

A fourth dissertation on fever : containing the history of, and remedies to be employed in irregular intermitting fevers / by George Fordyce.

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FOURTH DISSERTATION

Callegii ON *Regii*
FEVER.

Medicus CONTAINING THE *Ecumenus*

HISTORY OF, AND REMEDIES

TO BE EMPLOYED IN

IRREGULAR INTERMITTING

FEVERS.

Medicina igitur adhuc taliter comparata est, ut fuerit magis ostenta, quam elaborata; etiam magis elaborata quam amplificata.

BACON AUG. Sc. Lib. ii. Cap. i.

Solent autem homines naturam tanquam ex præalta turri et e longo despicere, et circa generalia nimium occupari; quando si descendere placuerit et ad particularia accedere, resque ipsas attentius et diligentius inspicere, magis vera et utilis fieret comprehensio.—IBID.

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A

FOURTH DISSERTATION

ON

FEVER.

MANY authors and practitioners have thought the tertian type of fever the true type, and described it as such: in other words, that every intermittent would recur at the end of forty-eight hours, if it were not prevented by some accident. Whether this be the case or no, the author having described a regular tertian, and the manner of it's treatment, proceeds in the next place to endeavour to lay down the history and manner of treatment of those intermitting and remitting fevers, which vary in their type from the true tertian. He means by fevers observing the tertian type, those

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which return from the end of forty-six to fifty hours.

In the first place, the most obvious distinction between the types of fevers, or the most obvious variation from the tertian type in them, is, that some fevers recur at the end of twenty-four hours after the beginning of the former paroxysm. In these each paroxysm goes through its course, as in tertians, in eight, ten, or twelve hours. These fevers have been called quotidian.

In the next place, in some intermitting fevers the paroxysms return at the end of seventy-two hours from the beginning of the former paroxysm. In these each paroxysm continues for eight, ten, or twelve hours, in the same manner as in a tertian. These have been called quartans.

In both quotidians and quartans it is to be remarked, as has been already done : First, in quotidians, that the return of the paroxysm is not absolutely fixed to twenty-four

four hours : Secondly, in quartans to seventy-two hours.

Quotidians may return at the end of twenty-two hours, or from that to twenty-six hours ; although the return is more confined than in tertians, seldom exceeding the bounds of between twenty-three and twenty-five hours.

In like manner, the return of quartans does not always take place exactly at the end of seventy-two hours, but from seventy to seventy-four hours. There is also a greater latitude than in tertians, they sometimes returning from sixty-nine to seventy-six hours.

In both these cases, the paroxysm may return constantly sooner than twenty-four or seventy-two hours : for example, constantly two hours sooner. These are called anticipating quotidians and quartans. In these the return being two hours sooner in every paroxysm, the beginning of the

paroxysm may take place at any time of the day or night.

In like manner, each paroxysm may return two hours later than the former paroxysm. These are called retarding quotidians and quartans, in the same manner as retarding tertians. Their paroxysms may take place any time in the day or night.

It may also happen, that subsequent paroxysms of a quotidian may sometimes take place at twenty-four hours after the beginning of the former paroxysm; sometimes at twenty-two hours, or sometimes at any time between that and twenty-six hours after the beginning of the former paroxysm, so as to wander sooner or later from the twenty-four hours, but always to be within two hours of the twenty-four. In this case the paroxysms will always continue to return within two hours of the same time of day.

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In a quartan the same thing may also happen. That is, supposing the quartan type should be such, as that the return of the paroxysm ought to be at noon; the paroxysm may nevertheless return at any time between ten and two, always returning therefore at within two hours of the same time of day.

To such quotidians and quartans, no particular name has been attached. They have generally been called regular quotidians and quartans, as if they had returned exactly at twenty-four or seventy-two hours from the beginning of the former paroxysm.

In anticipating and retarding quotidians and quartans, the same indisposition to return in the night time, which has already been shown to happen in regular tertians, is found to take place. That is, if in a quotidian or quartan the first paroxysm should take place at noon; the second at ten o'clock in the morning; the third at eight; the fourth at six; it often

happens, that the fifth paroxysm, instead of taking place at four o'clock in the morning of the next civil day, takes place at six o'clock in the evening of the day in which the fourth paroxysm happened. So also if the first paroxysm of a retarding quotidian or quartan should happen at noon; the second at two in the afternoon; the third at four; the fourth at six o'clock in the evening; and the fifth at eight; the sixth, instead of taking place at ten o'clock in the evening, makes its appearance at six o'clock in the morning following, in the same manner as in a regular tertian.

Suppose it should happen, that in a quotidian the paroxysms should take place at the end of twenty-four hours, or two hours sooner or later; or in like manner in a quartan, the paroxysms should take place at the end of seventy-two hours, or two hours sooner or later, so as to return at nearly the same hours of a civil day; and each paroxysm should occupy the space of eight, ten, or twelve hours, from the beginning of the accession to the end
of

of the crisis. The only differences in the history or manner of treatment, from what has been already laid down in treating on tertian fevers, are what follow, provided the disease remains a quotidian or quartan during the whole of its course.

A quotidian has a shorter course if left to itself, than a tertian—that is, if a quotidian be left entirely to itself, the intermissions become more perfect in from ten to fourteen days, when they become generally complete. If the disease be perfectly regular, they continue complete from three to four weeks; afterward the attacks become less violent, and the disease gradually goes off, so as entirely to leave the patient in about ten weeks. Whereas a regular tertian, going through its natural course, seldom leaves the patient in less than fourteen weeks.

On the other hand in a quartan, if the paroxysms from the beginning return from the end of seventy to seventy-four hours, the intermissions seldom become

complete till about three weeks. If they continue to return at that period of time through the whole course of the disease, the intermissions afterward become longer, and are more perfect. The disease is apt to run out for five months before there are any signs of abatement, and it is often six, seven, or eight months before the disease ceases entirely.

Supposing that no accident should take place during the ordinary progress of a quotidian or quartan, the same observation is to be made with regard to leaving the patient free from any habitual disease, as has already been made in the Dissertation on regular tertian; with this exception, that a regular quotidian is not so efficacious as a regular tertian, and a regular quartan is still less efficacious, or rather it is apt to subject patients to diseases arising out of itself.

Although the greater number of intermitting fevers follow the tertian, quotidian, or quartan type, yet it sometimes happens,

happens, that intermittents return at the end of ninety-six hours, so that they may be called quintans; and even some which may be called sextans; and the author has seen two or three cases of septans. All the types beyond quartans, that have come under his observation, have not continued for more than five or six paroxysms, after which they have gone off, or returned to quotidians, tertians, or quartans.

It has often happened, that intermittents, instead of recurring at the end of forty-eight, twenty-four, or seventy-two hours, or two hours sooner or later than these periods, have recurred at different times; as for instance, at the end of thirty-six hours, or two hours sooner or later.

Of such fevers it must be observed, that they also have a disposition to vary from thirty-four to thirty-eight hours, or whatever be their period, in the same manner as tertians, quotidians, and quartans.

It

It is also to be observed, that they have a great indisposition to return between eight in the evening and six in the morning, which indisposition renders them extremely irregular; for if a paroxysm should take place at noon, on Sunday, the next paroxysm ought to take place at midnight between Monday and Tuesday; but instead of that it often returns either at eight on Monday evening, or at six on Tuesday morning, or somewhat earlier on Monday evening, or later on Tuesday morning. Such fevers are also generally extremely irregular, whether they observe that or any other type different from the tertian, quotidian, or quartan.

Intermittents, which recur at the end of thirty-six, or any other number of hours, different from the hours at which quotidiens, tertians, and quartans recur, if even each paroxysm continue only for eight, ten, or twelve hours, go nearly through the same progress as regular tertians, quotidiens, or quartans; yet, however, they are not so apt to arise gradually to a certain height,

height, or to have so perfect crises, or to go off by the paroxysms gradually diminishing, as either of those which observe the regular types are.

It is to be observed, that it happens not uncommonly, that an intermittent, which returned at the beginning at thirty-six, or any other number of hours not coincident with the tertian, quotidian, or quartan type, very frequently in its progress becomes tertian, quotidian, or quartan.

Whether a fever be a regular tertian, quotidian, or quartan, or follow any other type, provided the paroxysms continue for eight, ten, or twelve hours, and the crises are tolerably complete, every observation which has been made with regard to a regular tertian applies to them also, both with regard to their progress and manner of treatment. It is also to be observed, that a regular tertian goes through its course with greater regularity than an intermittent of any other type, and with less danger to the patient; it is also more readily

readily carried off by remedies. Quotidians are the next in these points to tertians. A regular quartan is apt to be attended with many more accidents, but not so apt to be irregular as fever observing any other type, excepting a quotidian or tertian.

Whether therefore an intermitting fever be a tertian, quotidian, quartan, or observe any other type; if that type should arise at the beginning, or if the disease should resemble a regular continued fever for the first ten days, and afterward break down into an intermittent: if the paroxysms go each through their course in about twelve hours, and terminate in a tolerably perfect crisis, and continue the same type; or if at the beginning, or after they became intermittents, they changed their type to a longer one; in any of these cases, if they become more perfect in their intermissions for the first week or two, afterward remain for several weeks nearly equal, and then gradually diminish; if the accessions become less severe, and the intermissions more perfect, until the disease

ease

ease gradually goes off; or if a feverer paroxysm should have taken place, and terminated in a more perfect crisis, and the disease should not afterward return: if an intermitting fever of any type should thus go through its course, every observation that has been made, and every mode of treatment that has been laid down in the Dissertation on regular tertian, are applicable.

The only attention, that is further to be paid, is in those cases where irregularity or accident occasions intermittents to leave the course of a regular tertian, and become more dangerous in consequence.

The author means now, therefore, to enumerate these irregularities and accidents.

The first variation from a regular tertian, he means to take notice of, is a prolongation of the paroxysms, so that instead of continuing for eight, ten, or twelve hours, each continues for a much greater
length

length of time before the crisis is completed.

The first cause of prolongation of the paroxysms is a disease, which is apt to be excited in fever, and which the author intends to call general inflammation.

