

A series of essays on inflammation and its varieties : tending to show, that most diseases either consist in inflammation, or are consequences of it, more or less remote / by Henry Clutterbuck, M.D.

Contributors

Clutterbuck, Henry, 1767-1856.
University of Glasgow. Library

Publication/Creation

London : S. Highley ; Edinburgh : Sutherland and Knox, 1846.

Persistent URL

<https://wellcomecollection.org/works/h2qhqzsp>

Provider

University of Glasgow

License and attribution

This material has been provided by This material has been provided by The University of Glasgow Library. The original may be consulted at The University of Glasgow Library. where the originals may be consulted. This work has been identified as being free of known restrictions under copyright law, including all related and neighbouring rights and is being made available under the Creative Commons, Public Domain Mark.

You can copy, modify, distribute and perform the work, even for commercial purposes, without asking permission.



Wellcome Collection
183 Euston Road
London NW1 2BE UK
T +44 (0)20 7611 8722
E library@wellcomecollection.org
<https://wellcomecollection.org>





A SERIES

OF

2

ESSAYS ON INFLAMMATION

AND ITS VARIETIES;

TENDING TO SHOW, THAT MOST DISEASES EITHER CONSIST IN INFLAMMATION,
OR ARE CONSEQUENCES OF IT, MORE OR LESS REMOTE.

BY

HENRY CLUTTERBUCK, M.D.,

OF THE ROYAL COLLEGE OF PHYSICIANS, LONDON.

"nullius addictus jurare in verba magistri."

LONDON:

S. HIGHLEY, 32, FLEET STREET.

SUTHERLAND AND KNOX, EDINBURGH.

MDCCCXLVI.

31

THE

MEMOIRS OF THE

REV. JOHN

OF THE

OF THE

PRELIMINARY OBSERVATIONS.

INFLAMMATION is a disease of the most frequent occurrence, and from which no part of the living body is altogether, and at all times, exempt. It is peculiar to no clime nor country; and it affects, indiscriminately, all ages and constitutions. It arises under the greatest possible variety of circumstances, and is produced by a number of causes, many of which are in constant operation, or to which the body is habitually exposed. When to all this we add, that it is often the occasion of the greatest suffering to the patient, and is at the same time, of all diseases, infinitely the most fatal in its results, the extreme importance of the subject will not be questioned. This, indeed, appears to have been very generally felt;

for no disease, perhaps, has engaged a greater share of attention, or employed the pens of a greater number of inquirers, from the earliest periods of medical literature, to the present time.

On a subject so hackneyed, it might naturally be asked, what can remain to be told, that is really worthy of notice? Might it not reasonably be presumed, that practitioners were, by this time, sufficiently agreed in their views, both as to the nature of the disease, and its treatment, so as to preclude a necessity for further investigation?—Such a supposition, unhappily, would be far wide of the truth! opinions are as various and unsettled on the subject at the present moment, as at any former period; as I shall soon have occasion to show.

This disease constitutes so large a proportion of all the maladies which come before us in daily practice, that I feel no hesitation in laying it down *as an axiom*, “that most diseases either consist in *inflammation*, or are consequences of it, more or less remote.”

Should any one wish to satisfy himself of the truth of this, he needs only look over the *catalogues* of diseases, furnished by writers on *methodical nosology*; when, (provided he confine himself, as, of course, he ought to do, to *primary* or *idiopathic* affections, — rejecting such as are merely *symptoms*, —) he will probably, be surprised to find how few there are that do not come within the scope of the general proposition announced above.

In proof of this, I may state, that of the hundred and fifty *genera* enumerated in Dr. Cullen's *Synopsis*, one half, at least, are either *symptoms* only, or else mere *varieties*, (as *naturalists* would term them,) and therefore not properly admitted as examples of *primary* or *idiopathic* disease; while, of the remainder, the far larger portion will be found to consist in *inflammation*, though often disguised by unmeaning or inappropriate designations.

If, for example, we look to *hæmorrhage* — an

affection of the *sanguiferous* system:—to *dropsy*, as belonging to the *lymphatic* system:—or to *spasms* and *convulsions*,—affections of the *muscular* structure,—we shall find them all to be very frequently connected with, or dependent upon, *inflammation*; and, for the most part, most satisfactorily treated, when this connexion is kept in view.

With respect to the first of these, *hæmorrhage*, whether as taking place in the *brain*, in the *chest*, or in the *uterus*,—signs of *inflammation*, sufficiently well marked, will generally be found to precede, and often to accompany, the discharge; while, in treating such, more attention is commonly due to the *inflammatory* condition of the parts, than to the mere loss of blood.

Dropsy, likewise, in a great majority of instances,—whether it be seated in the *brain*, the *thorax*, the *abdomen*, or any of the other cavities,—is clearly traceable to the same source. Even in the few instances where dropsical accumulation

appears to be the result of mechanical obstruction—(as where a *tumid liver*, by pressing upon the *lymphatics*, obstructs the free passage of lymph into the veins,)—the original disease in the organ primarily affected, is still *inflammation*.

It is, perhaps, worth noticing here, that the term *dropsy* is so commonly associated with the idea of *debility*, as often to lead to erroneous, and even injurious practice: the real origin of the disease, namely, *inflammation*, being, in many cases, either wholly overlooked, or at least neglected, while *stimulant* or *exciting* remedies, under the name of *tonics*, are relied upon, where a cautious and qualified use of *antiphlogistics*, is really requisite.

Spasmodic and *convulsive* affections, and *neuralgic* pains, (so called,) are, in numerous instances, but the effect or consequence of *inflammation* in some part of the *nervous system*. Knowing this, we are often enabled to discover the existence of *inflammation* of the brain in infants, by the occur-

rence of *convulsions*; or even by the apparently trivial, though by no means unimportant symptom, —*clenching* of the hands or feet.

If we extend our observation still further, with respect to diseases of the brain, how few of these do we find, that may not fairly be traced to “*inflammation*,” or its consequences, more “or less remote?” To say nothing of *idiopathic fever*, as it is called,—a still disputed point with many—it is sufficient to mention here, *phrenitis*, *hydrocephalus acutus*, *apoplexy*, *epilepsy*, *palsy*, *insanity* in its origin—together with a host of minor affections, all referable, more or less remotely, to the same primary cause, *inflammation*; and differing from one another, chiefly, in degree, and in the particular part of the organ in which the disease is seated.

