the peruvian bark, which is founded on long experience, and is fairly deducible from what has been already laid down.

Having premised the necessary preparative remedies, such as blood-letting, evacuation of the stomach and bowels, and the use of aperients, the bark may be exhibited alone in doses of, from a drachm to a drachm and an half, at such intervals that four or five doses, or more or less, according to circumstances, may be taken during the period of intermission. In this way, the sick being at the same time under a proper regimen,

many intermittents have been, and still are cured. When the bark was first introduced into practice, the mode of using it was very different. At that time, as soon as the bark was taken, the patient was directed to take also some solid food, a practice which is alike inconsistent with both reason and experience. The sick should be supported principally by broths, until the close of the fever, when a more generous diet may be allowed.

In the mean time, strict attention must be paid, to ascertain whether or not the medicine agree with the stomach; whether or not it excite an appetite for solid food; whether or not the surface of the body in general be moist; whether or not the bowels be in an open state; and, lastly, whether or not the natural colour be restored to the urine. If there be any thing amiss on either of these scores, gentle purgatives, aperients, and refrigerants must be called in to the aid of the bark. In such cases, vitriolated tartar or some other cooling neutral salt combined with the bark will answer an excellent purpose. To avoid the necessity, however, of recurring to these remedies during the course of the cure, they ought not to be omitted in the beginning of it.

But as the bark in powder is oftentimes disagreeable to the stomach, as we have already

mentioned, and as the primæ viæ may for a certain time, be troubled by bilious and very acrid humours, there is another method in which I have thought proper to prescribe this remedy, and that with much advantage. After cleansing the stomach by an emetic on the day of intermission, I order a strong decoction of the bark to be administered in the form of injection, in the quantity of four or five ounces every two hours. This preparation both acts as a febrifuge, and tends to keep the bowels in a free and open state. The dose may be increased or diminished according to circumstances.

In some constitutions the peruvian bark produces severe and copious purging. When this is the case, its purgative effect must be prevented by laudanum, else its febrifuge qualities will pass off by the bowels, and not enter the system at all. Besides, it may even irritate the bowels to such a degree, as to add to the violence of the fever. Its purgative effect, however, must not be checked if it move the bowels only five or six times a-day, and that only during the first or second day of its exhibition. I have never known such a moderately purgative effect to have any influence in preventing a cure. On the other hand, it even contributes greatly towards it, by carrying off whatever may be left behind of the depraved humours. But should the bark continue to purge

for several days, this effect must be moderated, else it will debilitate the system of the patient. Still, however, this remedy will remove intermittents the sooner, provided it continue to keep the bowels open to a moderate degree.

Intermittents do not, in general, terminate immediately by the use of these remedies. Sometimes the subsequent paroxysm may be even more severe, and that, perhaps, in consequence of the tumult excited in the system by the purgative effect of the medicine. In general, however, the paroxysm is mitigated in force, and sometimes does not occur at all. At least the third paroxysm will almost always be prevented. By pursuing this method, therefore, intermittents may be cured both speedily and safely. Hence those physicians have erred greatly, who have not hesitated to assert, that the action of purgative medicines is unfavourable to the effects of the peruvian bark.

We must not desist from the use of febrifuge remedies, as soon as the fever terminates. The cure must be confirmed, and the febrile fomes entirely eradicated. This is the more necessary to be attended to, in as much as during the first stages of the cure, the patients frequently experience slight affections of the head, yawnings, something of chilliness, sleepiness, or some

other diseased sensation of body. These, indeed, are, as it were, only so many remembrancers of an evil that is past, but they may break out into a real fever similar to the original one. It is necessary, therefore, to continue the use of the bark, till the cause of the disease be entirely vanquished. The precise length of time during which the administration of this remedy ought to be continued it is impossible to determine; that depends on many circumstances which are very different in different patients.

In the mean time, certain general principles may be laid down, to which all directions on the subject are reduceable. Thus, the bark ought to be exhibited in certain doses, for six or eight days after the disappearance of the fever, and then gradually diminished daily, or thereabouts. It may, at length, be laid aside entirely, and that sooner or later, accordingly as the different parts of the system are more or less perfectly restored to their healthy functions. Finally, the patient cannot be considered secure from a return of the disease, while there is any deficiency in the secretion of bile, or the openness of the bowels, or any thing wrong in the colour or quantity of the urine.

Such is the method, which, to many physicians as well as to myself, appears preferable to

all others. There are, however, other modes of exhibiting the bark, from the merits of which, I would not wish to detract. Different methods may have their peculiar excellencies, as being better accommodated to particular constitutions; some, for instance, to tender and delicate habits of body, and others to such as are more robust: some remove disease more speedily, while others accomplish the same end by a slower process. There are, however, innumerable cases in which we are forced to depart from the usual practice. Hence, we must accede to the apparently contradictory opinions published by different physicians; they have all employed the proper specific, but the method must be different according to the constitutions of the sick and the nature of the disease; and it is right that every one should be governed by his own experience.

There is no other method, however, preferable in the cure of a double tertian to that which we have prescribed. The only difference between simple and double intermittents is, that the latter are superior in violence, and are characterized by shorter intervals between their paroxysms. From these two circumstances, then, must be deduced the differences that necessarily exist between the proper modes of treating double and single intermittents,

The more violent the fever, then, and the greater the danger that accompanies it, the greater circumspection it calls for in the exhibition of the first or preparatory remedies. The more strict, for instance, must be the patient's diet; the more diluents must he use; the more must the febrile heat be moderated; and the more strictly must the use of aperients be enjoined; but, in particular, the more copious must be the evacuations from the stomach and bowels, in order, that whatever might tend to increase the action of the febrile poison may be discharged. At length recourse must be had to the bark. This remedy, however, must be deferred till a later period than in a less violent disease, unless the most urgent circumstances should call for a different procedure.

If there be any form of intermittent, in which the bark is not to be immediately exhibited in substance, it is more especially the double tertian. In this disease it is better and safer to employ a decoction of the bark, with some cooling and purgative neutral salt dissolved in it. The production of acrid and putrid humours is then more copious; whence results the necessity of a remedy calculated both to evacuate, and to counteract fever. In as much as the paroxysms in this disease press closely on each other, it is necessary to give a glass of this decoction every

second hour. We do not, however, lay this down as an invariable rule. But it is most certain, that the practitioner must here perform in a shorter interval, what he usually performs in a longer one, in cases of simple intermittents.