This disease arises sometimes in consequence of fever; frequently from many other causes, and has often been called fever itself; sometimes inflammatory fever, sometimes inflammatory diathesis. It differs, however, from fever wholly; as it may arise, continue its course, and terminate, without any fever being present; and a fever may arise, pursue its own course, and terminate, without general inflammation at all taking place.

The most simple appearance in general inflammation, and which seems to constitute the disease, is hardness of the pulse.

Hardness

Hardness of the pulse is an action in the arteries in contracting, which gives a peculiar feel to the finger pressed moderately upon the skin lying immediately over any large artery; such as, for example, the radial artery in the wrist.

The sensitive powers of different persons are by no means the same.

The author wishes to avoid all metaphysical questions, and therefore leaves it to those who choose to amuse themselves with such subjects, whether it be by some formation of the organs of the senses congenial with man, or whether acquired by education, that there are certain discriminations of ideas, which the organs of the senses of one person may receive, and which the organs of the senses of another person cannot receive.

For instance, one person may be perfectly sensible by his ear of the concordance or discord of the number of vibrations of any musical instrument, so as to
produce

produce pleasure or pain; while the ear of another person may be in no wise capable of making such distinction, and he may be capable of receiving no pleasure from concordant vibrations, or pain from such as are discordant.

In like manner, the sensations from feeling are much more acute in some persons than in others. We are told from authority that can hardly be doubted, that some blind men have been able to distinguish colours by feel, at least to be able to distinguish the shape of the coloured from the uncoloured parts of cards, so as to be able to play at games of which these are the instruments.

The author wishes to show that a man, whose ears are not so attuned to musical notes, is not warranted to say that no other man's ears are attuned to musical notes, so as not to be able to distinguish between concord and discord; so in a much stronger degree, a man shall not say, that, because he cannot distinguish between objects of
different

different colours, or between the shades of a coloured part of a card, and the white part of it, by feeling that no other man is capable of making that distinction.

In like manner, if a man should say, that he could find no such distinct feelings in the pulsation of an artery, will it prove, that another man cannot find such distinction? Dr. William Hunter, for example, however great an anatomist, constantly denied, that he could feel any such distinction as hardness of the pulse, neither could his ears distinguish concord from discord; while his brother, Mr. John Hunter, as he has affirmed in his works, could well distinguish hardness of the pulse, and, as the author knows, could also distinguish concord from discord in a musical instrument.

The author thinks he has established, that a man's denying that his organs of sensation can discriminate between two sensations, is not a proof that such distinction cannot be felt by others. He

could readily cite a great many authorities, on which he might rest himself, that there is such a sensation as hardness of the pulse, to be felt by laying the finger upon the skin over a considerable artery; but he thinks it better to refer the proof of this argument to that which may perhaps be thought of much more weight.

If a vein be opened after a ligature, or any other pressure has been made upon it, between an opening into it and the heart; and if blood should flow from the opening into a basin, the shape of which somewhat approaches to the section of a sphere; it sometimes happens, that the blood coagulates in the basin in less than a minute, and sometimes it is four or five minutes before it coagulates. This difference depends in some measure on the circumstances in which the opening is made, and the blood flows.

If the vein which is opened be large; if the orifice be also large; if the blood flow in a stream through the air from the orifice

fice into the bafin; if the bafin be a perfect fection of a fphere; if the quantity of blood taken away be large and flows quickly; it will be more apt to continue fluid for a greater length of time.

If the vein from which the blood is taken be fmall; if a fmall orifice be made in it; if the blood, inftead of flowing in a fteam through the air, fhould run down upon the fkin of the arm into the bafin; or if, inftead of flowing immediately through the air in a fteam, the fteam be intercepted by any furface, and from that furface fhould fall into the bafin; or if the bafin, inftead of being a fection of a fphere, fhould be of fome other figure, the furface of which is larger in proportion to its contents; in all thefe circumftances the blood will coagulate fooner,

When the blood coagulates foon, there is not time for the red particles to fubfide from the top of it, and the whole coagulates into a red mafs. When the blood is received into a veffel, and coagulates

slowly, the red particles, being of greater specific gravity than the other parts of the blood, have time to subside, so that the blood separates into two parts before the coagulation takes place, the upper part forming a fluid nearly colourless and transparent, and the lower part forming a red opaque fluid; and when the coagulation takes place, the upper part is of a blueish or yellowish colour, and the under part red.

Both when the blood coagulates soon, and does not give time to the red globules to sink from the upper part of the blood; and when the blood is long coagulating, so as to give time for the red particles to sink from the top of the blood: when the whole is coagulated, it appears at first a perfect solid; only when it coagulates soon the whole appears a red solid, but when it coagulates slowly it has the appearance of a solid, the surface of which is colourless, or rather with a yellowish or brownish tint to the depth of a quarter of an inch, or a little more, and below that it is of a
red

red colour. In both cases a fluid generally oozes out from the surface of the solid mass, in which fluid the solid mass swims. When the blood is coagulated quickly, the whole of the solid mass is red, and when the blood is coagulated slowly, the greatest part of the solid mass is red, but covered at the top with a crust nearly colourless, but somewhat tinged with yellow or brown, which crust has often been called the buff of the blood.

It has been already said, that the size of the vein, the size of the orifice made in it, the flowing of the blood in a full stream through the air, and the shape of the basin into which the blood is received, have a considerable influence on the blood's coagulating sooner or later, and in consequence, a crust's being formed on the surface of the blood, after it has coagulated, free from red particles.

It is also to be observed, that independent of all these circumstances; or in other words, supposing that blood be taken

from two persons, when all the above circumstances have been exactly the same; the blood shall be longer coagulating, and in consequence show what has been called a buff, when taken from the one person; and coagulate soon, and consequently show no buff, when taken from the other person.

In this case, excepting in a few instances, when the blood coagulates slowly, the pulse has a feel of hardness, and there is a buff on the surface of the blood; whereas, on the other hand, when the pulse has no such feel of hardness, the blood coagulates quickly, and there is no appearance of a buff on the surface of the coagulum.

Here then is another criterion, beside the power in the practitioner of distinguishing sensations, by which the actions of the arteries may be discriminated, to wit: that they sometimes act so as to make the blood coagulate slowly when it flows from a vein into a basin, when taken

taken in the same circumstances, and that they act in other cases so as to occasion the blood to coagulate soon when it is received into a basin.

The author further affirms, that when the pulse has a feel of hardness, the blood taken from a vein is longer coagulating, than when no hardness is to be felt; and that therefore there is actually a sensation of hardness to be felt in the pulse, in contradistinction to all other sensations, viz. That the action of the arteries, which gives this sensation, also produces a disposition to make the blood remain longer fluid after flowing from a vein into a basin, under the same circumstances.

It is to be observed, that every thing on this earth follows by gradation. The twilight, which begins in the morning, gradually acquires meridian splendour, and gradually sinks from its meridian splendour into the shades of night. There is a gradation of animals from human beings, until they descend through quadru-

peds, fish and reptiles, and come down at last to corals, sponges, and mushrooms, until it is difficult to say which is animal or vegetable. Such gradations are there also in the feels of the pulsations of the arteries.

In some cases the sensation of hardness in the pulsations of the arteries can hardly miss being sensible to any person, who has the least delicacy of feeling; as happens in violent pleurisy and acute rheumatism. In such diseases, it is difficult to produce a quick coagulation of the blood, or appearance of buff on the surface of the coagulation: to prevent it, it is not only necessary to make a small orifice in a small vein, and let the blood run down the arm into a shallow vessel, but it is even necessary to interpose some other substance, the surface of which it shall run over before it falls into the basin, to make it coagulate quickly, and so show no buff on the surface of the coagulum; while in other cases the sensation of hardness is hardly discernable, and the least variation of the circumstances,

circumstances, with which the blood is taken, will prevent the appearance of a buff. There is another sensation which the pulsation of the arteries gives, which the author calls obstruction.

This obstruction of the pulse has been generally felt in fevers, and has been called hardness by many authors. That it is a different affection of the arteries which gives this sensation to the pulse, is very evident, since the feel of obstruction may be very great; and nevertheless, blood flowing from a vein into a basin, under all the circumstances most favourable to its remaining fluid, coagulates immediately, and of consequence no buff appears on the surface of the coagulum.

It happens often at the beginning of the hot fit of an intermitting fever, that the pulse is very much obstructed, and has by many authors been said to be hard; yet frequently, indeed always, when it is only obstructed, and not hard, if blood be taken from the arm, and received into a basin, under all the circumstances that tend to
make

make it remain fluid, it nevertheless coagulates immediately, so that no buff appears on the surface of the coagulum.

Fulness and strength of the pulse have also been often confounded with hardness; but neither fulness nor strength is at all necessary to the feel of hardness; for in an inflammation of the intestines the pulse is alway hard, and blood taken from a vein into a basin remains long fluid, consequently the coagulum is covered with a buff. The pulse in this case is hard, but not full or strong.

Hardness, therefore, is a peculiar sensation given by the pulsation of the arteries, different from strength, and fulness, and obstruction, as well as from every other sensation, which the pulsation of the arteries produces in a finger applied to the skin immediately over an artery.

The sensation of hardness in the pulse is evidently a mark of stronger action of the arteries. The coagulable lymph, in consequence of an animal's being alive, re-
mains

remains fluid ; the mucilaginous part of it remains dissolved in the water. In the blood vessels of dead animals, the mucilaginous part separates from the water with which it is combined ; it is therefore the life of the blood vessels, which keeps the mucilaginous part dissolved in the water, and consequently the coagulable lymph fluid,

It has been said, that the mucilage of the coagulable lymph remains soluble in water, in living animals, because the blood in a living animal is constantly in motion ; and that it is the motion which occasions its solubility in water, and consequent fluidity. But that this is not the case, is evident. In the first place, without adverting to this chemical maxim, that motion or rest can have no effect on the powers of chemical combination, this must be observed. In a fainting fit, which is sometimes continued for many hours without any motion's being perceived in the heart, or pulsation in the arteries, and consequently without any motion of
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the blood, the blood has remained fluid; and consequently the mucilage of the coagulable lymph has remained soluble in water. In a dead body, however, in a much less number of hours, it separates from its water and becomes solid, so as to render any further circulation of the blood impracticable.