The diseases of the *thorax*, are, with very few and unimportant exceptions, unequivocal results of *inflammation* in some part of the *respiratory* organs. It may even be doubted whether periodical

asthma, though so commonly and positively designated as *spasmodic*, really forms an exception. Again, all the really important affections of the *alimentary canal*, from the mouth to the *rectum*; *aphthæ*, *angina*, *gastritis*, *enteritis*, *cholera*, *diarrhœa*, *dysentery*, *hæmorrhoids*, — are essentially of the same nature. The *solid* organs, likewise, contained within the abdominal cavity—the *liver*, the *spleen*, the *pancreas*, the *kidneys*, and bladder—are all frequently the seat of *inflammation*, in different degrees.

Cutaneous diseases, in all their multifarious forms, mystified, as they are, by an affected jargon of terms, appear to consist, almost without exception, in *inflammation*, differing in degree and extent, (rather than in *nature*,) and in the particular parts of the cutaneous structure in which the inflammation is seated: I may mention, in proof, the terms *anthrax*, *impetigo*, *porrigo*, *ecthyma*, *mentagra*, *psora*, *psoriasis*, *lepra*, *elephantiasis*, *papulæ*, *phlyctenæ*, *furunculus*—with innumerable others, that serve only to involve the subject in almost inextricable confusion.

Ligamentous parts serving the purposes of connection and defence,—and likewise *bones*,—comparatively simple as all these are in their structure and uses—are no less simple in their diseases; *inflammation*, with its consequences, appears to be the only one of which we have any distinct knowledge.

—Nor are the *specific* diseases, as we term them, whether of the *febrile* or *non-febrile* kind, by any means exempt from the same category. They all exhibit the ordinary characters of *inflammation*; marked, however, by peculiarities sufficient to distinguish them from common *inflammation*, as well as from one another. *Scrofula*, also, in all its obvious forms, and wherever seated, is but a *variety* of inflammation, and requires a corresponding treatment.

Supposing all this to be true, the study of *inflammation* must necessarily involve to a great extent, that of disease in general. Indeed, it appears to me impossible to understand the general nature of *inflammation*, or even to comprehend

its numerous, and most important varieties, without reference to the general principles of *Pathology*; to which, therefore, I shall find it necessary frequently to refer.

Allowing that so large a proportion of diseases, as they ordinarily occur in practice, really “consist in *inflammation*, or are consequences of it more or less remote,”—a question naturally arises—“what practical benefit is likely to accrue from the admission of such a principle? are all diseases that come under the denomination of *inflammation*, or which are essentially connected with it, to be treated alike, or upon one common principle?”—This is by no means contended for. *Inflammation*, though at all times, radically and essentially the same disease, is nevertheless liable to be varied by a great number of circumstances that require attention in practice:—such as the *degree*, and the *stage*, of the disease—its particular *seat* in the body—the nature of the *cause* producing it (as *specific* or otherwise)—the *constitution*, and *mode of life*, of the individual af-

fect—as well as others that might be mentioned,—all of which, tend to modify the character of the disease, and so as, more or less, to influence the treatment.

But although there is no one remedy, or mode of practice, applicable to the treatment of inflammation in all its varieties, there are nevertheless advantages, and those of no trivial kind, that may be derived from keeping the general principle, here contended for, in view. There is always something to be done, and something to be avoided, in the general management of *inflammation*, upon which the chance of success, in some degree, turns: such are, for example, attention to regimen;—quietude of the part affected;—and the avoidance of all causes of *irritation*,—a precaution that is rendered peculiarly necessary, in consequence of that increased *excitability* of the part, which this disease hardly ever fails to induce.

Knowing, also, that the most important character of *inflammation*, is a *violent*, as well as

disordered, action of the *blood-vessels* of the part, the constant tendency of which is, to produce *disorganization*—our chief attention will naturally be directed to the obviating such a result; by the use of prompt, as well as active means, and that in proportion to the importance of the part affected. Our treatment, on this view of the subject, will be *radical*, rather than *palliative*. We shall be led to regard *symptoms* as only of secondary importance, though not to be wholly overlooked or neglected. They will not, however, as at present is frequently the case, be the chief object of attention, so as, in fact, to constitute, probably, *nine tenths* of our daily practice; leading, at all events, to the employment of superfluous, if not injurious, means of cure.

Of this, abundant examples might easily be adduced: as where *opium*, or other *narcotics*, is administered, with the view of easing *pain*, or procuring *sleep*; or, again, when *wine* and other *stimulants* are given for the purpose of *supporting the strength*,—as the phrase is,—without adverting

to the fact, that *general weakness* is often merely the consequence of active *local* disease, and likely to be aggravated, rather than relieved, by such treatment.

Among the advantages that may be expected to follow the admission of the general principle here contended for, that of greater simplicity in respect to practice is one of no trifling importance. We shall no longer be prescribing for names, but for things. We shall not find it necessary to exhibit a different remedy in every different disease that comes before us, merely because it goes by a different appellation. The treatment of inflammation altogether, we shall find, is reducible to a few leading principles, with corresponding indications of cure, which may all be fulfilled by few and simple means, requiring only to be properly adjusted to the peculiar circumstances present.

I shall now proceed to notice briefly a few, and but a few, of the various and discordant opinions

that prevail at present, in regard both to the nature of *inflammation*, and its treatment; which will serve to show the necessity for further inquiry.

From the time of John Hunter, towards the close of the last century, the opinions of that unrivalled pathologist, with regard to *inflammation*, have, in a great measure, maintained their ground. His idea was, “that *inflammation* consists in an *increased vascular action* of the part,—chiefly of the smaller vessels, (the *capillaries*,)—the larger arteries doing little more, than supplying the part with the additional quantity of blood required:—and, as the natural result of such *increased action*, that not only is more blood sent to the part, but circulated through it with increased force and velocity.”