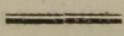
To this mode of treatment a double tertian seldom fails to yield. By the exhibition of the preparatory remedies alone all the symptoms are mitigated, and sometimes the disease declines into a simple tertian. But even in case things should not go on so successfully as this, still by persevering in the same mode of exhibiting the bark, the disease will begin to be removed. In a double tertian the fevers that constitute it are, for the most part, cured in succession, or one at a time. Thus, as we formerly mentioned, one of the two tertians disappears immediately, while the other still remains. When both shall have disappeared, then a simple decoction, or the bark in substance, may be exhibited, and that either with or without some purgative salt, as circumstances may require.

second hour. We do not, however, lay this down as an invariable rule. But it is most certain, that the practitioner must here perform in a shorter interval, what he usually performs in a longer one, in cases of simple intermittents.

CHAP. XVI.

To this mode of treatment a double effort is seldom able to yield. In the exhibition of this medicine, the disease declines into a simple tertian. But even in case of a double effort, it should at go on as usually as the ordinary presciving in the same mode of exhibiting the bark, the disease will begin to be removed.

Whether or not a quartan fever requires a mode of treatment peculiar to itself.



THE foregoing considerations relate to intermittents of every kind. We must now enquire, whether or not the quartan fever calls for a mode of cure peculiar to itself. Previously to the discovery of the peruvian bark, this disease was considered as the opprobrium of physicians and the torment of patients. Even at the present day, it is believed by many, not to yield to that remedy. Although, say they, it oftentimes seems to be cured by the bark, yet it frequently disappears only for a certain time. It oftentimes continues throughout the winter, and on the occurrence of the spring or summer, is cured by the favourable influence of the weather, rather than by the febrifuge virtues of the bark.

It must, indeed, be acknowledged, that the quartan fever possesses something peculiar to itself. It differs from other forms of intermitting fever particularly in this, that it appears to take deeper root in the system than they do, unless it be checked at an early stage. But if it be of recent origin, there is no doubt but it will yield to the mode of treatment already mentioned, and that as readily as any other form of intermittent. As it may, however, degenerate into a more obstinate disease, there are certain precautions which should be used to prevent such frequent relapses in it, to the reproach of both the peruvian bark and the medical profession.

Unless the symptoms of the disease be very slight, a strict diet must be firmly enjoined, although the intermission of two days which occurs between the paroxysms may not seem to require it. Even this will not succeed without blood-letting. So important a remedy is blood-letting in quartan fevers, that it almost immediately reduces their violence, and many of them cannot be cured without it. Emetics are no less essential in the cure of the disease; if they be neglected, the febrile fomes will for the most part remain in the system. Purgative remedies are not altogether so necessary, because the accumulation of vitiated humours is not in general

so abundant in diseases of this description. It is, notwithstanding, adviseable to keep the bowels in a laxative state.

These precautions being attended to, there is no doubt but the fever will be subdued, provided it be treated in the manner which we have laid down. As it is, for the most part, however, extremely obstinate, a larger portion of the bark must be administered. For the same reason, it is better to mix with that febrifuge some other remedies of a penetrating nature. Certain aromatic substances mixed with vegetable alkali, are sometimes exhibited with the best effects. Cascarilla, in particular, is a very powerful remedy in the treatment of quartan fevers. This mode of practice is sanctioned by daily experience, as well as by the authority of the ancients, who were in the habit of prescribing the more heating kind of remedies, not constantly, indeed, but in certain cases.

It is particularly in quartan fevers that the peruvian bark, mixed with the lesser centaury or agaric in powder, may be exhibited with great advantage. Even in persons of delicate, but more especially in those of robust constitutions, and in such as were subject to no diseases of the viscera, I have oftentimes used the following remedy, namely, Pulv. Cornachini gr. xxiv :

Agarici. gr. xv. Sal Ammon. one drachm :
 Cort. Peruv. four drachms, M. f. Electuar :
 The mode of administering this preparation is,
 to give the fourth part of it to the patient every
 third hour.

I have known a great many quartans cured
 by this remedy alone, although they had already
 run on for two or three months. It is necessary,
 however, to persist several days in the use of it,
 taking care only to diminish, if requisite, the
 quantity of the purgative medicines. In the
 mean time, let the patients use ptisans of aper-
 ent and gently cordial qualities. It will also be
 adviseable to administer to them moderate doses
 of nitre, both for the purpose of increasing the
 urinary discharge, and also of moderating the in-
 ternal heat, which may possibly be produced by
 the foregoing remedies.

After the quartan fever has yielded to the ac-
 tion of these remedies, the use of the bark must
 not be immediately relinquished. In conse-
 quence of the just apprehension of a relapse, this
 febrifuge must be continued for a very consider-
 able time. If neutral salts and chalybeates be
 combined with it, they render it a prophylactic of
 still higher value. This compound preparation
 restores tone to the system, removes obstruc-
 tions, and promotes the secretion of the bile.

But although all these acrid and heating articles, of which we have treated, be almost infallible remedies against quartan fevers, they cannot be administered to every one labouring under it. Those persons whose constitutions are weak and irritable cannot bear their action. In such patients, therefore, the preparatory remedies are to be exhibited with greater caution than in others, and the peruvian bark must be used in the same manner as in simple tertians, that is, combined with gentle purgatives and aperients. Sometimes the heating quality of the bark is to be moderated. This may be done by making it into a decoction along with borage and bugloss, and adding to the liquid thus prepared, a quantity of nitre or arcanum duplicatum.

In persons advanced in years, still further precautions are essentially necessary. In such subjects quartan fevers are more dangerous, because the vital principle is sometimes overwhelmed by the cold fit. If, therefore, the violence of the cold fit be very great, a return of it must, if possible, be prevented. This end will be most likely to be attained by emetics, followed immediately by a copious use of the peruvian bark. But, as in old age, the different parts of the body are less permeable, and their excitability less keen, the activity of the bark must be increased by some stimulating aromatic and penetrating

salt. These additions are still more necessary in the winter season.