There is not any instance of the mucilage of the coagulable lymph, after it has been once separated from its water by coagulation, becoming soluble in water again, excepting by putrefaction, or by boiling in water, or maceration in water, heated to nearly two hundred and twelve degrees, or at least to more than one hundred and forty degrees. This is a heat much superior to any that ever takes place in the living human body. It is not therefore motion, that gives the mucilage of the coagulable lymph a disposition to remain soluble in water, and therefore fluid; but a stronger action of the living power exerted in the arteries. It may be conceived, that the fluids of the human body, as well

as

as the solids, have chemical properties, in consequence of their being alive, which they have not when they are dead.— In this case, when the blood remains fluid for a long time after it flows from a vein into a basin, so as to allow the red globules to fall from the top before it is coagulated, and so as to give the appearance of buff to the surface of the coagulum, we must conceive, that the life remains in it for some time after it is taken out of the body.

Whatever may be the case, whether it be that this continuance of fluidity of the blood for a longer space of time is owing to the superior action of the arteries on the blood, or that the life remains in the blood itself, longer after it is taken from the body, its remaining long fluid, and in consequence a buff appearing on the surface of the coagulum, shows that there is a superior action of the living power in the body when there is hardness of the pulse. This hardness is pointed out by the feel of the pulsation of the arteries; and by the blood when once taken from
a vein

a vein into a basin, in the circumstances already enumerated, showing an appearance of buff on the surface of the coagulum.

Hardness of the pulse alone shows, that the living power is acting too strongly in the blood vessels, for a man to be considered in perfect health. Sometimes this sensation is accompanied with no other appearance of stronger action of the living power in the blood vessels, nor does it disorder a man not afflicted with any other disease, so as to prevent him from going through the ordinary functions of life; but if it should take place in any disease, it very often alters the progress of that disease.

If it should happen in a regular tertian, it prolongs the time of each paroxysm of the tertian; so that instead of the paroxysm going through its ordinary course in eight, ten, or twelve hours, it may require, twelve, fourteen, sixteen, or many more

more hours for it to go through that course.

An action in the arteries producing a feel of hardness in the pulse, constitutes general inflammation, and forms the simplest case of the disease; but other symptoms frequently attend it. The heart often acts more strongly; that is, the left ventricle contracts with greater force, so as to propel the blood with greater force into the arteries. In this case, if the finger be pressed upon a large artery lying immediately under the skin, the artery during the time of its distention resists the pressure, and it requires a greater pressure to prevent its being distended, which sensation has been generally called strength of the pulse.

By this stronger action of the heart and arteries, the velocity of the blood is also increased, by which means it is made to return faster upon the heart, and stimulate the heart to more frequent contractions, so that the pulsations of the arteries

tries are not only hard and strong, but also frequent.

It happens too, if there be no other disease but general inflammation, that the left ventricle makes a full and complete contraction. When any muscle makes a full and complete contraction, it is fully and completely relaxed after such contraction. The ventricle of the heart then, after making a complete contraction, makes a complete relaxation, and receives into it a large quantity of blood from the auricle, and propels all that blood at each contraction into the arteries, so that the artery in which the pulse is felt is greatly distended, and the pulse becomes not only hard, strong, and frequent, but also full.

If the pulse should become hard alone, we cannot say that a man is in perfect health, but if it also become full, strong, and frequent, it certainly constitutes a disease of itself; that is to say, it prevents the functions of the body from being carried

ried on perfectly and regularly, and may even produce such derangements in the system, as to destroy the patient. This disease the author calls general inflammation.

The slightest case of general inflammation then is hardness of the pulse, in any degree, for in perfect health there is no such sensation in the pulsation.

When the disease is in somewhat a greater degree, the pulse is not only hard, but there is a sense of fulness and uneasiness all over the body, a want of appetite and restless sleep.

If the disease should be in a still greater degree, the pulse becomes full, strong, and frequent, from about a hundred to a hundred and ten pulsations in a minute. It is also uniform, that is to say, the pulsations are equal in time, frequency, and force, provided the disease does not arise in consequence of any other disease existing in the system.

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With

With these appearances there are want of sleep, total loss of appetite, sense of universal distention, flying pains in the extremities, general tumour and redness, the patient draws his breath deep, there is sometimes cough, pain in the internal part of the head, the patient complaining that his head is ready to burst, fullness of the vessels of the eyes, and delirium.

When this disease proves fatal, the feel of tension throughout the system suddenly going off, the patient sinks, or the affection of the brain may be so great as to destroy the patient.

It is not the author's business in this Dissertation to show the general cause, progress, and termination of this disease. It is sufficient at present to remark, that it is not uncommonly excited in a regular tertian, and other intermitting fevers; and to point out the effects which it produces in intermitting fevers, and the means of counteracting them.

General

General inflammation is excited in intermitting fevers most commonly when they happen in temperate and cold climates; and in particular states of the fever itself, especially when the fulness arising from the small vessels, contracting and filling the large vessels with blood, distends them, and stimulates them, or perhaps from some other cause.

When general inflammation arises in a regular tertian, the pulse in the hot fit is not only full, strong, frequent, and obstructed, but likewise hard; if blood be taken from the arm, the red particles fall from the surface before it coagulates, so that after the spontaneous separation, the coagulum is covered with a buff-coloured crust.

There is fulness of the vessels of the head shewn by the vessels of the eye appearing more numerous, and the external jugulars appearing fuller. The pain of the head is greater and is felt more internally, and there is sometimes delirium

even in the first paroxysm of the disease. More particularly the hot fit is protracted. The paroxysm often continues in a regular tertian, for thirty-six or forty hours before any critical symptoms take place. The crisis is not perfect, the pulse still remaining frequent, the appetite not returning, the tongue being still covered with a crust, and the head-ach remaining, though in other respects the patient is relieved, and falls into a quiet sleep for a few hours.

Sometimes again the relief is but trifling, and a practitioner would be led to suppose it a continued fever, excepting that the paroxysms attack the patient in the day time, not in the evening; that the exacerbations are greater; and that they observe very exactly the tertian type.

This is one of the cases of fever that was called by the Greeks Hemitriteon, and by Celsus Semitertian, though certainly not the most frequent case to which they gave that name.

If

If general inflammation should take place in a great degree in a quotidian, there is for the first week, or a day or two longer, all the appearance of a continued fever, except that the exacerbations take place in the day time, and not in the evening.

If it should be one of those anomalous cases, which fall between a quotidian and a tertian; if the returns of the paroxysms should be near the quotidian type, that is to say, in less than thirty-six hours, the disease has at first the appearance of a continued fever, excepting for the times of the recurring of the exacerbations as in a quotidian. If it should be nearer a tertian, it is more near to what happens in a tertian, that is to say, there is some appearance of crisis taking place before the next exacerbation comes on.

If general inflammation should take place in a great degree in a tertian, which is afterward a quartan, most commonly during the time the general

D 3 inflammation

inflammation continues, it keeps it in the tertian type; but if it should not retain the tertian type, the paroxysm is prolonged from thirty to fifty hours; and the crisis is very incomplete; the pulse especially continuing hard, and often full and strong during the time of the intermission.

When in any case general inflammation has prevented the crisis from leaving the patient in an intermitting fever so free from the disease, as to take off the hardness, fulness, and frequency of the pulse, the foulness of the tongue, and internal head-ach, the disease has been looked upon by many practitioners as a continued fever. That it is not, is known, first by the exacerbation taking place between six in the morning and five in the afternoon; and secondly by the fever breaking down into a complete intermittent, after the general inflammation is gone off.

The exertions which take place in consequence of the fever itself, and the increased

creased action of the heart and arteries which constitute general inflammation, gradually weaken the system, and by this means carry off the general inflammation, and afterward the intermittent becomes regular. This happens commonly before the end of the second week of the disease; the fever, after the general inflammation is gone off, goes on much the same as if no general inflammation had arisen, with this difference, that it is more irregular.

In temperate and cold climates, general inflammation happening at the beginning of an intermittent is not often fatal, even during the time that it renders the intermittent similar to a continued fever.

If general inflammation should not prevent the crisis from taking place, it is hardly ever fatal either in itself, or in its consequences.

In hot climates, general inflammation more seldom happens; but when it does take place, it renders it doubtful whether

remedies can be employed at the beginning of the disease, which, if they had been employed, would have carried the general inflammation off, until it is too late for their being of any use. If general inflammation should take place in an intermittent in temperate or cold climates, there is no mischief arises from employing remedies to carry it off.

The most powerful remedy for carrying off general inflammation is evacuating the bloodvessels.

The bloodvessels must always contract themselves so as to adapt themselves to the quantity of blood, which is contained in them. They must always be cylindrical, when not compressed by an external force,

This contraction is an exertion of the living power. It was long thought to depend upon the elasticity of the vessels.

Elasticity is a power which dead matter

ter has, which occasions a cylinder to contract, if it be distended beyond it's disposition to contraction, at the same time occasions it to become larger if the cylinder be made of less diameter by any other force, as has been sufficiently explained in a former Dissertation.

That the contraction of the vessels, so as to adapt themselves to the blood which is in them, depends on a power which arises from the life, is evident from these experiments and observations.

If an animal be killed by any means which do not empty the bloodvessels, such as breathing a quantity of air unfit for respiration, as soon as the body is dead, and without any exudation from the bloodvessels into the other cavities, the bloodvessels enlarge, and in consequence become in part empty. The arteries become so empty, that it was supposed by the ancients, that they contained only air when the animal was alive. The veins are no longer cylindrical, but flat. The paleness

of all the parts in proportion to their floridness when the animal was alive shows, that the capillary vessels contain also a less quantity of blood in proportion to the diameter which they now assume.

From these appearances it is evident, that the bloodvessels have lost that power, which contracted them to the size they are at in a living animal, and that, being left to their elasticity, it has distended them. Therefore their elasticity is so far from being the power, that contracts the bloodvessels so as to adapt them to the blood that is in them in the living animal, that it is constantly endeavouring to counteract that power, and to distend the vessels.