These opinions have been very generally acquiesced in, up to the present period; being supposed, and not without good reason, as it appears to me, to afford, upon the whole, a satisfactory explanation of the phenomena of the disease.

Recently, however, other, and widely different, views of the subject, have been taken, and promulgated upon no light authority.

A distinguished writer and teacher of the present day,* considers *inflammation* as beginning in the *nerves* of the part, rather than in the *blood-vessels*. As the simplest illustration of this, he refers to the disease as induced by the application of *cantharides* to the skin. "The first symptom here," he observes, "is *pain*, which *exhausts* the *nervous energy* of the part; and the action of the arteries becomes *weakened* in consequence; for continued *irritation* of the *nerves*, (from whatever source it proceeds—whether from *heat*, *electricity*, or any other *stimulant*),—*exhausts* the *nervous* power of the part, and the *capillary* vessels are thereby *weakened*; they *contract* with less force, and so admit a larger quantity of blood into them." *This yielding to distension* is, of itself, considered a proof of *weakness*: and,

* See *First Principles of Medicine*, by ARCHIBALD BILLING, M.D. Physician to the London Hospital, &c. &c.

as a necessary consequence of such *weakness* of the *capillaries*, the force of the current of blood through them, is said to be diminished. Nor is this supposed weakness confined to the *capillaries*:—"the large, as well as the small vessels, being in a *distended* state, are thereby proved to be equally weakened." This is said to be further shown, by the increased *throbbing* of the arteries, in and about the part;—"the more they *throb*, the more they are yielding to distension: and this also shows *weakness*, or want of *contractile power*."—In conformity with these notions, "the way to reduce *inflammation*, is to *increase the action* of the arteries, and which may be done by the application of *cold* and *astringents* to the part."

Some years ago, an opinion sprang up in Edinburgh, among the private teachers in the University, that in *inflammation* there is *debility* of the *capillaries* of the part; but that the *larger* vessels are in a state of *increased action*. This notion was adopted at the time by Dr. LUBBOCK;

and, subsequently, by Dr. PHILLIPS WILSON; as well as by several others.

Mr. LATTA, in his "Practical System of Surgery," published at Edinburgh in 1794—a work of considerable merit—contends, that there is not merely a *deficiency* of action in *inflammation*,—but a sort of *paralysis* in the smaller arteries; and upon this ground, he accounts for the accumulation of blood in the part; "the vessels becoming dilated, from want of *contractile* power."

Dr. A. CRAWFORD, again, thinks there is *congestion* of blood in the vessels, in *inflammation*, and, (dividing the disease into *two stages*,) he applies the term, ACTIVE CONGESTION to the *latter* stage.—(See *Cyclopædia of Practical Medicine*, Art. *Inflammation*.)

Dr. PHILLIPS WILSON, admitting the enlargement of the vessels, refers it to a *predisposition to distension*, and not to *increased impetus*; "because," as he says, "the dilatation takes place

before the increased *impetus* is observed." The same distinguished writer remarks further, "that the *capillaries* are *obstructed*; and that the blood, in consequence, moves more slowly in them:" referring to the microscope, in proof.

Dr. JOHN THOMSON supposes that, in *inflammation*, the actions of the vessels is sometimes *increased*—sometimes *diminished*.

Dr. CARSWELL thinks that *inflammation* has two stages, in which the *physiological* condition of the part is in opposite states—or, as some affect to call it—*sthenic*, and *asthenic*.

Inflammation has also lately been attempted to be explained, by reference to some supposed ill qualities in the general mass of blood; and it has been called, accordingly, a "*blood disease*," instead "of a state of disordered vascular action," as hitherto generally thought—"that it is a process of *abnormal nutrition*, consisting in a peculiar perversion of this function."

Dr. MARSHALL HALL'S views of *inflammation* are highly ingenious, though somewhat peculiar; and refer, apparently, as much to the *solids*, as to the *fluids*. He looks upon the *capillaries* as not simply continuations of the arteries, (as commonly supposed,) but as being differently constructed altogether;—as *passive canals*, possessing no *contractile* power — a sort of *network* of *pellucid* vessels—*dividing*, without becoming smaller; and *anastomosing*, freely, with each other;—that they constitute, as it were, an *intermediate* system, between the arteries and veins;—that the blood is moved in them *partly* by the *vis á tergo* of the *arteries*—*partly* by the *absorbing* power of the *veins*,—and, in part, also, by *capillary attraction*. These *blood-channels*, as he would prefer to call them, are supposed to be the primary seat of *inflammation*. Indeed he fancies that, by the aid of the microscope, he has actually witnessed the commencement of the disease in the web of the frog's foot: “first, a single blood-globule attaches itself to the side of the *capillaries*; and, by a succession of these adhering

globules, an *obstruction* is at length produced."— In conformity with this idea, he imagines, "that when *friction* proves a remedy for *inflammation*, (as is sometimes the case,) it operates by breaking down the adhesions: thus removing the *obstruction*."

Thus various and discordant are the opinions that exist at present, with regard to the nature of this almost universal malady. Nor is this discrepancy by any means confined to merely speculative points of doctrine. It is no less observable, in regard to practice. Each School of Medicine has its favourite dogma on the subject, and which prevails, to a greater or less extent, and for a longer or shorter period, in proportion to the popularity and influence of the teacher; till it happens to be superseded by something more attractive, because more new, than the preceding. Thus there seems to be nothing like stability, either in doctrine, or in practice, amongst us.

It is by no means my intention, however, to enter here into a minute discussion of the various *theories*, (as they are flatteringly termed,) that have prevailed at different periods, or that now prevail, with respect to this all-engrossing subject. To attempt this, would be an invidious, as well as almost endless task; and of little use (unless by way of caution,) for any practical purpose. Still less am I actuated by a desire of suggesting any novelties on the subject, either of a theoretical or practical nature: for as to *theory*, I believe it to be impossible, in the present state of our physiological and pathological knowledge, to frame any of a sufficiently comprehensive character that would not be open to numerous and insurmountable objections; while, in respect to *practice*, I am disposed to question whether, with all our alleged improvements in science, and with a host of new and powerful agents at our command, we can justly boast of much greater success, in our efforts to relieve or remove disease, than our early progenitors.