To what is here said, respecting the use of bark in quartan fever, I must add, that I am acquainted with what I consider as a certain remedy against the obstinacy of that disease. I allude to warm mineral waters possessing purgative properties, which have produced a perfect cure, when all other remedies had been tried in vain. Many have been cured under these circumstances by the waters of Bourbon. The waters of other places have also produced the same effect. Several persons, who, after the last war in Flanders, retained the relics of obstinate quartans and even tertians, were restored to health by these, when all other remedies had completely failed.

CHAP. XVII.

Of impediments arising from previous affections of certain parts of the system, or from different temperaments.

THE foregoing directions cannot be strictly followed in all cases. Such, frequently, is the nature or temperament of patients, the constitution of some particular parts of the system, the nature of the fever itself, and the variety of symptoms, that difficulties occur on all hands. To remove these difficulties, therefore, the practitioner must pursue a different course, or rather, he must vary the course already pointed out, so as ultimately to attain the cure of the disease. The use of the bark must be accommodated to the various impediments which are thrown in the way, whether these impediments exist in some particular part, or be spread throughout the whole body.

The stomach itself oftentimes rejects the bark. It cannot, for instance, bear the taste of this remedy, though by no means very disagreeable. To remove this difficulty, Fuller prepared a draught composed of bark, syrup of cloves, and some cordial distilled water. In this preparation there is nothing to offend the stomach, and the only thing to be dreaded is, lest it may prove too highly stimulant. To prevent that, let some cooling, and aperient ptisan, with nitre dissolved in it, be given at the same time.

The same objection exists against an infusion of bark in generous wine. To render the preparation less disagreeable, some physicians use Spanish wine, but direct the infusion after it is made, to be boiled a little. They are of opinion that, by this process the wine loses part of its native strength, and may be prescribed with safety. If any wine, however, be admissible, it is particularly Rhenish wine, as being more aperient and less stimulant. But, as I have very frequently mentioned, remedies of this kind are always too heating. They may answer a better purpose in fevers that have nearly worn themselves out, than in such as are more violent and of recent origin. In this latter description of fevers, a watery infusion of the bark, holding some neutral salt in solution, forms a more suitable remedy.

But an impediment to the use of the bark frequently arises, not only from the repugnancy of the stomach, but from its injured functions. An obstinate vomiting sometimes forbids the use of this remedy. To remove this difficulty Sydenham was in the habit, after the manner of Riverius, of exhibiting lime juice and vegetable alkali, and afterwards liquid laudanum for the purpose of allaying irritation. Others, pursuing a bolder practice, have attempted the cure of fever by exhibiting the bark combined with opium or laudanum. But if the violence of the fever be not too great to be borne with safety by the patients, my first step is to remove the affection of the stomach, which being done, the general disease can be the more readily subdued.

But the intestinal tube no less than the stomach oftentimes presents difficulties to the cure of intermittents. In either case the sick may be relieved in the same way, namely, by exhibiting the bark in the form of injections. When given in this way, however, it has been observed to be more serviceable to young persons than to adults. But it will do little or no good, unless it be retained for a considerable time in the colon and rectum. It will be very readily discharged, particularly if a diarrhœa exist. In such a case, recourse must be had to narcotics, which may

be given in the decoction of the bark. The proper doses of these remedies are the only points that now remain to be determined. Great care, however, must be taken not to give too large a dose of narcotics, else the issue will be a deep stupor.

Difficulties arise from the state of the lungs, no less than from that of the stomach. When the lungs are tender and irritable, and the sick subject to a spitting of blood or a troublesome cough, they appear incapable of bearing the peruvian bark. But it is to be remembered, that the disease itself is more injurious to this pectoral affection than the action of the remedy. The bark must, therefore, be employed, but care should be taken at the same time to administer lenient and demulcent medicines along with it. For this purpose, I am in the habit of adding to the decoction of it, the root of the althea, or the flowers of the poppy. In the case of a female, who had been attacked by a very severe and incessant cough, I employed these demulcents with the greatest advantage; for the cough and fever were removed at the same time.

In cachectic and hypochondriac patients, the bark must be used with precautions suited to the particular nature and character of the ex-

isting affections. In persons of the latter description, some of the viscera are diseased, in consequence of which, the nerves are affected with irregular and preternatural motions. If, therefore, heating substances be administered, if the peruvian bark be given alone, without any previous preparation, an intense degree of heat is excited, and a constriction is produced in the diseased viscera. Hence, emollients, gentle laxatives, aperients, and refrigerants, ought both to precede the use of the bark, and also, to accompany it. If a different mode of treatment be attempted, the fever will be rendered more obstinate and severe.

Difficulties equally great arise in the cases of chlorotic females, or such as labour under menstrual irregularities. Subjects of this description are with difficulty relieved from intermittents, because they are affected by two diseases. The practitioner must begin by administering emetics to them, as such remedies are no less efficacious in the removal of the original affection than of the fever itself. As the stomach is always disordered by a suppression of the catamenia, a remedy which will excite that organ to severe action, cannot fail to be of service. Aperients are also of advantage in such affections.

In children the cure of intermittents is attended with no less difficulty. These young subjects reject all medicines. It is peculiar to them, however, that they are in less danger than adults. We frequently see children of every age, labouring for a long time under intermitting fever, and recovering at length without any disagreeable consequences, and that without medical assistance. But they would have recovered more readily, had mild emetics been administered to them in the beginning of the disease. I have prescribed tartar emetic to children of two years old. I am convinced from experience, that this medicine operates more mildly on them, than it does on adults.

The emetics will be productive of more salutary effects, provided they be followed up by febrifuge remedies. The syrup of the peruvian bark will answer very well, particularly if it be combined with the rob of elder berries. This medical preparation, by acting as a mild purgative, prevents in many children the necessity of any other cathartic. But if it cannot be employed, recourse must be had to absorbents with rhubarb and cream of tartar. In young children these remedies are real febrifuges: indeed, in many cases, it is scarcely necessary to use any other medicines; hence, let them be

administered as plentifully as practicable. For, although so many children recover of their own accord, yet in many others the abdomen swells, the viscera are obstructed, and the liver becomes greatly enlarged. These symptoms are rendered worse, if the bark be injudiciously administered; indeed, it may even produce them, if they have not yet occurred.

CHAP. XVIII.

Of impediments arising from the fever itself, from the injuries which it usually does to various parts of the body, and from an improper mode of treatment.