This action of the living power, which contracts the bloodvessels so as to adapt them to the present quantity of blood, is the first and most necessary exertion of the living power; because if the bloodvessels be in any way emptied, so that there is not a sufficient quantity of power in the
body

body to contract them to the remaining blood, every other operation, whatever it may be, ceases. All the exertions of the body and mind, as has already been shown, are also diminished, while the bloodvessels contract, and continue cylindrical and full, if a portion of the blood be taken away. If a man is accustomed to labour, that is, to employ his muscles in pulling along any weight, he can only pull a certain weight forward in a given time, according to his strength. For example, he can pull forward a hundred weight, with a velocity of a mile in an hour. If the blood vessels of this man be emptied so that they shall contain a pound less blood in them, the bloodvessels will contract so as to adapt themselves to the remaining blood, but the man shall not be able to pull forward a hundred weight with a velocity of a mile in an hour; but shall be obliged, if he be to pull a weight forward at a mile in an hour, to retrench it to half a hundred weight, or if he must pull the whole hundred weight forward, he cannot do it with a velocity greater than half a mile in an hour.

Again,

Again, this argument may be taken in another light. Suppose a man in full vigour is capable of pulling along a hundred weight with a velocity of a mile in an hour, and can maintain this labour for six hours together, when his strength is exhausted, and he is obliged to rest, that it may be recruited, before he can begin his labour again. If in this man a pound of blood be taken away, the blood-vessels will contract themselves and continue cylindrical, and perfectly full of blood; but the man will not be able to pull forward a hundred weight with a velocity of a mile in an hour for more than three hours together; but at that time he shall be obliged to rest, so that his strength may be recruited.

The author does not mean to affirm, that diminishing the quantity of blood by a pound will exactly diminish the powers a man has in drawing forward a weight by one half; he has only taken this proportion by way of illustration. The argument

gnment will hold equally, whatever the diminution of the muscular power by diminishing the quantity of blood by a pound may be. Certain it is, that the muscular power, by such diminution of the quantity of blood, will be greatly diminished, he thinks more than the proportion he has taken, while the bloodvessels can contract so as to adapt themselves perfectly to the blood which is left, and remain perfectly cylindrical and full.

In the same manner, if the heart and arteries be exerting themselves, so as to propel the blood forward with a certain force into the capillaries and veins; if the quantity of blood contained in the bloodvessels be diminished, they will contract so as to adapt themselves to the quantity of blood remaining in them, and continue cylindrical and full; but the heart and arteries will no longer be capable of propelling the blood forward with the force, with which they were capable of propelling it before the diminution of the quantity of blood contained in them.

This

This diminishing the quantity of blood in the bloodvessels will occasion an increased exertion in the sides of the vessels, in order to adapt them to the remaining quantity of blood, but will diminish all other action in the body, whether it be in the muscular or any other of the moving parts.

This effect of diminishing the quantity of blood in the bloodvessels, and, if it may be said, drawing the living power of the body into the sides of the vessels, diminishes all other action, and may go so far as to make all other action cease and be fatal. We see therefore, that the loss of a certain quantity of blood kills.

By diminishing the quantity of blood in the bloodvessels, the increased action of the heart and arteries, which has been described as hurtful in fevers, may be diminished upon these principles, and the general inflammation carried off. The mischiefs arising from it, which have already been pointed out, to wit, prolong-
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ing the hot fit so as to render the intermissions short and imperfect; it's converting an intermittent into a continual fever; it's proving fatal by the general distention in the whole body; it's oppressing the brain, and producing delirium, and occasioning the death of the patient; may be avoided by diminishing the quantity of the blood.

The quantity of blood in the bloodvessels may be diminished; first, by making an opening immediately into any bloodvessel, and letting a quantity of blood flow out; secondly, by increasing the secretion from almost any of the glands in the body.

When a bloodvessel is opened in any part of the body, so as to let a quantity of blood flow out from it, the circulation is so quick, and the bloodvessels communicate with each other so perfectly, that the blood is equally evacuated from every part of the body.

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The secretion from glands may be increased; first, by stimulating the secretory or excretory ducts of the glands. This cannot be done without also stimulating the bloodvessels in the neighbourhood of these glands, and so increasing the circulation in that part of the body, and of course diminishing it in the other parts of the body, and thus rendering it irregular. It has been shown in a former Dissertation, that every irregularity in the circulation tends to prolong the paroxysm of fever, and render the crisis more imperfect. Now if we diminish the quantity of blood, and take off the general inflammation by bleeding, we do not render the circulation irregular; but if we produce the same effect by stimulating any set of glands, we do render the circulation irregular, and therefore the general inflammation is better taken off by bleeding, than by increasing the secretion from any of the glands, in fever. Secondly, we may increase the secretion from any set of glands by relaxing them, or by throwing a larger quantity of blood upon them by contract-

contracting the vessels in some other part of the body. In this case too, we render the circulation irregular. In whatever way therefore secretion is increased from any set of glands, so as to diminish the blood in the bloodvessels, an irregularity of the circulation is produced, which does mischief in fever.

Opening a bloodvessel, so as to let out a quantity of blood, is therefore the only means that should be employed, to diminish the quantity of blood in the bloodvessels, and carry off the general inflammation, when it is doing mischief in intermitting fevers.

The best mode of opening a bloodvessel in this case is, to open a large vein in the arm, or any other part of the body, so as to allow the blood to flow out quickly.

It is of consequence to take away a sufficient quantity of blood at once, to take off the general inflammation, and

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that

that it should flow quickly from the blood-vessel.

If blood be taken quickly, and in considerable quantity from a bloodvessel, the larger vessels are emptied in a greater proportion, the smaller ones not having time to contract, and supply the large ones with blood.

Diminishing the quantity of blood in the large vessels, so as to make them contract in a greater degree, weakens much more than emptying the small vessels, and making them adapt themselves to a smaller quantity of blood. If blood be taken from a large vessel quickly, and in considerable quantity at once, the large vessels are emptied, and the effect in weakening the action of the living power is much greater, than if the same quantity of blood had flowed slowly from the vessels, or been taken at different intervals of time.

At

At least taking away a large quantity of blood at once quickly, diminishes the living power of the body, much more than taking away the same quantity slowly, or at several different times.

This is proved by the following experiment, which is almost daily repeated in London. If it be wished to kill an animal, such as an ox or a sheep for example, and to leave a large quantity of blood in the small vessels so as to give a red colour and greater weight to the flesh, the carotid artery is opened so as to let the blood flow out as quickly as possible. In this case, a much smaller quantity of blood, flowing out quickly, weakens so as to kill the animal. If it be wished to leave as small a quantity of blood in the small vessels as possible, in order to make the flesh look white, as is done in a calf, then the blood is first taken from a vein, until the animal nearly faints. This bleeding is repeated sometimes more than once, before a large artery is opened, and the animal allowed to bleed to death. By this means, a much larger

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quantity

quantity of blood is taken away, and the small vessels are much more emptied, than they would have been if no evacuation had been made from veins, before the animal was killed, by opening the carotid artery. Taking away blood, therefore, in large quantities at once, and quickly, weakens much more than taking it away at several different times.

Take the argument in another view. The degree of weakness, which is produced by diminishing the quantity of blood in the bloodvessels, is temporary or permanent. The temporary weakness is according to the quickness of the evacuation. If a large quantity of blood be taken away quickly, such a degree of weakness may be produced, as to prove fatal; although the same quantity might have been taken away slowly, without having any bad effect. If such bleeding be stopped before it has proved fatal, even if a fainting fit should have taken place, the patient gradually recovers, and his strength is restored to a certain degree, although he will still continue much weaker, than he was

was before the evacuation. If the same quantity of blood be taken away slowly, or at different times, no temporary weakness shall arise, no greater degree of diminution of strength, than continues after the evacuation.

In intermitting fever it is the present strong action of the arteries we wish to carry off. We do not by any means wish, to produce permanent weakness, for this would render the fever afterward irregular. The practitioner is therefore to weigh the degree of general inflammation, the strength of the patient, the mischief that is arising from general inflammation in the disease, and, from considering these things, determine the quantity of blood, which is to be taken away. The author has often found 16 ounces of blood, taken away at once, of more use than 24 ounces taken at twice.

General inflammation, or increased action of the heart and arteries, shown by the pulse becoming hard, full, and strong,

the tongue being covered with a thick white fur, there being considerable sense of tension all over the body, may prolong, as has been said, the hot fit of fever, so that instead of eight, ten, or twelve hours, it may continue for thirty-six hours, or even still longer, and render the intermissions short and incomplete; or it may make the disease have nearly the appearance of a continued fever, and may produce stupor and delirium, and run a risk of destroying the patient. In such cases it is proper to carry it off by making evacuations by bleeding, in order to avoid the danger, or, to shorten the paroxysm. If it do not endanger the life of the patient, or prolong the paroxysm, it will soon wear itself out, as the patient's strength is diminished by the efforts, which are made during the time of the paroxysm, and the whole of the patient's strength is wanted, to support him during the course of the disease. It is to be observed, however, when intermissions become tolerably perfect, food may be given during the time of them, so as to replenish the vessels

vessels with blood, and recruit the strength that is lost by emptying them, and that it is therefore better to err in taking away too large than too small a quantity of blood.

In intermittents happening in temperate and cold climates, the intermissions become almost always tolerably perfect. In such cases, therefore, we need not hesitate in taking away blood, if any danger or prolongation of the paroxysm should arise from general inflammation. In hot climates, where sometimes there is hardly ever perfect intermissions, and where the patient is much sooner exhausted by the exertions, which take place in the paroxysms, and when the intermissions and remissions are not so perfect as to allow the patient to be recruited by employing food which gives much nourishment, excepting there be real danger from the general inflammation, there should be great caution before blood is taken away. Such danger may arise from the tension, from the head's being affected. If there

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should

should be such real danger, a sufficient quantity should be taken away at once, so that the evacuation shall not require to be repeated.

If general inflammation should arise at the beginning of a continued fever, the dangers from it, and the manner of managing the patient, will be shown in that Dissertation, in which their regularities in such fevers, and methods of obviating them, will be treated of.