Practically speaking, medicine still is, as it always has been, to a great extent, "a conjectural art." Nor do I believe it is ever destined to be otherwise. From the natural, and inherent, obscurity of the subject, we are, in a manner, obliged to grope our way in the dark, rather than to march boldly on, (as some affect to do;) and are not unfrequently forced to retrace our steps.

My chief endeavour will be to reconcile some of the discrepancies of opinion that exist at present among us, not only as to the *nature* of the disease in question, but also in regard to its *treatment*, which, to a great extent, is involved in the discussion. Were it not so, indeed, I should esteem it little better than waste of time to continue the inquiry.

Instead of proposing new remedies, (we have already, indeed, by far too many to allow of our attaining a full or accurate knowledge of their properties individually,) my wish rather is, to point out, as well as I am able, the proper em-

ployment of those we already possess; and, at the same time, to set just bounds to their use; for it is not to be questioned, that numerous instances—(many more, in fact, than is generally supposed)—occur, in which the disease is best left to pursue its natural course. This kind of knowledge is of no easy attainment, and is the last we acquire;—and then, indeed, only imperfectly; for the study is absolutely endless.

With these preliminary observations, I now proceed to point out the course intended to be pursued in the prosecution of the work.

PART I.—In the first *Section* will be given, what may be termed the *Natural History* of the disease — by which I mean, the description of its *characters—course—and terminations*, when uninfluenced and undisturbed by art. This kind

of knowledge, although of primary importance, is not of very easy attainment, in the present day more especially, when drugs so numerous, and of such herculean operation, are in almost constant use,—a circumstance that cannot but materially influence both the characters and consequences of disease.

A thorough acquaintance with the natural course of disease, teaches us when to interfere by art, and when to trust to *Nature*, as we call it—in other words, to leave the disease to follow its natural course, without interruption. The tendency of *inflammation*, as well as a host of other diseases, after running a certain course, to decline spontaneously, not only with safety, but to the benefit of the patient, is far more general than appears to be commonly felt or understood. “What we have to learn,” says Dr. Forbes, “is, what diseases are curable by *art*, and what not;—what are capable of relief, and what otherwise;—what are the remedies that are proper in themselves, and also when to be administered;—to *sim-*

plify the treatment of diseases, by throwing aside unnecessary, and especially violent ones, when not indispensable;—to learn to *prevent*, rather than to *cure*;—and, where the indication is obscure or doubtful, to refrain, and wait. One of the besetting sins of English practitioners at present," he adds, "is the habitual employment of powerful medicines, in a multitude of cases that do not require their use. *Mercury, iodine, colchicum, antimony, drastic purgatives, and excessive blood-letting,* are frightfully misused in this manner." (See the "Lancet" of 6th February, 1846.)—In this feeling, I cannot but confess, I fully participate.

In *Section 2*, will be pointed out the CAUSES; both those that *occasion*, as well as those that *predispose* to the disease, as far as they are known; for, in many instances, they escape our observation. This will be followed by

Sect. 3,—containing a brief inquiry into the NATURE of the disease—its *physiological* condition,

as compared with the healthy state, or what is usually termed the PROXIMATE CAUSE.

Sect. 4.—The principal *varieties* to which the disease is subject.

Sect. 5.—The *mode of attack*,—*course*,—and *terminations*.

Sect. 6.—The *general laws* by which the disease appears to be governed in its course: and, lastly,

Sect. 7.—The general PRINCIPLES OF TREATMENT.

The SECOND PART of the work is intended to show the application of the *general principle*, mentioned in the title-page, to the diseases of the different structures and organs of the body; and will be found to include by far the greater number of the cases that come before us in daily practice; and which, if I mistake not, will admit of a treatment corresponding, *in principle*, with that of *inflammation* in general;—subject, of course, to those modifications, that are required in the

management of all diseases. The true *art of physic* consists in proper discrimination, and the adaptation of our means of cure, to the circumstances of each individual case.

ON INFLAMMATION,

AND ITS VARIETIES.

PART I.

NATURAL HISTORY OF THE DISEASE.

SECT. I.—*General Characters of Inflammation.*

THERE are certain obvious and striking appearances in Inflammation that have attracted notice from the earliest times, and which, indeed, have generally been considered as characteristic of the disease: namely, "*Increased heat,*" "*redness,*" "*pain,*" and "*swelling.*"*

These, collectively taken, are, doubtless, always sufficient to characterize inflammation, though singly and separately, they are not to be relied upon; for either of them, or even more than one, may be pre-

* "Notæ Inflammationis sunt quatuor: rubor et tumor, cum calore et dolore." (Celsus, *de Medicina*, lib. 3, cap. 10.)

sent at the same time, without inflammation; while, on the other hand, either of them may be wanting, or at least unperceived, and yet the disease exist. In numerous instances, too, and those often the most important, the disease is hidden from our view; and here, of course, the characters in question are of little avail.

It becomes necessary, therefore, to inquire how far the signs mentioned, either collectively or individually, may be relied upon; and what other means we possess of detecting the disease, when those are either wanting, or inadequate to the purpose.

1. With respect to the first of these—*Increased heat*. This is so generally an accompaniment of inflammation, that were we able in all cases to measure accurately minute variations of temperature, it is probable that this sign would rarely be found wanting.

The *heat* of an inflamed part varies greatly at different times, as from two or three to eight or ten degrees, above the natural standard, according to the violence of the disease, and the nature of the part affected. The heat in inflammation is sometimes greater than is found to take place in what is called *fever*, or any other disease.

The *heat* of a part, however, may be considerably augmented by friction, or other exciting causes that increase the circulation of blood through it, without inflammation necessarily taking place. Hence it appears that *increased heat* is not always to be relied upon as a sign of inflammation; it is nevertheless a suspicious symptom that always demands attention. Thus, in the diseases of infants, if, upon grasping the head between our hands, we are made sensible of an unusual degree of heat within, it is a ground for suspecting at least inflammation to be going on in the brain, or its membranes, or both; and should this be accompanied by increased pulsation of the arteries in and about the head; and still more, if there be observed any disturbance of the cerebral functions, there is hardly room for doubt; and the same in regard to other parts.