OTHER difficulties present themselves, which arise either from the fever itself, or from an improper mode of treating it. These may be considered collectively or separately. Taken collectively, or in a general point of view, they may be reduced to an obstinacy of fever, and affections of the abdominal viscera. In some cases the fever absolutely refuses to yield to the peruvian bark; sometimes it is not in the least affected by it, even when all the usual preparatory medicines have regularly preceded it. The efficacy of the peruvian bark appears to be different, according as the seasons are different. In certain years it is attended with the happiest effects, while in others again it does more harm than good. There are also certain places in which it is a very unsuccessful remedy,

such, for instance, as marshy regions and those bordering on the sea. There is a great variety in the strength of the febrile poison. When more acrid, it takes deeper root in the solids and fluids of the body, and adheres to them more closely, and with greater obstinacy.

When intermittents are obstinate or perverse as it were, it would be madness to persevere in the exhibition of an useless remedy, when it might even become hurtful. In vain do some practitioners have recourse to larger doses, with a view to overcome the febrile fomes by force. In such a case, either the cause of the disease remains in the viscera, after the paroxysms have been suspended, or, as we formerly mentioned, fuel is added to the fire, and the fever is rendered more obstinate. It becomes necessary then to desist from the use of bark, and to return to that of diluents and aperients. But, above all, an emetic must be administered. Many practitioners in marshy countries err in this, that they place too little dependence on emetics. Such is the efficacy of these remedies against fevers, that I have known many persons who used them as prophylactics, to escape an attack.

When intermittents are obstinate, many considerations concur to convince us how im-

portant it is, not to abuse the peruvian bark. From improper modes of treatment, various local affections arise, which remain with the patients during the remainder of their lives. I have known many of the most robust men, who, after attacks of intermittents, have experienced various disorders of the principal functions of the system, and have fallen at length into very grievous affections. Some of these became melancholy and cachectic, others were liable to obstructions, and not a few, being never perfectly restored to health, have at length fallen victims to their sufferings. In some persons it has brought on a premature old age.

In obstinate cases of intermittents many things occur, and those of a peculiar nature, which forbid the use of the peruvian bark. When this remedy is employed, many persons as we formerly mentioned, experience a sense of heaviness, a burning, and a constriction or tightness. But these are so many certain impediments to a cure. In such cases, one of two things exist, namely, either there is some latent affection of the coats of the stomach, which must be treated in a manner suitable to its nature; or (as usually happens) that viscus is over-loaded with vitiated humours, of acrid and highly stimulating qualities. But these humours must necessarily be

expelled and changed; hence again appears the necessity of having recourse to emetics and alteratives. Nor must the bark be any more employed, unless these remedies have preceded it, or be administered along with it.

Similar impediments arise out of the state of the duodenum, or the other portions of the intestinal tube. Oftentimes the bowels are rendered more costive by the use of the peruvian bark. The stools burn as it were, are bilious, of a yellowish-red, or of a black colour, so that they sometimes even seem to corrode the patient's linen; if under these circumstances bark be exhibited, the sick are sure to be injured by it. All bad consequences may be guarded against by gentle emetics, repeated if necessary; after this, gentle purgatives, refrigerants, and aperients, if continued a sufficient length of time, will effectually cleanse the alimentary canal, and carry off the whole mass of depraved humours. These are the only remedies on which we can confidently rely, in cases where the use of the peruvian bark has produced an accumulation of such humours, nor must that remedy be employed again, until the state of the system be materially changed.

But we must look deeper into the very fountain or source of all these impediments. They almost always depend on the state of the liver.

If that viscus be oppressed from the beginning, by the excessive violence of the fever, it would be an error fraught with destruction to administer the peruvian bark; and if its use be found unfavourable to the secretion and excretion of bile, it is to be no less carefully avoided on that account: for if it be persevered in, an accumulation of very thick and acrid bile will be formed; the liver will become parched as it were; the fæces will acquire a darker colour; the urine will become very red, and will deposit a copious brick-dust sediment. But there is no need of all these symptoms, to convince us that there is some disorder in the functions of the liver, which impedes the cure. If the countenance be either livid or pale, or put on a yellowish cast, even in cases where the fever appears to have left the patient, it must be considered as still lurking in the system ready to break forth again.

To remove all these symptoms, the use of the peruvian bark must be immediately relinquished, and medicines given for some time, with a view to unlock the liver. For this purpose, I have frequently used with advantage, the depurated juice of certain saponaceous plants, together with that of borage and bugloss, holding in solution a quantity of neutral salts, such as arcanum duplicatum, &c. Such is the efficacy of

purgatives in affections of the liver, that I have frequently removed them by the use of such remedies alone. Having accomplished this, which was done sometimes sooner, and sometimes later, I then had recourse with success to the peruvian bark.

The impediment is still worse, if the abdomen become tense and hard, whether this effect be produced by the action of the fever, or by remedies unskillfully administered. The cause of this hardness is situated in the viscera just mentioned. In consequence of the congestion and obstruction which occur in these viscera, the blood does not circulate freely through them, and the other humours stagnate in them. Hence arises a rigidity of the fibres, an astriction of the intestines, and a plethora of the vessels of the mesentery. But when these occurrences take place, it is impossible to cure the fever without their removal.

While these symptoms exist, the peruvian bark cannot be exhibited without hazard. The natural softness can be restored to the viscera only by free and repeated evacuations. Nor will the bark answer for this purpose, although it may prove purgative, and even open the bowels five or six times a-day. For the stimulant power of this remedy certainly irritates and ex-

cites heat, even while it solicits the intestines to a discharge of their contents. Therefore, neither their fibres, nor the texture of the other viscera are relaxed by its action.

Lenient purgatives contribute most to the removal of this hardness of the abdomen. As often as that symptom has occurred in my practice, I have cured the rigidity of the intestines by cassia and other similar remedies. I have also prescribed, at the same time, the juice of succory and other herbs of that kind slightly impregnated with salts. By the assiduous exhibition of these remedies for a certain time, I have always succeeded in removing this hardness of the abdomen, particularly in those cases of disease, to the treatment of which I was called soon after their commencement.

But in fevers of longer standing, this mild treatment does not succeed so well. In them the cachectic habit of body, and the hardness of the abdomen must be attacked by remedies of greater strength. I have, therefore, oftentimes exhibited a purgative mixture composed of senna and some milder laxative, such as cassia, tamarinds, or manna; I have then directed some laxative and emollient beverage, with soluble tartar dissolved in it. By this mode of treatment I have generally accomplished my object,

and have very often succeeded in removing even the fevers themselves. But a cure effected in this way is not to be fully confided in. After the complete subsidence and softening of the abdomen, therefore, it ought to be confirmed by peruvian bark.