Although general inflammation at the beginning of an intermittent may be one cause of endangering the life of a patient, or making the disease have the appearance of a continued fever, only that the paroxysms do not take place in the evening, or prolonging the paroxysm to thirty-six hours, and render the intermissions imperfect; it is by no means the only one which produces these effects,

Sometimes when the pulse is full, strong, and obstructed, but by no means
hard,

hard, nor does blood taken from the arm show any inflammatory crust, for no reason which has been investigated, the paroxysm runs on for the length of thirty-six hours, in a tertian; for eighteen or twenty hours in a quotidian; and sometimes, though rarely, to sixty hours in a quartan. In these cases, the patient falls into a profuse sweat, and a lateritious sediment falls to the bottom of the urine; he feels himself much exhausted, and perhaps falls into a sleep for two or three hours; the sleep having been prevented during the time of the paroxysm; and the disease by no means goes off completely before the return of the next paroxysm. In this case a few paroxysms weaken the patient very much, and sometimes prove fatal. This variety has also been called hemitriteon, or semitertian. It differs entirely from those intermittents, which have their paroxysms prolonged by general inflammation.

When this case of semitertian arises in temperate or cold countries, generally, if
the

the disease be left to itself, the paroxysms shorten the crisis, and intermissions become more perfect, and the disease is changed into a regular quotidian, tertian, or quartan.

The remedies to be employed, to convert it sooner into a regular tertian, are in the first place clearing the intestines from noxious matter contained in them by an emetic. It is best to employ the emetic in the evening, in the same manner as has been directed in a regular fever. On the next day, in the morning, a moderate dose of rhubarb, or some other purgative, which tends to increase the peristaltic motion of the intestines, should be exhibited.

After the intestines have been cleared of their contents, preparations of antimony or ipecacuanha, or such other medicines as tend to produce appearances similar to those which take place in the crisis of fever, should be exhibited at the interval of four, five, or six hours, so as to act constantly

constantly on the system. These should be continued for several days, until a perfect and longer intermission has taken place. When a perfect intermission has been procured, if it should continue but for six or eight hours, the bark of the cinchona should be given in powder to the quantity of a dram or two drams every hour, or even every half hour, or as much in quantity and as frequent as the stomach will bear.

The bark is to be omitted when the next paroxysm, if it should return, has come on, and repeated again in the next intermission, provided it is as perfect as the former one. If it be not, the medicines producing appearances similar to those, which take place in the crisis of fevers, are to be recurred to until another intermission has been produced, in which case the cinchona is to be again exhibited.

If the exhibition of the cinchona should have prevented the return of the paroxysm altogether, the practice should be followed,

followed, that has been pointed out in a regular tertian.

Supposing that the exhibition of such medicines as produce appearances similar to those, that arise in the ordinary crisis of fevers, should not produce a perfect crisis, nor shorten the paroxysms; and that the patient is so much weakened, that his life is endangered from the weakness taken place in the disease; the cinchona is to be employed in the best remission that can be procured, and its exhibition regulated as has been already described in the management of a regular tertian.

Tertians, quotidians, or quartans, which have their paroxysms prolonged in temperate or cold climates, are still not very formidable; either falling of themselves into fevers the paroxysms of which are shorter, or their crisis more perfect; or being rendered by medicines, such as have been above described, shorter, or their crisis more perfect.

When

When general inflammation takes place at the beginning of an intermittent, although it has not been accounted for why the general inflammation should prolong the hot fit, yet it is evident, that it is often the cause of its prolongation.

When there is no great hardness of the pulse, and often when there is no great fulness and strength of it, but only frequency and obstruction; the hot fit is frequently prolonged, even so as to leave no other mark of an intermittent to distinguish it from a continued fever, excepting the exacerbations not taking place in the evening.

When this happens in hot climates, the disease is the most formidable, which is incident to mankind. It has frequently been called the plague, and by several other names, indicating the most fatal disease.

In countries where the heat of the atmosphere rises above ninety degrees of Fahrenheit's

Fahrenheit's thermometer, where the ground is marshy, or where there are stagnating waters, or where thick forests prevent the heat of the sun from drying the earth; three diseases, the most fatal to the human race, to wit, dysentery alone, continued or remitting fever producing it, and irregular semitertians, often arise.

Of these diseases the Author at present means to treat only of irregular semitertians.

Irregular semitertians, as well as these other diseases, arise, as has been said, from water stagnating in marshes, or from the air's being kept moist in countries covered with wood, where great quantities of rain falls.

In all these cases, if there should be any animal or vegetable matter, (one hundred degrees of Fahrenheit's thermometer being the most proper heat for putrefaction) the animal and vegetable substances

stances fall readily into the putrefactive fermentation. The vapour arising from animal and vegetable substances putrefying has already been shown, in a former Dissertation, to be one of the most powerful causes of fever. Several practitioners have thought this vapour always the cause of the semitertians, which are treated of at present.

The Author has shown in a former Dissertation, that moisture, by dissolving in the atmosphere, or by evaporation, generates cold. That cold so generated is also one powerful cause of fever; that it is often the cause of intermittents, as well as the other diseases which have been above enumerated, without any putrefaction taking place, is certain from several instances. These diseases have been produced in countries where the water was only found at a foot or two under the surface of the earth, whence the moisture has arisen, and contaminated the air so as to occasion these diseases, while the soil has been perfectly dry, and there has not
been

been the least appearance of putrefaction, the country being clear from woods. In this case it could be nothing but the moisture, that produced the disease. One instance of this occurs in the encampment of the English army, in the war about the year 1745, in a sandy plain in Flanders. Another in a region of Peru, where water is every where to be found at about seventeen inches below the surface of the earth, though the country itself is barren for want of water, and uninhabitable from the number of dysenteries and semitertians which take place in it.

The Author could mention many instances of the like kind, but these are sufficient to show, that moisture without putrefaction often produces this disease.

The next thing that draws our attention is, whether infection be not also one cause of these semitertians.

The Author has already said, that all fevers are infectious; regular tertians being

ing the least, and a regular continued fever, when its symptoms are in an intense degree, the most.

The opinion about the infectiousness of the semitertians of hot climates, where they are so very fatal, has been various; and given by young and unlearned practitioners, with such positive and contradictory firmness, that it is very difficult to form any true conclusion of it.

It has happened that a town, or even several towns, have grown up near harbours suddenly, in countries before uncultivated; and where the inhabitants, paying attention to trade only, have neglected the means of carrying off putrescent matter; when the heat has in this case arisen to any very considerable degree, putrefaction has taken place, and occasioned such semitertians, as at Philadelphia.

When a semitertian has arisen in a town under these circumstances, the in-

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habitants

habitants have been frightened, and anxious to investigate the cause of the disease. One origin of it has suggested itself to them, viz. that infection has been imported by ships arriving from countries in which infectious fevers have subsisted, almost always without any minute attention to the rise of the disease.

When this happens in a town where the heat, under certain circumstances, is very intense; as it is where winds blow in the beginning of the summer over a sea, or a continent lying nearer the equator; and which at other times is subject to extreme cold, from winds blowing over a continent further from the equator. In such towns, when the summer is a little advanced, and the heat becomes constant, great putrefaction takes place.—In consequence, fevers have arisen very suddenly, and universally. At this time many ships, from local circumstances, have arrived from countries where infectious fevers are very common. The sudden breaking out of this very fatal fever has
been

been ascribed to the arrival of such ships; yet ships of this description have arrived at other times of the year, when no such heat or putrefaction was prevalent, without any infection having taken place.—This renders it extremely doubtful, whether the fevers arise from imported infection.

The inhabitants of such towns as have been described, upon the breaking out of such a fever, have, from terror of the infection, fled into the country. In this case two things might happen to prevent the disease arising among those, who had gone into the country, the one, their not being exposed to the infection, supposing the infection existing; the other, the removal from the masses of putrescent matter.

It is to be inquired, to which of these two causes the exemption from such fevers in those who thus removed into the country was owing. The Author never having been in a situation

to observe himself the circumstances, which could determine his opinion, must depend upon facts related to him by those, who have been present under these circumstances, and whom at the same time he has had an opportunity of cross examining. No good evidence can be procured from the writers, who have lately treated on this subject in such situations, from the great attachment to hypothesis, which is so manifest among them. From the evidence the Author has been able to collect, it would seem, that these semitertians are not very infectious; since in hospitals, where patients were received in such fevers, the physicians, surgeons, and other attendants, were not oftener seized with the fever than the other inhabitants of these towns. While in the war between Great Britain, France and Spain, where the American independence was the ground of the pursuit, when infectious fever broke out in the combined fleets of France, and Spain, which obliged them to put into the harbour of Brest, in the hospitals of Brest every one of the nurses, and above one hundred and fifty

fifty of the practitioners in medicine, caught the disease, and were cut off by it.

Moreover, though many ships have arrived from these towns in the several ports of Europe, and in many certainly without performing any quarantine, yet the disease has never been produced in these.

The Author therefore thinks he may believe, that, though, as he has before asserted, all fevers are infectious, yet these semitertians are like the other varieties of intermitting fevers, not very infectious.

It may be concluded therefore; that these fevers arise sometimes from putrefaction, sometimes from cold, generated by small drops of water evaporating or dissolving in some or all of the vapours which constitute the atmosphere, sometimes though less seldom from infection.

The Author now means to attempt a description of this disease. It must how-

ever be remarked, that he never had an opportunity of observing this disease himself, never having been in a hot climate. His knowledge of it in the first place is taken from descriptions of it in authors. These are in many particulars very defective. In the second place, from descriptions of it which have been given him by many practitioners, who have treated the disease in warm climates.—Five of these physicians had been affected with it themselves. In the third place, from the descriptions of it by several patients, who had been afflicted with the disease. From these, although they had not any knowledge of medicine, he had an opportunity of inquiring what appearances they recollected during the time of the disease.

The Author wishes first to describe the disease in it's most violent form, and when it approaches nearest to a continual fever.