2. *Redness.* This sign of itself is little to be relied upon as indicative of inflammation, since, like increase of heat, it may be produced by friction, or other exciting causes, without actual disease. On the other hand, inflammation may exist (for a time at least) without *redness*; as in *ligamentous* structures—the *cornea lucida*, the *arachnoid* membrane of the brain, and even in the *medullary* substance of this organ.

It is worth remarking here, that parts may be reddened by inflammation during life, and yet such redness may have disappeared upon examination after death. Thus, the *tunica conjunctiva* of the eye, in many cases, is found colourless after death, though it had been intensely reddened by inflammation during life. The same thing, doubtless, may occur with regard to the *brain* and its membranes, in which the previous existence of inflammation has been sometimes questioned, upon no other grounds than the want of redness after death: and this in cases that had been marked during life by every symptom, both local and general, denoting such disease. The following seems to be the explanation of this:—Inflammation must have existed for some length of time before it produces such a permanent enlargement of the vessels of the part, as to allow of their retaining in them a conspicuous quantity of red blood after death. Hence it is, that in certain cases, the more violent the inflammation is, and consequently the sooner it proves fatal, the fainter are the traces left behind it after death. This remark applies with peculiar force to the *acute hydrocephalus*, as it is termed, of infants.

Redness, therefore, though an exceedingly frequent attendant of inflammation, is still an equivocal sign, and only to be relied upon in conjunction with

other signs. Nor must it be forgotten, that the blood after death is liable to gravitate towards the most depending parts, so as to give a fallacious appearance of redness, that has sometimes been mistaken for that of actual inflammation.

3. *Pain.* This, though one of the most frequent and the most distressing of all the characters of *inflammation*, is by no means a certain or *pathognomonic* sign; for it may proceed from other and different causes. It may arise, for example, from simple over-distension of a part; or from *spasmodic* contraction of muscular fibres, altogether independent of *inflammation*.

Pain, when it proceeds from *inflammation*, may exist in all possible degrees, from the troublesome sensation termed *itching*, to the most acute and intolerable suffering. It is sometimes of a *throbbing* kind, as where the arteries of the part are of sufficient magnitude for their pulsations to be felt.

Neither the degree, nor the danger, of *inflammation* is to be judged of altogether by the *pain* the patient is enduring. It depends, in a great measure, upon the sensibility of the part affected, either natural or acquired, whether the disease will be productive of much or of little pain. Thus in *lumbago*, and in

sciatica, the pain, from the abundance of nervous structure adjoining, is often most acute where, nevertheless, from the long continuance of the disease, and its favorable termination at last, it seems reasonable to suppose that the actual inflammation was not considerable. The same remark applies to *toothache*, and probably to many cases of *neuralgia* or *tic douloureux*, as it is termed.

On the other hand, parts that naturally possess but little feeling (which is the case with some of the most important organs, such as the *lungs*, the *heart*, and even the *brain* itself,) are often dangerously inflamed, with little or no actual pain; the disease, in these cases, being marked chiefly by disorder of function. The *liver*, likewise, as regards its general substance, is comparatively deficient in sensibility, and therefore gives but little pain under *inflammation*. Certain structures, however, appear to acquire great sensibility under *inflammation*, as, for example, the *serous membranes*, or those which line the close cavities, and invest the different organs above mentioned. The pain in these cases may be severe, although the *inflammation* be neither violent nor dangerous, so that on many occasions the most painful inflammations are the least dangerous: and *vice versá*.

That *pain* is not essential to *inflammation*, is further shown by *paralysis*, where certain parts are totally deprived of feeling, yet are readily excited into *inflammation*; as by the application of intense heat, or other powerful causes.

Lastly, the *pain* produced by *inflammation* is sometimes distant from its source. Thus inflammation about the *hip-joint* often produces pain at the knee or ankle, while the actual seat of the inflammation is scarcely noticed. Many cases of what is called *tic douloureux* have been traced to structural disease in the brain, the consequence, necessarily, of inflammation as their source. Doubtless, many more instances of the same kind exist, though little known or noticed.

As already stated, *pain* may arise from *spasm* alone, without inflammation; and as the treatment differs widely in the two cases, it is always of importance to discriminate, as far as possible, between them. For this purpose it may be observed, that pain produced by *inflammation* is generally of a *continued* kind, though varying in intensity from time to time; while that from *spasm* is rather of an *intermitting* character. In *inflammation*, too, there is commonly increase of *heat* in the part, while *spasm* is often attended by a sense of *coldness*.

Pain, too, from *inflammation*, is aggravated by pressure, while that produced by *spasm* is rather relieved by this cause.

It is proper to observe, however, that *inflammation* and *spasm* may exist, as it were, in combination, each marked by its peculiar characters. Thus, in inflammation of the *pleura*, the intolerable *stitches*, as they are termed, felt in the side, are to be ascribed chiefly to temporary *spasms* of the *intercostal muscles*, rather than to the *inflammation* of the *pleura* itself. And so in regard to other inflammations seated in the immediate neighbourhood of muscular structures ; as, for example, the *intestinal canal*. In all these cases, while we are driven, as it were, to afford temporary relief to the *spasm*, it is of great importance not to overlook or neglect the inflammation itself.

4. *Swelling*. This is one of the most general attendants on *inflammation*, and, indeed, may be said to be invariably present in greater or less degree. The most delicate membranes, when inflamed, become thickened in consequence, although they may not be reddened by the disease.

The degree of thickening, or *swelling*, produced by inflammation, depends upon the texture of the

part affected. If this be loose and yielding, the swelling is generally considerable. Of this, the eyelids afford the best example. In the denser texture of *ligament*, on the contrary, the swelling is hardly to be perceived. While in *bone*, there is no swelling observable, till the inflammation has continued long enough to increase the bulk of the part, by a new growth.