This mode of cure is far more necessary still, in case the abdomen be greatly enlarged. Such an enlargement is not an unfrequent occurrence, even without any collection of water. It takes place in various fevers, particularly in certain epidemics, and that sometimes in an early stage of the disease. More frequently, however, it does not appear till after the disease has run on to a certain period. Not only the abdomen, but the face, the arms, and the lower extremities swell. In this state of things the peruvian bark must be cautiously avoided. Purgatives and aperients, which we have so often recommended, constitute here the principal remedies.* Some reliance may be also placed on diuretics. I have oftentimes cured both the fevers and the swelling by the use of wine in which juniper-berries had been infused, and to which the martial salt of Riverius and sal prunelle were added.

* Obstructions such as our author is here treating of, appear to be most certainly and effectually removed, by the exhibition of mercury, till a gentle ptyalism be produced.....*Trans.*

CHAP. XIX.

Of the cure of fevers which, having ceased for a time, recur again, and also of certain symptoms that usually accompany them.

IF the impediments just mentioned be removed, the fevers will be easily removed, nor will any of the febrile poison remain behind. But all patients have not the good fortune to be thoroughly freed from this poison. In many persons the paroxysms are only suspended for a certain time; either a very slight cause brings them back again, or they return of their own accord. Thus, alternately disappearing and re-appearing, these fevers are frequently protracted for a great length of time.

To counteract this state of things physicians have fallen on various expedients. One while they have exhibited the bark in increased doses, and another while mixed various articles with it, for

the purpose of adding to its efficacy. It must, indeed, be acknowledged that in a great many cases this remedy thus variously exhibited does succeed. When combined with the lesser centaury it has been found capable of removing many obstinate fevers. Mixed with purgatives it has been no less efficacious. I have seen many patients, who had taken large quantities of the bark alone without effect, in whom a perfect cure was afterwards effected in a short time, by this same remedy when taken in combination with neutral salts. Not only purgatives, but diluents and aperients also, should accompany the use of the bark.

But, these remedies failing, I have, when the sick were willing to submit to it, adopted a much more certain mode of cure. I have, immediately ordered my patients to bed, as if they were under an attack of a more serious disease. I have then confined them to an extremely low diet, and sometimes to water alone for several days. I have next had recourse to the use of aperients and gentle purgatives, and directed it to be continued for a certain time. To this treatment the fever has generally yielded; or if it did not entirely give way, its violence and obstinacy have at least been greatly diminished. It then readily yielded to the peruvian bark, if pro-

perly administered, and the patient had no ground to dread a relapse.

This method is highly necessary in certain fevers, which not unfrequently occur. In some cases where the paroxysms have disappeared, the pulse remains frequent; it rises in force particularly after the patient has taken exercise or food, although he has not been intemperat in either. In the mean time he does not appear to be indisposed, because he is, or has been, in the use of febrifuge remedies. But if he be guilty of any irregularity in diet; if he return to his usual occupations; and if, in addition to these things, certain changes in the atmosphere occur; under these circumstances, the fever which seemed to be removed, immediately recurs again. In vain, then, will recourse be had to the bark, however plentifully it may be exhibited. That remedy will produce only fallacious and short lived suspensions of the disease; hence there will be an absolute necessity of employing those auxiliary means which we have just mentioned.

I would not, from what I have here advanced, be understood to mean, that the fever must be attacked by these same remedies, every time it may recur. Sometimes very obstinate fevers may be left to themselves; if, for instance, they recur in the winter, and the febrile poison cannot be

checked, it will be necessary to wait the arrival of the spring. Even at other seasons, and in certain temperaments, it becomes requisite to relinquish entirely the unavailing use of remedies. I have indeed seen, though rarely, intermittents even in the summer season, so obstinate as to resist all remedies. I have committed such complaints to nature, taking care only to regulate the diet of the sick, and to prescribe such gentle remedies as might aid the viscera in their respective functions. In some instances I have derived more advantage from this mode of practice than from any other.

So much for the mode to be pursued in those intermittents, which remain obstinate, after having run on for a considerable length of time. In recent cases, where the disease has been removed and threatens a relapse, a different mode of treatment must be adopted. When the strength of the patient is not much impaired, and the fever has not taken very deep root, it will be most safe to return to the preparatory remedies. Whence, if it can be done, both evacuants and diluents must be administered. After all remaining obstructions have been thus removed, febrifuge remedies may be given with advantage. Yet these must be varied in use according as the fevers or the nature of the symptoms are various.

Some patients, for instance, though free from fever and paroxysms, are subject to obstinate watchfulness, or most acute pains of the head. In such cases, the remedies must not be relinquished, but rather urged with a zeal proportioned to the urgency of the symptoms; for we are not to consider the fever as actually subdued, but only the force of the febrile poison as thrown on the head; after it has changed this seat, the paroxysms return again as before.

In this situation of things, the febrile stimulus must be drawn from the head. But in the cases of most sick persons, I have observed that this could not be done in any way better than by blood-letting. By this remedy alone, however, a cure cannot be accomplished. Hence I have considered it safe and certain to have recourse again to emetics; next I have directed laxative and aperient drinks, which, with the occasional addition of soluble tartar, I have generally found sufficient for every necessary purpose.

Profuse sweats to which the patients are occasionally subject, after the removal of the fever or the suspension of the paroxysms, prove at times no less troublesome. If this excessive evacuation arises, as it usually does, from an imperfect cure, the disease must be treated with the proper remedies. To this end, if it be not of

very long standing, if the strength of the patient be but little reduced, or if those remedies which ought to have been premised have been neglected, I generally have recourse to blood-letting, and that with advantage. In such cases, there is no doubt, but the viscera are subject to some preternatural stimulus ; blood-letting, then, by diminishing irritation, renders all things better.

But in addition to this, other remedies must be administered, which seem better calculated to put an immediate stop to the sweats. Evacuants, indeed, draw off the fluids, which were more slowly making their escape, through the natural outlets of the body. But this avails very little, unless attention be paid to the obstructions of the viscera, and the secretion and excretion of the bile and urine be promoted. Nor must we neglect such remedies as are calculated to allay the internal heat. For, during the flowing of these sweats, there generally exists a burning internal heat, and an acrimony which stimulates the surrounding parts.