In

In the first place, the attack of the disease has been so violent as to carry off the patient in the very first paroxysm. In this case the disease, properly speaking, must be called an ephamera. This was the case more particularly at Bencoolen, when Fort Marlborough was situate in a marsh near the sea shore; it has ceased to be so fatal since the Fort has been removed to a more elevated ground.

It happens in a less violent degree in other cases. Thus, when European troops have been sent to the islands lying between the Tropics, on the eastern coast of America; the first attack of the fever has rarely been fatal. The patient has been seized at once with all the most violent symptoms of the first stage of fever.— Sometimes with a sense of coldness; shivering; rigor and horror; great depression of strength, and want of disposition to exert the powers of the mind, and a total apathy to all external objects: there has been great thirst; the tongue has been covered sometimes with a thick fur;

nausea, total aversion to food, want of sleep, and all the other most violent symptoms of the attack of a regular fever have taken place. Moreover, the disease in all those who had been affected with it whom afterward the author had occasion to see, and who remembered the circumstance, began between six in the morning, and eight at night. The attack was well marked, no symptoms of the first stage having preceded for several days before.

After the attack, the exacerbations became much more violent, so that the disease increased very fast. The Author could never gain any information, whether these exacerbations took place in the evening, or at any other part of the day. This has been already shown to be the great criterion between intermittent or remittent fevers, the exacerbations of which take place between six in the morning and six o'clock in the evening; and continued fevers, in which the exacerbations always take place between five and six in the evening.

On

On the second, third, fourth, or fifth day, the nausea increafes, and the patient begins to bring up a dark brown matter. This has rather the appearance of the matter formed upon the tongue in very violent fevers. It is alfo moft probably formed upon the furface of the ftomach, and perhaps of the duodenum, or even on the beginning of the jejunum. This matter has not the colour or tafte of bile. The force of the exertions in vomiting often occasions a greater quantity of bile to be fecreted, thrown back into the ftomach, and brought up along with the dark brown matter. When this happens, it gives to the matter thrown up the tafte and appearance of bile. At other times, however, there is no appearance of bile at all, but only of this dark brown matter.

When fuch vomiting has taken place to any great degree, the action of any medicine thrown into the ftomach is apparently prevented. The food is not digefted, and the patient is almoft always
cut

cut off. This has given the name of black vomit to the disease.

At other times, spasmodic contractions of the extremities take place, similar to the varieties of tetanos with violent delirium. These symptoms are often fatal, though not so constantly as the vomiting which has been just described.

At other times the skin assumes a dark brown colour, which has given it the denomination of yellow fever.

Many have supposed, that this was owing to a quantity of bile getting into the blood vessels, and have conceived that bile was the cause of the appearance. The colour, however, is very different from that which takes place in jaundice. The evacuations from the intestines have not that clay-like appearance, which is common in the jaundice. The secretion from the kidneys has not that deep yellowish brown, nor that thick sediment, which have almost always been seen in
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those persons, in whom bile has got into the blood vessels.

The dark brown colour of the skin seems to the Author rather to arise from a greater secretion of the sebaceous matter secreted by the sebaceous glands of the skin, than from any other cause.

This fever often likewise has dysentery arising in it, but as the Author does not at present mean to treat of that disease, he has only to observe, that this dysentery, along with the fever, very soon weakens and wears out the patient, and also renders the disease extremely fatal.

The fever, as the author has described it, seems as if it were a continued fever. There is one circumstance, however, which has convinced him that it is a semitertian. This is an agreement of all those who have had, or have seen, or have treated the disease, in the following observations. It happens often, that a patient apparently becomes greatly relieved,
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and appears in a state as if he were recovering, when all at once a fresh attack takes place, and carries him off.

This disease, when it takes place in so violent a degree, is so very frequently fatal, that it seems rather to have confounded practitioners, and made them employ all kinds of the most violent remedies they could think of, as if a very violent and fatal disease could only be got rid of by very violent means. Some practitioners have taken away large quantities of blood; some have purged largely; some have given large quantities of mercury; some have thrown cold water upon the patient. All these and other violent measures seemed to have enhanced the danger, and rendered the disease much more fatal, than it would have been if it had been left to go through its ordinary course. It would seem not at all proper to exhibit medicines, which are not found to avail in ordinary and less dangerous cases of the disease.

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There does not seem to be so considerable a degree of general inflammation, as to render it necessary to make evacuation by bleeding, to obviate the danger that arises in consequence of such general inflammation. The general inflammation is not so great as to prolong the paroxysm, so as to require this evacuation; and the author has before affirmed, that bleeding from any large vessel indiscriminately, in any part of the body, has no power of diminishing or carrying off fever. As far therefore as he can judge, he should expect no advantage, but great mischief, from taking away a quantity of blood, or repeating the evacuation. He thinks it would hardly ever be prudent, to take away blood at all.

Purging, as has been said in former Dissertations, excepting so far as to keep the bowels free from putrescent matter, is extremely hurtful in fever. The quantity evacuated weakens the patient, and diminishes the powers of the body, so as to render a patient unable to support himself

himself during the course of the disease. At the same time, the alteration in the circulation arising from the purgative, causing a larger flow of blood to take place in the interior parts of the body, makes the effort in the hot fit to produce a perfect crisis, or greater relaxation of the paroxysm, less efficacious. For its efficacy depends on the uniformity of its action in every part of the system, as the author has formerly pointed out. The author must therefore be of opinion, that large evacuation by purging is very detrimental, instead of being useful in this disease.

Mercury cures the venereal disease, which no other medicine will cure, or at least not with any degree of certainty. Physicians have seemed to have concluded, that whatever medicine will cure one disease, which no other medicine can cure, will cure all diseases, which no other medicine will cure. This supposition has occasioned mercury's being employed in a variety of diseases, where it evidently

evidently does a great deal of mischief. It has also occasioned it to be employed for a great many purposes, for which other medicines are much more properly adapted. Mercury has been employed in all cases of fever, of an ordinary degree of intenseness, whether continued or intermitting, by various practitioners, without any sensible good effect, either in producing crisis, occasioning more perfect relaxations, or shortening the ordinary course of the disease. It is evident therefore, that it is imprudent to exhibit it in these most violent fevers.

The next thing that requires consideration is, whether we be to leave the fever to go through its ordinary course; as although it is a very dangerous disease, it is by no means always fatal, but in many cases has gone off when left entirely to itself; or whether some effort is to be made to carry it off; or whether some medicine may not be employed to make it go through its course with less danger to the patient.

Preparations of antimony, ipecacuanha, and other medicines, have been shown to produce symptoms similar to those, which take place in the ordinary crisis of fever. These, especially Dr. James's powder, have frequently been employed in this very violent disease. The patient's stomach very soon becomes so extremely irritable, that any dose of such medicines, which might be expected to be at all efficacious, has produced vomiting; which, when it takes place in any great degree, has hardly ever been got over, but has destroyed the patient. The author conceives it is possible, that preparations of antimony, of which he has said in a former Dissertation tartarized antimony is the best hitherto known, if they have any chance of carrying off the disease, by producing symptoms similar to those which take place in the ordinary crisis of fever, ought to be exhibited immediately on the attack of the disease. This immediate exhibition of them, he apprehends, has been prevented; in the first place, by the great depression of strength,

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and perfect apathy of the patient, which arise immediately on the attack of the disease: Secondly, by the general want of energy of the inhabitants of very hot climates: Thirdly, by the hurry which takes place in all military operations; this disease being particularly apt to arise in armies in very hot climates: Lastly, from the great hurry of practitioners, when a town, district, or country, is seized with an epidemic disease. The author can say nothing from his own experience, but should be disposed, at the moment of the attack of such a disease, to employ as great a dose of tartarized antimony as the patient could bear without producing nausea; that is, from a quarter to a third part of a grain, together with about half a grain of opium. The medicine should be repeated every four hours. The patient should be laid in bed, and covered with a light covering of cotton. Warm watery farinaceous and mucilaginous fluids should be drunk frequently. If this practice be not begun within six hours from

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the attack, the author should not expect much success from it. At any rate he proposes it with great diffidence.

If by this practice, that moisture should be restored to the skin, with which it is generally covered in hot climates, it may be continued for two or three days : and if the symptoms of the disease should be so far diminished, as that any thing like a crisis should be brought on, and the stomach be quiet, the author then would recommend the exhibition of peruvian bark in substance, to the quantity of a dram every hour, or as much as the patient's stomach will bear without producing sickness.

As to the action of any other remedy, which the author has pointed out, as carrying off or alleviating regular continued fever, or regular tertians, such as inflaming the skin in any part of the body, applying leeches to the temples, fomenting the lower extremities, &c. he has little hope that any of them will be of use.

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The method which has been recommended of nourishing, supporting the strength, and treatment in other respects in a regular continued fever, while it is going through it's ordinary course, should also be employed in this disease.

When semitertians happening under similar circumstances, and from the same causes, are not so near in their appearances to continued, but nearer to regular remittent and intermittent fevers, the following appearances take place, as far as the author can collect from the histories of the disease, which have been given by authors, or have been related to him by those conversant in the disease itself.

The first accounts of the disease the author means now to describe are taken from the notes sent daily by the physicians of Alexander of Macedon. The author cannot help taking this opportunity of giving his opinion of this man, who he thinks had the greatest energy of mind, and was the greatest lover of the happiness of the

human species of any man, whose history has reached our times. Those notes or bulletins were to inform the Grecian and Persian nobility of the progress of the disease, which, as the author has already said, he caught by surveying the marshes on the banks of the Euphrates, in order to form a plan for draining them. These notes are preserved by Arrian.

Neither the Greek physicians, in the time when the Lacedæmonians and Athenians contested the dominions of the coasts of the Mediterranean, or those bordering upon them, nor during the Roman empire, nor the very few Roman physicians whose works have come to us, were conversant in diseases of countries, the heat of which was generally, for any considerable part of the year, above ninety degrees of Fahrenheit's thermometer in the shade, or in the night time. The author therefore has not been able from their works, which are the great foundation of all medical knowledge, to investigate the history or manner

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ner of treatment of those semitertians, which are between those which so much resemble continued fevers, and those which Greek physicians have described. The author must therefore rely for further information upon the very few accounts, which can be depended upon; these have been published by practitioners who have practised for a considerable time, in very hot climates, and who had before received a regular medical education. Beside these he has received information from those who have lived in such climates, and have attended patients afflicted with the disease, and from patients who have themselves gone through the disease.