The *brain*, as a whole, presents peculiarities in this respect that merit notice. This organ, (or rather, we might say, assemblage of organs,) with its membranous coverings, and a small portion of limpid fluid interposed between them, and also in the ventricles, the quantity of which, altogether in health, is trifling, though liable to be greatly increased by disease,—its blood-vessels, and the blood contained within them,—are all inclosed in an unyielding bony case, the *cranium*, the cavity of which they at all times completely fill; and, being incompressible or nearly so, they cannot increase in bulk altogether. If, therefore, inflammation should arise in any portion of this multifarious structure, so as to produce its usual effect,—*swelling*, or enlargement,—or, should blood be extravasated, or serum effused, in any part within the skull,—the additional space required, in any of these cases, can only be furnished

by a compression of the vessels in other parts of the organ; these alone being capable of yielding to pressure, and that only by expulsion of their contents, the blood.

Such a state of parts occurring within the skull, must of necessity interrupt or disturb, more or less, the cerebral circulation; and in that way tend to disorder the *sensorial functions*. The application of this will be shown hereafter, when we come to treat of the Diseases of the Brain individually, as connected with *inflammation*.

From what has been now said, it must appear that the ordinary and obvious signs of *inflammation*, namely, “*increased heat,—redness—pain—and swelling,*”—are not sufficient at all times to enable us to detect the disease; inasmuch as there is hardly one of them that is constantly observed; while, singly taken, they may arise from other and different causes. Indeed, in the most formidable cases of *inflammation*, as those seated *internally*, the signs mentioned are of little or no value. Happily, however, there are others of a less equivocal nature; by a careful attention to which, there is little danger of the disease being either overlooked or mistaken. These I shall now proceed to notice.

1. *Increased sensibility* is one of the most general effects of *inflammation*. Hence arises the tenderness to the *touch*, as well as an increased susceptibility of all other impressions, so commonly observed in this disease. Parts that are devoid of feeling in health, or nearly so, often become exquisitely sensitive when inflamed; such is the case with *bones* and *ligaments*, as well as many others. And thus it is, that we are often enabled by pressure to detect *inflammation* in parts that are hidden from view. By this test, also, we are led to distinguish *inflammatory* from *spasmodic* pain, as already noticed.

2. *Increased irritability* in muscular or contractile parts, is another of the constant effects of *inflammation*. Thus, if the *heart* be inflamed, its pulsations become more frequent, and sometimes irregular also; while the *pulse* at the wrist is generally small, the heart, from its excessive *irritability*, not allowing any considerable quantity of blood to accumulate within its cavities. The same is observed in the *urinary bladder*, when suffering from *inflammation*, as well as in other hollow organs.

3. *Impeded or disordered function* is a never-failing result of *inflammation* wherever seated; the

disorder differing greatly at different times, according to both the degree and the stage of the disease. Thus, with regard to the *simpler* structures—if an *artery* be slightly inflamed, it will become at once more *irritable* and more *active*, driving the blood onwards with greater force. If a *nerve*,—not only will its own proper *sensibility* be increased, but the *sensibility* of the parts to which it is distributed, and which thus often become the seat of very acute suffering; as is strikingly observed in inflammation of the *great sciatic nerve*. So again, if an *absorbent* be inflamed, its coats thicken, it contracts, and the passage of lymph through it is more or less impeded; and should the main trunks of the *absorbing system* be thus affected, it becomes the occasion of *anasarcous* swellings in the parts below; of which, *phlegmasia dolens*, as it is unmeaningly termed,—(the *white limb* of lying-in women,)—arising probably from an *inflamed* state of the lymphatics within *Poupart's ligament*, is a sufficiently striking instance. In the same way, also, general *anasarca*. as well as *ascites*, and *hydrothorax*, often appear to be produced by *inflammation* within the chest, involving the *thoracic duct* at its entrance into the left *jugular vein*.

If we take the more *compounded structures*, into

the composition of which the *simpler* structures just enumerated enter; as, for example, the *mucous membrane* lining the different passages, both outlets and inlets, of the body—should these become violently inflamed, the *secretion* from them is often at first altogether suppressed; after a time, however, it is renewed, but always in an altered state. In slight affections of the sort, the *secretion* is often copious from the first. In the *serous membranes*, or those lining the shut-up cavities, *inflammation* has a tendency to produce an accumulation of serous fluid in the sac (dropsy); in other cases the inflamed surfaces adhere to each other, so as to obliterate the cavity more or less completely. What has been just said is sufficient to show the frequent dependence of *dropsy* on *inflammation*,—a connexion that is too frequently overlooked.

In the still more *compounded structures* the same derangement of function, as the result of *inflammation*, is observed. Should that most important organ, (or rather assemblage of organs,) the *encephalon* or *brain*, for example, be attacked by *violent*, and at the same time *extensive inflammation*, all its peculiar and essential functions (the *sensorial*) may be suspended at once, or as nearly so as is consistent with life; as in certain *apoplexies*; while

in lesser degrees of the same affection, its different functions may be singly or unequally impeded or disturbed, according to the precise seat and extent of the disease.

In this way, as it appears to me, may be explained the great diversity observed in the character of what is called *proper* or *idiopathic fever*, at different times, as well as in all the other *inflammatory affections* of this organ.

It is necessary to observe here, that certain *inflammations* often disturb the functions of other and distant parts ; a fact, the knowledge of which may assist us in forming our *diagnosis*. Of this, numerous instances will be afforded when we come to treat of inflammation as affecting different organs. I may mention at present the *kidneys*, the inflammation of which is generally attended by vomiting.

These then are the *local* signs or characters of *inflammation*, as far as regards the part affected, and by attention to which, either singly or combined, the existence of the disease may, in almost every case, and with little difficulty, be ascertained.

But although *inflammation* is essentially a *local*, and not a *general* affection, it is nevertheless capable

of disordering, by *sympathy*, or by *irritation*, other parts, and, indeed, the whole system.

When the inflammation is slight and of small extent, it produces no sensible disturbance of the general system; but when either violent or extensive, even in parts of comparatively little importance in the animal economy, it is apt to excite much general disturbance, chiefly observable in the *sanguiferous* system, which becomes generally though unequally disordered. At first there is a sensation of *chilliness*, with slight occasional *shiverings*; the *capillary* vessels on the surface are contracted by a sort of *spasm*, (*cutis anserina*, or *goose-skin*;) very different from mere inaction, and therefore not properly designated by the term *debility*; there is likewise *coldness* of the extremities, with *paleness* and shrinking of the features; the *pulse* at the wrist is small and feeble, and generally frequent, sometimes irregular also.