But these sweats which succeed the termination of a fever, may flow from a different cause; such as the state of the blood, or debility of the system. The affection must, then, be treated in a different way. The bowels, indeed, as well as the urinary passages should be kept open ;

but tonics, that is, remedies calculated to restore the lost tone of the fibres, constitute the principal means of cure. Hence the peruvian bark, or a vinous tincture of it, are for the most part sufficient. Sometimes bitter infusions taken along with chalybeates answer every purpose. These remedies will be the more effectual, if exercise be called to their aid, which alone, with an attention to regimen, is sufficient to restore the strength of the circulation and the tone of the vessels.

But there are other affections which are still more difficult to cure. Thus, after the fever has been checked, there sometimes remain constant anxieties, a loathing of food, a heaviness, and a loss of strength; indeed the symptoms of an ill-cured fever manifest themselves in all parts, but particularly in the countenance, which becomes livid or of a yellowish colour; all these symptoms have occurred to me in practice, particularly during a certain epidemic, which committed great ravages in this place. On that occasion, fevers which seemed to be perfectly cured, generally recurred again. It was then with difficulty that the sick survived. Many fell at length into a putrid diarrhœa, or a dysentery. In some cases a copious effusion of blood broke forth, and proved fatal to the patient.

In the treatment of this fever it was absolutely necessary to reject the bark entirely. That remedy seldom failed to render all things worse instead of better. The heaviness, the prostration of strength, and the affections of the stomach and liver, were relieved only by aperients and deobstruents. The putrid diarrhœa could be safely checked only by mild evacuants. The dysenteric symptoms required, also, a peculiar and specific mode of treatment. Even after all the troublesome symptoms had become milder, or disappeared entirely, there were some practitioners who still would not venture again on the use of the peruvian bark. They waited till nature or a change of the season should complete the cure of the disease. But these physicians had too great a dread of the effects of this remedy. It could be safely used provided it was preceded by the proper remedies. Having previously prepared the systems of my patients for its action, I then had recourse to it with the greatest success. We have already treated of the watery and flatulent swellings which occur during the actual continuance of the fever. But, as we have elsewhere mentioned, a swelling very often attacks the lower extremities after the febrile affection has terminated. Provided, however, the fever has been treated and cured in a proper manner, nothing serious is to be apprehended from this swelling; for the water col-

lected in the cellular membrane passes away of its own accord, as the strength of the patient returns. If, however, the water be in large quantity, or if, in consequence of a laxity of the fibres, it remain longer than usual in the cellular receptacles, the exhibition of diuretics and tonics becomes necessary.

On such occasions, a decoction of some bitter aperient vegetables, holding in solution a quantity of soluble tartar, is an excellent remedy. I have also in many cases derived advantage from the use of wine, in which juniper-berries had been infused, and which contained at the same time, in solution, a portion of the martial salt of Riverius. But these are not the only remedies that may be administered. There are others which have been given with success, such as a lixivium of broom ashes. There is but little difference, however, between this remedy and the febrifuge water of Riverius, which consists of salt of tartar dissolved in common water.

Such are the remedies which I have found by experience to be efficacious in removing the relics of intermittents, or certain affections which are attendant on these diseases. If in prescribing these remedies, I have sometimes been silent

respecting the peruvian bark, it is not, from such silence to be inferred, that I meant to induce practitioners to neglect the use of it. If the fever has not been cured in a proper manner, if there be any apprehension that its fomes still remains in the viscera, the use of the bark cannot safely be dispensed with. When by the use of other remedies the symptoms have disappeared or become milder, the cure must be perfected and confirmed by the bark.

CHAP. XX.

Of the cure of Malignant Intermittents.

MUCH less must practitioners neglect the use of the bark in the treatment of intermittents, if they be of a malignant nature. But there is a double plan of treatment which must be pursued in such diseases ; one of these must be adopted during the violence of the paroxysms, and the other in their decline, or rather during their intermission. For as some of the symptoms are foreign from the nature of the fever, these symptoms and the febrile cause call each for remedies peculiar to themselves.

This circumstance, as formerly mentioned, was observed by Louis Mercatus. That physician was the first who treated extensively of these foreign symptoms, but Morton and Torti have approached nearer to a proper method of

cure. We will briefly lay before the reader our experience on this subject.

We will not treat separately of all the symptoms that occur, but only mention the principal remedies by which they may be combatted. When the head is severely attacked, when a delirium occurs, or a kind of apoplexy, lethargy, or coma oppresses the patient, a peculiar mode of treatment becomes necessary. Blood-letting has oftentimes been observed to remove these symptoms like a charm. Nor is this remedy less serviceable in those acute pains resembling rheumatism which attack the limbs, back, &c. in severe gripings or spasms of the stomach or intestines, and in oppressions at the breast. Indeed it may be used with advantage in all such affections, provided the strength of the patient be not too much exhausted.

In the apoplectic, lethargic, and comatose state of fever, blistering must by no means be neglected. Nor is this remedy less useful in those paroxysms, in which the patients lie without motion or sensation. But, although the practice may to some appear less likely to prove useful, I have even ventured to try the same remedy in certain very acute pains; for as these pains are, for the most part, spasmodic, it is practicable to effect a revulsion or derivation of

the morbid action from one part of the system to another. I am convinced by experience that blistering is also a very important remedy in oppressions at the breast.

The use of opiates is no less recommended, by the nature of the remedies themselves, by experience, and also by the painfulness of some of the symptoms. Indeed the rheumatic pains in the limbs, are sometimes so severe as to call for the immediate exhibition of these remedies ; and in pains of the viscera, particularly of the stomach and intestines, it would oftentimes be almost criminal to neglect them. By opiates vomiting and diarrhœa may be checked, which sometimes bring the patients into the utmost danger. It is in the mean time to be observed, that opium should not be exhibited alone. It ought to be mixed with aromatics, as in theriaca, and the liquid laudanum of Sydenham. It may also be exhibited along with æther, which is of itself an excellent remedy for oppression and vomiting.