Such semitertians begin at once with an attack of the first stage of fever; there is generally chillness, and not uncommonly rigor and horror, and considerable depression of strength; but not that total carelessness about every thing which takes place in the fever just described. There is dryness of the skin, and nausea. The chillness is followed by heat; great thirst takes

place, the pulse becomes frequent to a hundred and twenty, or a hundred and thirty strokes in a minute: Most commonly the tongue is also dry and covered with a whitish fur. There is often violent pain in the forehead, evidently in the external parts, that is, those without the cranium. In the first paroxysm, which observes the tertian type, there is hardly any appearance of remission, except it be that the pulse becomes somewhat less frequent about thirty-six hours after the attack. The second exacerbation does not take place in the evening, but between six o'clock in the morning and five in the afternoon. After the second exacerbation, something more like a crisis takes place, and is more conspicuous after the third and fourth. If the disease should continue longer, and have less appearance of crisis, the paroxysms run more into each other. Delirium, if it did not take place before, often arises, and the disease is frequently fatal. Nevertheless it sometimes terminates its course, if left entirely to itself, in two or three weeks,

weeks, and the patient recovers much more frequently than in the case just before described.

It happens also very commonly in this case of semitertian, that during the beginning, in the violence of the attack and hot fit, no evacuation takes place from the intestines. During the relaxation from the paroxysm diarrhœa, however, takes place. It ceases upon the recurring of a fresh paroxysm of the disease. When this happens it weakens the patient, and adds considerably to the danger.

In a semitertian, such as has here been described, no time is to be lost, the disease being very often full as acute, as a continued fever in temperate climates: that is to say, it often terminates in the second, or at most the third week of the disease.

It hardly ever happens, that there is such a degree of general inflammation as

to require evacuation by bleeding. If it be not necessary, it is always hurtful, by weakening the patient.

The primæ viæ ought to be cleared immediately upon the attack by an emetic and laxative, such as have been described in treating of irregular tertians, only no time is to be lost.

Medicines, such as preparations of antimony, of ipecacuanha, &c. which have a tendency to produce appearances, such as arise in the ordinary course of a regular fever, are to be exhibited during the time of one or two attacks and remissions; afterward, without waiting for a perfect intermission, the bark of the cinchona is to be exhibited in the best remission that can be procured every hour, and in as large a quantity as the patient's stomach can bear. If the stomach should reject a small quantity of it, such as forty grains, or if it should occasion purging, a moderate quantity of opium, such as five or six drops of tinctura opii, equal
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to a fifth part of a grain of opium, with five grains of the pulvis aromaticus of the London Dispensary, may be given along with each dose of it. The powder of the cinchona is to be given during the last eighteen hours of the paroxysm and remission, if the fever observes the tertian type, which it generally does. Afterward the bark should be omitted, whether the paroxysm return or not, for twenty-four hours, and then repeated again, and this practice is thus to be gone on with till the disease is carried off, if this can be effected by this medicine.

The effects of inflaming the skin, in any part of the body, bleeding with leeches applied to the temples, or any other remedies, which have been said in former Dissertations to be useful in the disease, the author can in no wise judge of, as he has not had any opportunity of observing them himself. Neither has he been able to collect their effects either from the authors who have treated of such diseases, or those persons who have
seen,

seen, or been affected by them, with whom he had an opportunity of conversing.

The author now returns to irregularities which take place in intermittents, such as happen in temperate climates.

It happens not uncommonly, that in an intermittent of any type the quantity of blood thrown upon the lungs in the attack of the disease occasions cough, attended with expectoration, especially when the fever has continued for some time.

At the beginning, the cough and difficulty of respiration are often without any expectoration. Sometimes during the time of the paroxysm, the cough is without expectoration, but expectoration takes place during the time of the remission or intermission.

This affection of the lungs is sometimes somewhat similar to peripneumony,

mony, but more frequently to catarrh, or rather a mixture of catarrh and peripneumony. In either case general inflammation, such as has been described, takes place sometimes. The pulse becomes hard and frequent, without being full and strong, or attended with such affection of the brain, or tension in the whole system, as have been before enumerated. The frequency and hardness of the pulse continue during the intermission, and give an appearance of remission only, and not intermission of the disease.

When this cough goes on for any length of time, the pulse becomes contracted and small, continuing at the same time hard and frequent. The natural evening paroxysm of fever is considerably increased. The proper attacks of the intermittent, whether it be tertian or quartan, are rendered more obscure. The patient is weakened and emaciated. The natural evening paroxysm goes off with sweating between four and five o'clock in

in the morning, so that the disease puts on the appearance of, and has often been mistaken for phthisis.

If such inflammatory affection of the breast should arise soon in an intermittent, it becomes necessary, beside employing the methods already recommended to produce perfect intermissions, to bleed upon the skin of the breast by means of leeches or scarification, and the application of cupping glasses. The skin of the breast should be inflamed by blisters. Expectorants, such as gum ammoniac, and squills, ought to be employed. Mucilaginous, and oily medicines are to be exhibited to defend the mucous membrane from the stimulus of the neutral salts of the thin mucus which is secreted. If by these means the inflammatory appearances, whether they were peripneumonic, or catarrhal, be entirely got the better of, or very much relieved, we are to endeavour to prevent the return of the paroxysm. This is to be attempted, in the first place, by employing a purgative immediately

mediately on the going off of the paroxysm. An hour before the attack of a fresh paroxysm is expected, we are to exhibit ipecacuanha or antimony, along with stimulants and opium. We are then to lay the patient in bed, and give him warm watery fluids to drink along with mucilaginous substances in small quantities frequently, so as to endeavour to produce sweating. By these means the paroxysm is often prevented from taking place. This practice has already been described more fully.

It is better to attempt to carry off the disease in the first place, by these means, than to employ the bark of the cinchona; for this bark is apt to increase the inflammatory affection of the thorax. These remedies however do not counteract the accession, and prevent it from taking place: and if the inflammatory symptoms of the thorax have been in a great measure subdued, by the remedies which have been just mentioned, then the cinchona is to be employed during the intermissions, as
has

has been described in the second Dissertation, so as to put a stop to the disease.

The cinchona, however, is by no means to be made use of, if the inflammatory affection of the thorax be not subdued in a very great degree.

When the patient was considerably weakened, and the ordinary evening paroxysm of fever was much increased, so that hectic symptoms came on; the author hesitated very much in the beginning of his practice, whether it were proper to employ the cinchona to endeavour to put a stop to the disease; but from trying various treatment in many cases he is satisfied, that it is by much the best to employ the cinchona in large quantities, as has been before described. With any practice the disease in this case is not uncommonly fatal.

The next danger which is apt to take place, arises also from the blood's being propelled from the exterior parts, in the
time

time of the attack, to the large internal vessels; but especially to the vessels of the abdomen, and particularly those of the spleen and liver.

The spleen becomes enlarged and hard, and sinks lower in the abdomen, so as to occasion a hard tumour there. Upon dissection after the death of the patient, it has been found much enlarged, harder, and more unequal in its internal appearance. The whole abdomen in this case is swelled, or there is rather the feel of a hard circumscribed tumour in it. The patient feels a sense of weight and distention, the digestion does not go on well, and costiveness is apt to take place. This case is however not very fatal.

A like swelling and hardness are apt to arise in the liver. The tumour in this case is more in the region of the liver, it does not descend so low. Upon dissection the liver has the same appearance of hardness and inequality.

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There are tumours in the abdomen, so situate, and so arising, that the author cannot believe they can be affections of either the spleen or the liver; but he has not been able to find any case of a patient's having been opened, where the tumour subsisted in any other part. These tumours have been called ague cakes. They arise more frequently in quartans than in tertians, and more frequently in tertians than in quotidians.

These tumours do not seem to alter much the progress of the disease, nor do they seem to prevent the disease from being carried off, either by the ordinary progress of the fever itself, or by the exhibition of the cinchona, or any other remedy which has been employed to carry off the disease.

If the disease should be terminated either in its ordinary course, or be cured by any medicine, these tumours are left, and often continue for many months, or even years, without any great detriment
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to the patient, as they at last gradually subside, and go off. Sometimes when they have arisen after a quartan has continued for a month or two, they have again subsided after it has continued for two or three months longer, and before the quartan has finally ceased.

When a fever has ceased of itself, or has been carried off by any medicine, and these tumours have been left, they are always distressing, and often hurtful in a considerable degree. The patient feels uneasy, the appetite is more or less diminished, the patient feels a sense of weight, and indisposition to action, the peristaltic motion of the intestines does not go on regularly, the colour of the skin does not recover its clearness, the patient, though not so ill as to be prevented from going through his ordinary business, is nevertheless languid.

If from any cause the intermittent should recur, and continue for some time, it is not uncommon for these tumours to

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subside again, and when the disease is carried off by medicine, or goes off by its ordinary course, the patient recovers his health perfectly.

In many cases tumour arising in the liver from the same or any other cause, produces hardness like scirrhus in various parts of this viscus. These by pressing upon the branches of the vena portarum which passes into the liver, and branches in the manner of an artery, prevent the blood from returning from the abdominal viscera with the same facility, that it does commonly. The passage of the blood being thus retarded, occasions a greater extravasation of lymph into the cavity of the abdomen, so that the ordinary exertion of the absorbents is not sufficient to take up the whole lymph. Thus an ascites takes place. The tumour which arises in consequence of the accumulation of water in the abdomen, pressing upon the liver, increases the scirrhus there, and the disease is generally fatal.

These

These apparently scirrhus tumours not uncommonly press on the ductus communis coledochus, the duct of the gall bladder, the hepatic duct, or the ducts which have been commonly called pori bilarii, which the author would rather call hepatic ducts. The pressure of these scirrhus-like tumours upon any of these ducts may prevent the whole or part of the bile from getting into the duodenum, occasion it to be absorbed, and produce jaundice of itself, without any concomitant dropical symptom, or along with it ascites. When this happens, the disease is generally fatal.