These, together, constitute what is termed a *cold fit*, which is more or less violent, and differing in duration, according to the surrounding temperature and other circumstances. This *cold stage* is sooner or later succeeded by a gradual return of *warmth*, beginning at the centre, and extending gradually to the extremities; the skin becomes hot and dry, the

tongue parched, and covered by a whitish fur or crust. Thus is formed the *second stage*, or *hot fit*; and this again terminates sooner or later in a *third* or *sweating stage*; during which the pulse returns by degrees to the natural state, though perhaps somewhat weakened.

These three stages, more or less distinctly marked, constitute what is termed a *febrile paroxysm*, or, in common language, *fever*, (in allusion to the *increase of heat*, the most obvious, and generally speaking, the most durable stage of the affection,) and as it obviously arises during the course of *inflammation*, of which it appears to be a consequence or *symptom*, it has been called *symptomatic fever*; the supposition being that a *febrile* state of body may arise independent of *inflammation*, and as an *idiopathic* or *primary* affection—a supposition, however, that few probably now entertain.

This *febrile state*, the result or consequence of *inflammation*, (and indeed as I believe of no other cause,) has been differently denominated by writers. It has been called "*pyrexia*," "constitutional disorder," "the constitution sympathising with the part," "general inflammation," and also "symptoms of irritation;" all, however, serving to mark its *secondary* or dependent nature, and equally appli-

cable, according to my judgment, to what is called *idiopathic fever*, and to other *inflammations*.

Among the signs of *febrile action* described above, the foul or coated state of the *tongue*, merits more than ordinary notice; in the first place, because it is of the most constant occurrence; and, secondly, because it has been attempted to be explained on other grounds.

It is a prevailing opinion at present, that a *furred* or *coated* state of the tongue, arises directly from a disordered condition of the *stomach* and other *digestive organs*, as the phrase is,—that the *secretions* are vitiated,—and that, in short, the tongue is little more than an *index* to the state of the stomach, and the rest of the alimentary canal.

In opposition to this it may be remarked, that such a state of the tongue is frequently observed where no particular disorder of the stomach, or the rest of the organs of nutrition, can be perceived. Nor is such a state produced, *directly*, by causes that occasion disorder of these organs. *Nausea* and *vomiting*, for example, as produced by *emetics* or other nauseating drugs, have no immediate effect in inducing *foulness of the tongue*; and, on the other hand, a *furred* state of the tongue so invariably

accompanies a *febrile* state, as caused by *inflammation* of all sorts, and wherever seated, that it seems unreasonable to question their connexion, as cause and effect. There is no violent or extensive inflammation, indeed, whatever be its seat, that is not accompanied by the state of tongue mentioned.

Another argument, that has been adduced in support of the supposed connexion between the *tongue* and the *stomach*, in *febrile* states of the system, is, that the appetite for food, and the power of digestion, either cease altogether, or are at least impaired, in all such cases. But so, in fact, are all the other functions, and for the same reason, namely, that the system is in a disordered state altogether. It is also said, that the fact of the tongue becoming clean after the use of *emetics* and *purgatives*, is a proof that the previous state of *foulness* depended upon a disordered state of the stomach. This mode of reasoning, however, is far from satisfactory. It might, with as much justice, be maintained, that because *ophthalmia*, *hernia humoralis*, as well as a hundred other topical inflammations, are relieved, (as no doubt they often are,) by *vomiting* and *purging*, they owed their origin to a disordered state of the *stomach* or other *digestive* organs. These remedies, like most others, appear to act

upon a different and far more general principle, namely, the principle of *counter-excitement*, or *counter-irritation*. In these same cases, too, *bloodletting* is often found to clear the tongue of its fur, more promptly and effectually, than either *emetics* or *purgatives*, and that, seemingly, by putting an immediate stop to the *febrile* action which the *inflammation* had excited.

A *foul* or *coated* state of the tongue, then, is always to be considered as a sign of *febrile* action; as this, again, is of *inflammation*; the seat of which it should be our immediate endeavour to discover. This may generally be done, either by the feelings of the patient himself, or by a careful examination of the different functions.

By inspection of the *tongue*, likewise, we are enabled to judge, both of the *degree*, and the *danger*, of the primary disease (the *inflammation*.) In slight degrees of this, the *fur* on the tongue (if any), is usually thin, and of a whitish hue; while it is confined principally to the back part of the organ; but as the disease advances, and begins to assume a formidable character, the *crust* spreads over its whole upper surface; it becomes thicker, and, at the same time, darker in colour.

Not only does the *tongue* thus serve to show the

existence of *inflammation* somewhere in the system, but, on many occasions, it indicates also the particular seat of the disease. When the *liver*, for instance, is suffering *inflammation*, the crust on the tongue is generally of a *yellowish* hue; while in *brain-affections*, especially if of an aggravated or *malignant* character, (such as is usually called *typhoid*,) the *tongue* turns *brown* in different degrees; and, in extreme cases, approaches to actual *blackness*.

Upon the whole, it may be taken as a general rule, that the thicker, and the drier, the *crust* on the *tongue* is, the more active and dangerous is the *inflammation* which it represents. On the other hand, the disappearance of the crust, is a sign of the cessation of the *febrile* state, and, in many instances also, of the *inflammation* itself. This, however, is not always, or necessarily, the case, but is to be judged of and determined by the *local* symptoms.

A careful attention to the state of the *tongue*, therefore, is, in all cases, a matter of no small importance; both in regard to *diagnosis* and *prognosis*, and even to the treatment; as will be shown hereafter.

The state of the *urinary discharge*, in *febrile* affections of all kinds, also merits notice. When the disease is recent and active, the urine is commonly scanty, high-coloured, and loaded with saline matters, so as often to irritate painfully the passages through which it is discharged. But in proportion as the *febrile action* declines, the urine is observed to be increased in quantity; it becomes turbid as it cools; and, at length, deposits a sediment—which is sometimes *furfuraceous*, or bran-like—sometimes of a brick-dust (*lateritious*) appearance. Such changes in the state of the *urine*, with the other signs mentioned, serve to mark the *exacerbations* and *remissions*, as well as the *decline*, of the *febrile state*.