I will not here treat of diluents or demulcents, which contribute to allay irritation, and the advantages of which are known to every one. Nor is it requisite to dwell on the use of remedies calculated to awaken motion and excite heat. It must be obvious to every one, how necessary

these are in cases of prostration of the vital principle, in great depression of the pulse, and in a very obstinate cold fit where the surface of the body assumes a marbled appearance. But, that remedies may be exhibited with the more advantage, no less regard must be paid to the symptoms than to their cause. This cause is the poison which vitiates the fluids, and disturbs the functions of the system. It is necessary to enquire, therefore, what may be capable of resisting this deleterious cause, until its violence abate, and an intermission ensue.

When the paroxysm has passed over and the symptoms have become more mild, then is the proper time to administer that febrile antidote, the peruvian bark. This remedy may indeed be exhibited in decoction, but there is reason to apprehend that in this way it cannot be taken in sufficient quantity. In a disease, therefore, so rapid in its progress, recourse must be had to the bark in substance, or rather, indeed, to the extract ; nor need we be apprehensive of giving it in too large doses. If the doses be small, they will be insufficient for the end in view, which is, to overpower, as it were, the febrile poison. Hence, let the patient take a drachm of the extract of bark at a dose, and repeat this two or three times during the intermission.

A question occurs here to be solved, namely, whether or not purgatives ought to be mixed with the peruvian bark? These remedies, indeed, will not be amiss in affections of the head, they may also be administered when the force of the disease falls on the breast, as well as in rheumatic pains of the joints and limbs. The bowels ought, however, only to be kept gently open rather than to be severely purged, lest the efficacy of the bark should pass off in that way. The force of the medicines must be particularly directed against the febrile poison, whose impetus is to be counteracted.

But there are various other affections in which the bowels must not thus be moved. When the stomach and intestines, for instance, receive the whole force of the disease, the practitioner must decline the use of purgatives. If a diarrhoea exist, it must even be restrained. It would be no less improper to administer purgatives in cases where there is a prostration of the vital principle, or where, during the cold fit, the heat has retreated from the surface and extremities to the internal parts of the body. In cases of this description, we must rather have recourse to aromatics, such as Virginian snake-root, in combination with the bark, that it may the more effectually penetrate the recesses of the system, and thus rouse it into action. For the same pur-

pose I have oftentimes administered the bark in wine.

Another question occurs, and that of no less moment, in as much as it relates more immediately to the danger of the disease. It is enquired whether or not the physician must always wait for a remission of the paroxysm in order to exhibit the bark? If, indeed, the febrile action be not very intense, but, on the other hand, if there be a prostration of strength and a debility of pulse, if there be not great irritation in the stomach or intestines, finally, if the force of the symptoms will by any means admit of it, I know no good reason why, in so doubtful a state of things, the bark may not be exhibited either alone or combined with some other remedies. Although the symptoms usually intermit, yet the degree and duration of the intermission are both uncertain. In the mean time the danger is great, and there is consequently a pressing call for the exhibition of the antidote.

CHAP. XXI.

Of the treatment of common remitting fevers, and also of those of a malignant nature.

SO much for the treatment of intermittents ; we will now pass on to the consideration of that of remittents. These, as we have already remarked, are of various kinds ; or rather, they vary with respect to their violence and their type. They are often attended with unexpected and dangerous symptoms. Hence, although they originate from the same fomes, and the same cause, it is requisite to enquire whether or not they call for the same, or for different modes of treatment. It is frequently difficult to institute a mode of treatment, and this difficulty arises from numerous causes.

The first thing to be attended to, is, the nature and use of the remedies necessary to be exhibited. The fevers are continued, because they are marked by no perfect intermission.

No other mode of treating them, then, immediately occurs, but that which is employed in continued fevers. But their nature and character are opposed to all specific febrifuges, particularly to tonics, bitters, astringents, and such remedies as excite heat. The peruvian bark appears, therefore, to be improper in the treatment of remitting fever. For if that remedy proves, for the most part, injurious in genuine intermittents, when their paroxysms are protracted, and their violence is great, can it do good in a fever of a continued course, although its violence may sometimes abate?

Yet as remittents belong to the same class with intermittents, is it possible that they can call for remedies altogether different? Can that medicine be improper in the treatment of remittents, which is best calculated to subdue and eliminate their cause? In order to reconcile all these circumstances, which appear so inconsistent with each other, we must look a little deeper into the subject. We must enquire, for instance, whether or not the symptoms of intermitting and remitting fevers are so different from each other, that they require to be cured by different modes of treatment?

The symptoms of these diseases do not, except at first sight, appear to differ so greatly from

each other. In most respects the mode of treating intermittents and remittents is nearly the same. For, as the bark does mischief if administered in intermittents, during the actual existence of the paroxysms; so also, in remittents, if it be exhibited during the prevalence of the paroxysms, it renders every thing worse. The practitioner must, therefore, wait for the remission, in order to administer this remedy with advantage to the sick. Previously to its use, the primæ viæ must be well cleansed, for if they become turgid with fæcal matter, or if the bowels be in a costive state, the fever will be increased in violence.

In the treatment of these diseases, there exists only this difference, namely, First, that in remittents the fever only abates, and allows, therefore, less time for the use of remedies to counteract it, and, Secondly, that the febrile heat is more intense, and the secretory functions less free and active. The fomes of the disease will consequently be eradicated with more difficulty, because it will be removed only by slow degrees. The action of the bark, however, both on it and its effects is certain, though somewhat feeble; it at least weakens its force, if it does not completely eradicate it. Let the impediments to the use of the bark be done away, and that remedy will be at length successful.

The efficacy of the bark is particularly manifested in its preventing the paroxysms, or reducing their force. Hence, it appears, that if the paroxysms be very severe, this remedy may be advantageously employed against them. It may, indeed, increase the heat of the body, and will not immediately, as in intermittents, destroy the febrile fomes. But the greater evil must be obviated; and the impetus of the fever will do more mischief to the system, than the action of the bark when used as a remedy for it. The state of things is here precisely as it is in a case of disease, consisting of a pleurisy joined to an intermitting fever. No doubt but, in such a case, the peruvian bark may somewhat injure the inflamed lungs; yet, as this remedy weakens the force of the intermittent, and may do away the danger arising from paroxysms, it ought to be employed.