When ascites is occasioned by such scirrhus-like tumours produced in the liver in intermitting fevers, the skin often assumes a dirty yellowish brown colour. This colour the author rather attributes to the colouring part of the rete mucosum, or the sebaceous matter secreted by the glands of the skin, than to bile absorbed, or its not flowing into the duodenum. There is no appearance

which shows that bile does not get into the intestines, such as want of colour in the fæces, &c.; or of its having got into the bloodvessels, such as the urine's becoming a yellow dye, &c. The author has already shown, that no bile is ever contained in the bloodvessels, unless it has been previously formed in the liver and absorbed.

The same determination of blood from the bloodvessels upon the abdominal viscera, when the patient becomes weak after an intermittent has continued for two or three months or longer, sometimes occasions an increased secretion from the glands of the intestines. Diarrhœa is thus produced. This diarrhœa, like that which has already been described as taking place in intermittents in hot climates, is more severe during the remissions and intermissions; and less severe, or ceases altogether, at the time of the accession, and during the time of the paroxysm. Such diarrhœa tends to increase the weakness considerably. Frequently

quently this weakness occasions dropfical appearances. At first œdematous fwel-
lings appear in the lower extremities.
These increafe, rifing up to the thighs,
and then to the integuments of the ab-
domen. Afcites alfo takes place. This
is an accident very dangerous and dif-
ficult to get the better of. If aftringent
remedies be employed, fo as to put a
ftop to the diarrhœa, the dropfical ap-
pearances increafe, and the intermittent
continues to recur, although often very
obfcurely, and very irregularly. If the
diarrhœa be allowed to go on, or if it
have been ftopped, and be allowed to return
by leaving off the aftringents, the weak-
nefs increafes in fuch a degree as to deftroy
the patient. If the bark of the cinchona
be exhibited, it often increafes the diar-
rhœa, without having the effect of pre-
venting the irregular returns of the at-
tacks or exacerbations. It appears to
the author to be beft in this cafe, firft to
clear the primæ viæ, by employing about
twenty-five grains of rhubarb; after its
operation is over to exhibit cinchona in

pretty considerable quantity, such as a dram every three hours, and to give at the same time a grain of ipecacuanha, with fifteen drops of tincture of opium, (equal to half a grain of opium), together with a moderate quantity of any of the warmer spices every four hours. The author, however, is very far from saying, that this practice is always efficacious in curing the disease, which, when it has been allowed to run on to this state, is not uncommonly fatal.

Suppose, that no tumour has taken place in any of the abdominal viscera, so as to compress either the lymphatics or the veins, and that no diarrhoea has taken place; yet it happens not uncommonly, when an intermittent has run out to a great length, that such weakness arises as to produce a dropy. This happens more frequently in quartans than in tertians, and more frequently in tertians than in quotidians.

First of all, œdematous swellings begin to take place in the lower extremities.

These

These as usual increase, while the patient is in an erect, and diminish when he remains for some time in nearly a horizontal posture. As he is generally in an erect posture during the day-time, the swelling is greater in the evening, and as he is in a horizontal posture during the night, it is less in the morning.

Beside this increase and diminution of the tumour, in consequence of the patient's being in an upright or in a horizontal posture, an increase of the tumour takes place during the intermission, the tumour being, as far as the cause just mentioned allows it, greatest at the end of the intermission. When the paroxysm comes on it diminishes; during the time of the paroxysm it totally subsides, if the weakness have not become very considerable.

The increased exertion of the lymphatics during the hot fit appears to occasion a total absorption of the lymph; the want of this exertion during the day in which no paroxysm takes place, allows

the lymph to be accumulated in the cavities.

Supposing the disease be left entirely to itself, and should terminate by a more severe exacerbation's producing a perfect crisis, or by the disease wearing itself out, and gradually subsiding, this dropsy is very rarely fatal. After the disease is gone off, if the strength be restored, the lymph is absorbed, and the patient regains his former health.

If the fever should go on, the tumour rises higher, occupies first the integuments of the abdomen, and the cellular membrane among the muscles of the loins; afterward ascites is joined with it, the functions of the intestines are hurt, and the patient sinks, the external appearances of the dropsy becoming gradually nearer phlegmasia than anasarca.

When the bark of the cinchona, or any other remedies having similar effects are exhibited, and prevent a return of
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the exacerbation, then the exertions of the lymphatics during the hot fit, and the absorption of the lymph do not take place, the lymph is not absorbed, and the dropfical symptoms appear to be very much increased.

The dropfical symptoms appearing thus to increase, when the intermittent has been put a stop to by the cinchona, or other medicines having a similar effect, has occasioned an opinion, that the cinchona gave occasion to the dropfy, and the practice of exhibiting it has been reprobated by many practitioners. It is to be observed however, that such dropfical symptoms have arisen solely from the weakness occasioned by the continuance of the disease. It is further to be observed, that the increase of the dropfical symptoms, after the paroxysms of the fever have been prevented from returning, is owing to the want of that alleviation of the dropfy, which took place during the paroxysm by the greater exertion of the absorbents during the hot fit.

fit. At the same time that, as well as the other exertions during the paroxysm, tend to weaken the patient, so as to become the very cause of the final increase of the dropsy. The putting a stop to the paroxysm, therefore, although it prevents the temporary alleviation of the dropfical symptoms, yet at the same time it removes their original cause. It would appear therefore from this view, that it is proper if possible to put a stop to the further progress of the disease, and so prevent the patient from being more and more weakened.

The author, accordingly, for many years has not hesitated, when dropsy has arisen in an intermittent which has continued long, and there has been no cause to suspect induration in any of the viscera occasioning pressure on the lymphatics or veins, to exhibit the bark of the cinchona, and endeavour by this means to prevent the return of the paroxysm. He has found in such cases, that the dropfical

dropfical appearances, although they at first increased, yet as the strength returned generally began by degrees to diminish, and at last disappeared entirely, and the patient recovered his health.

It happens not uncommonly, if intermittent fevers have been entirely neglected in the beginning, or when the bark of the cinchona has been employed improperly, that is, not according to the mode prescribed in the Dissertation on regular tertians, that the disease runs out to a great length, whatever its type may be. It also becomes irregular, varies its type, and is often only a remittent. In these cases the patient is weakened, and is apt to sink under such weakness without any dropfical symptom, or affection of the thorax.

When this happens the pulse always keeps up a degree of frequency. The paroxysms and remissions are sometimes sufficiently distinguishable, at other times they are hardly distinguishable. The tongue is sometimes constantly covered with a mu-
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cus which is of a whitish or brownish colour. The appetite is lost, and the patient gradually sinks. He may however remain in a doubtful situation for many weeks, and at length recover.

In such cases, and more particularly in those in which cinchona has been employed improperly, or so as not to cure the disease, however properly it may have been employed; preparations of the metals, such as have been enumerated in the Dissertation on regular tertians, have been had recourse to sometimes with effect. Of these, preparations of arsenic seem to have been most frequently efficacious. If it be ever proper to employ any preparation of arsenic internally, the best seems to be the compound of kali with calx of arsenic, which many modern chemists call acid of arsenic, and which has been known by the name of white arsenic. The author has often attempted to give various preparations of arsenic in cancerous cases, but although he has taken care to exhibit it in such
small

small quantities, as not to affect the stomach and intestines, yet upon continuing it, such excruciating pain has taken place in the extremities, and such a degree of stupor, as always to force him to desist from it. Add to this, that it is so dangerous a medicine, that if it happen to be given in too large a dose it is often fatal. It is not to be intrusted therefore in the hands of such young men, as are too frequently employed to compound medicines in the shops of the apothecaries of this country. An error too of half a grain in a dose may be fatal: it is not on this account to be trusted to the scales, which are commonly employed in apothecaries' shops, and which are often not sensible to half a grain.

Next to arsenic, preparations of zink seem the most powerful. The calx which is found in the chimneys of furnaces, in which brass is produced by combining copper with zink, and which, when it is of a light gray colour, has been called cadmia, if of a dark dirty blue colour, tutty,

tutty, was formerly very much in use in complaints which return by paroxysms, and among others in intermitting fevers. Lately the calx formed by exposing to the air of the atmosphere the surface of zink melted, and heated to a white heat, called flowers of zink, has been more in use. The author does not know of any comparative experiment on which this has been grounded. Sometimes likewise zincum vitriolatum has been exhibited for the same purposes.

Preparations of copper have been used more seldom, though perhaps, they are as efficacious. Formerly cuprum acetatum was much employed, both externally and internally, though it has now fallen very much into disuse. It has been conceived, that copper combined with ammonia muriata, by moistening sheets of copper with a solution of ammonia muriata in water, and exposing them to the air, is less stimulant in proportion to its other powers, and consequently is less apt to affect the stomach
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and intestines, and therefore more proper to be employed. The disposition of preparations of copper to effect the stomach and intestines has made it be considered as a very active poison; which however, independent of this effect, is not true. If *cuprum ammoniacale* actually did produce less effect on the stomach and intestines in proportion to its other powers, it would be undoubtedly a more useful medicine; but the author has not found upon trial that this is the case, and therefore conceives, that *cuprum vitriolatum* is the most certain of the preparations of this metal.

The preparations of iron, which have been employed in medicine, have been very various: but whether in its metallic form, or calcined, or combined with acids or with alkalis, or with neutral salts, its virtues do not seem to be very different, and its powers of preventing the returns of the paroxysms of an intermittent seem to be the least of these four metals. At the same time it has no noxious or deleterious effect.

effect. As a strengthening medicine to keep up the force of the system, during the progress of an intermittent, its powers are very considerable, and it has often been used.

Whichever of these metals, or whatsoever of their preparations are employed with a view to prevent the return of the paroxysms of an intermittent, they should be exhibited in as large doses as the stomach will bear. They ought only to be exhibited in the times of the intermissions. This rule however is not to be so strictly adhered to, as the exhibition of the bark of the cinchona, especially if the intermissions have become imperfect, or been converted into remissions. In other respects the same rules are to be followed, which have been before laid down in regard to the exhibition of the cinchona.

FINIS.