But there are certain principles by which the exhibition of the bark ought to be regulated. It should not be employed, unless the fever to be removed be certainly of the intermitting kind. It appears from the daily controversies of physicians, how difficult a thing it is to discover the real nature and character of fevers. Skilful practitioners do not expect to derive any advantage from the use of peruvian bark in febrile complaints unless they be of the nature of

intermittents. But there are physicians of less knowledge and abilities, who, as often as they meet with a case of fever, marked by periodical exacerbations, attempt its removal by the peruvian bark. But as this remedy would be hurtful in inflammatory fevers, although characterized at times, by periodical and regular exacerbations, will it be likely to prove less injurious in various other fevers, which differ equally from the nature of intermittents ?

In every fever, however, which derives its origin from the fomes of intermittents, the peruvian bark is not calculated to check the paroxysms. If in the spring, for instance, an intermitting fever be changed into a continued one, or if it assume that form from the beginning, it must be treated like a simple continued fever. In this way, it is induced at length either to remit or intermit ; or is sometimes, by such treatment, even cured entirely. It is worthy of remark, that I have oftentimes seen the fomes and cause of an intermittent completely eradicated by a continued fever.

In a similar manner must we treat the double tertian remittent, which is marked by regular exacerbations, and never departs from its proper type. Sometimes this disease runs on to the eleventh, fourteenth, or twentieth day, and

is considerably violent even during the time of its greatest remission. But while it prevails to such a degree, the peruvian bark must not be administered; for it induces great heat, and adds to the intensity of the fever. It is necessary to wait, therefore, till its remissions become more considerable.

There are some practitioners who have directed a trial to be made of that remedy, on this condition, that its use be immediately relinquished in case it does not succeed. Others again conceive that it ought not to be exhibited earlier than the twelfth day of the disease; but both of these classes are in an error. Uncertain remedies ought not to be tried, nor should we fix a certain period for the exhibition of remedies which nature herself has not fixed; our best plan is to follow her as our guide, and to give her such aid when labouring for her own relief, as she seems to require.

Many remitting fevers occur, in which the paroxysms or exacerbations come on with great violence, and bring the sick into the utmost danger. In such cases the practitioner must proceed in a very different manner. The bark must be exhibited with boldness. Nor must its use be dreaded, because the remission is, perhaps, rather slight. It will be sufficient if there be any

remission at all. It is only incumbent on the practitioner to enquire, whether or not, any thing ought to be mixed along with the bark, and what assistance may be derived from other remedies.

A mode of practice which I have generally found successful, is, to exhibit an emetic on the decline of the paroxysm, and after this to give a febrifuge potion, consisting of bark, together with some laxative and aperient remedies, so prepared as to be capable of producing a speedy effect. By such treatment as this, all the symptoms are generally rendered milder; I say, milder, for, in fevers of this description, we are not to expect that the paroxysms will be entirely removed, as they are in intermittents; they decline, for the most part, only in a very gradual manner. Frequently, however, remittents of this kind are changed into intermittents, not, indeed, into tertians or quartans, but more generally into the form of double tertians.

It more frequently, however, occurs, that in fevers of this description, the paroxysms are so protracted, that the preceding almost runs into the succeeding one, leaving the intermission extremely short. Decoctions of bark, therefore, should not then be used, because they require too long a space of time for their operation.

Recourse must consequently be had to the bark in substance, or rather to the extract of bark. A drachm of the extract is equal in strength to an ounce of the bark in powder ; hence the necessary doses may be more easily repeated, and thus the patients placed in a state of safety. In such cases, if in any, the extract may be mixed with some cooling purgative salt. For the burning heat should be allayed, and if practicable, the bowels kept open, for which purpose, the remedies ought to be given in very large doses.

The same remedy must be pushed to a still greater extent, in those fevers where malignant symptoms arise. When, for instance, the head is very grievously attacked ; when an apoplectic or lethargic state supervenes ; when the lungs are greatly oppressed, or the abdominal viscera affected with a very acute and excruciating painunder these circumstances, I say, there is the utmost danger in delay, nor can the lives of the patients be sufficiently guarded in any other way, than by a plentiful use of the peruvian bark. When the febrile poison has dissipated itself throughout the whole system, this remedy meets and extinguishes it, as it were, and, at times, restores the patients from such a low state, that they might almost be said to be raised from the dead.

The mode of administering the bark depends on the nature of the fever, the force of the symptoms, the longer or shorter duration of the period of remission, and the laxity or costiveness of the bowels. But amid such a variety of circumstances, it is impossible here to point out what may be necessary for each particular case. We can only say in general, that there is no great difference between the proper treatment of double tertians and malignant remittents, except that in the latter, the remedies must, in the same space of time, be given in larger quantities ; for when the danger is so pressing, the febrile poison should be subdued and eradicated as speedily as possible.

It is indeed best to wait till the exacerbations remit ; but there are cases in which the remissions are scarcely perceptible. Then, indeed, having first used the proper preparatory remedies, the bark must be boldly exhibited. This remedy is the less to be dreaded, in as much as the pulse is for the most part depressed ; but if it even were not depressed, still the bark must by all means be used. In such a doubtful disease, it is, as we have already said, the sheet anchor of safety by which alone the vital principle can be supported.

In the mean time a very special regard is to be had to those symptoms, in which the whole force of the disease seems to centre. It is, indeed, in counteracting these symptoms that the bark is so efficacious. But other remedies should be also frequently exhibited in such cases. From what we have said on the subject of malignant intermittents, the reader may readily collect our sentiments as to the several means that might contribute to a cure in the present instance. What was there advanced may be applied to all cases that usually occur in malignant remittents. Indeed there is no other difference between the two diseases, except that between the paroxysms of malignant intermittents there is a longer interval, and that during this interval the patients are more free from fever.

For the better illustration of the method of cure, I had prepared for publication a number of cases. But it appeared best on reflection that these should be omitted. There are not two cases of disease precisely alike; whence, there are not two in which the same remedies will produce precisely the same effects. It seems most adviseable, therefore, to reduce to certain general laws, all the facts which experience has brought to light, and from these, to deduce a mode of cure accommodated to the state

and condition of each patient. It is oftentimes the fault of observers, that while they carefully treasure up all facts that fall under their notice, they seem quite regardless of the principles which these facts are calculated to suggest and support. But the establishment of just principles, besides being the proper and natural end of observations and facts, is certainly what confers on them their highest value.

THE END.

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