The condition of the *general mass of blood* undergoes important changes, as the effect of *febrile action*; by the observation of which, much light is often thrown upon the primary disease, the *inflammation*.

If blood be drawn rapidly from a large vein or artery, during the *febrile state*, its appearance, after coagulation, is observed to be materially altered, though differently at different times, and under different circumstances. Should the habit of the

patient be strong, and the disease active, (more especially if membranous structures be the seat of the *inflammation*,) the blood coagulates more slowly than in health, so that the *red globules* subside towards the bottom of the mass : while the surface, in consequence, appears covered with either a *buff-like*, or a *gelatinous* crust. If the disease have been of considerable duration, (as in *pulmonary consumption*, or other *inflammation* of long standing,) the *crassamentum* assumes a cup-like appearance on the surface, and is contracted into a globular form. Such an appearance of the blood always indicates an already-protracted state of the disease.

If the *inflammation* be confined to the *parenchyma*, or general substance of the larger organs, such as the *lungs*, or *liver*, (without involving the investing membranes,) the surface of the *crassamentum* is usually flat and extensive.

The *cerebral substance*, again, when exclusively inflamed, (as in *simple fever*,) gives rise to another peculiarity in the appearance of the blood when drawn. The crust on the surface, in this case, is *gelatinous* in character, (*sizy*), and the *coagulum* altogether extremely loose, or *soft in texture*, with a flat and extensive surface.

Thus, the *inflammatory state* of the blood, as it

is called, affords important information in the way of *diagnosis*. It shows, in the first place, a *febrile state* of system; this, again, shows the existence of *inflammation*; of which it is always an *effect*, and, consequently, a *proof*. The *buffy* state of the blood that is sometimes (though not always), observed in *pregnancy*, has been quoted in opposition to this; but pregnancy is frequently accompanied by *uterine inflammation*; while it is, in itself, at all times, a near approach to this disease; being attended, very generally, with the leading symptoms of *inflammation*, namely, 'heat,' 'pain,' and a '*febrile state* of system:' while there is the same tendency to a new growth and enlargement of parts, that characterize *inflammation* in general.

It is worthy of remark here, that the *inflammatory crust* on the blood may be prevented showing itself, by trivial circumstances—by anything, in fact, that hastens coagulation; such as the blood flowing in a small stream; or trickling down the arm; or being received in a capacious vessel; by all which, it is exposed extensively to the atmosphere, and its coagulation thereby quickened. For the same reason, blood drawn by *scarification*, rarely presents a *buffy* surface. The approach of *syncope*, also, is

apt to prevent this appearance, as the blood then flows more slowly.

Although the appearance of either *buff* or *size* in the blood is a sign of *febrile action*, and therefore a proof of inflammation itself existing in some part of the body, the absence of such signs is no proof of the contrary; for slight degrees of inflammation may take place without disturbing the general system. Thus it is, that in the first days of simple *idiopathic* fever, as it is called, (encephalitis,) there is often no such change observed in the blood, because general *febrile symptoms* have not yet arisen: the disease, so far, is strictly *local*, and marked only by *local* signs; such as throbbing pain in the head, with disordered sensorial functions. As the disease proceeds, however, the *inflammatory crust* begins to show itself, and with the peculiarities stated above.

With respect to the nature of *pyrexia*, or a *febrile* state of system, it may be observed that it is not simply a state of *excitement*, or increased vascular action, (such as may at any time be produced by violent exercise, or *stimulating* applications of any kind internal or external—mental or bodily)—it is a

preternatural, or *morbid*, state of action, in which, all the functions, both of body and mind, are more or less disturbed; the different *secretions* are disordered; the *muscular strength* is enfeebled—*sleep* diminished, unsound, and unrefreshing—the *appetite* lost, or impaired; and *nutrition*, consequently, almost at a stand; while, on the other hand, *interstitial* absorption seems to be increased. And thus the body becomes emaciated, as the disease proceeds.

SECT. II.—*Of the Causes of Inflammation—exciting, and predisposing.*

There is, doubtless, great advantage in becoming acquainted with the different *causes* capable of exciting *inflammation*, as well as with the circumstances that *dispose* the body to be affected by them. For in the first place, by avoiding them, we have a chance of preventing the disease altogether; and secondly, because the removal of them is generally conducive, and often essential to, the removal of the disease itself. In many instances, indeed, the removal of the *cause*, is all that is requisite to the cure; the disease afterwards subsiding of itself.

It is sometimes said, that *inflammation* may arise *spontaneously*. But this can only mean, that the *cause* is either not perceived, or not understood. The body is so constantly exposed to a variety of noxious agents, many of them obscure, and some of them, probably, unknown, that it is natural to expect the disease should frequently appear, without our being able to ascribe it to any particular source.

1. Whatever tends to injure or destroy a part, such as mechanical violence, or destructive chemical agents,—is capable of producing *inflammation*.

2. Everything that violently impresses a living part, so as to excite or disturb its *vital movements*, may likewise become a cause of *inflammation*. Thus *stimulants* of all kinds, or things that excite or increase action,—*irritants*, that disorder action,—(of both which, there is an almost endless variety,) may have the same effect.

3. *Changes of temperature*, likewise, especially when sudden and considerable, are to be included among the *exciting* or occasional causes of inflammation.

Thus, *heat* which, in a moderate degree, is essential to healthy action, becomes, when applied in excess, a most powerful cause of *inflammation*. *Intense heat*, indeed, is one of the most certain, and, at the same time, the quickest acting, of all the known causes of this disease. It seems to act *chemically*, as well as *vitally*, on the part; while there is hardly a perceptible interval between its application, and the appearance of the most violent *inflammation*.

4. *Cold*, again, according to the general opinion, would seem to be one of the most frequent *exciting* causes of inflammation; so much so, indeed, that, in common language, the term *cold* is used synonymously with, or as a substitute for, the disease itself—a mode of speech, however, that is not free from objection, as it often leads to the application of *heat*, as well as other *stimulants*, in cases that require an opposite mode of treatment.

Cold, though, physically speaking, a *negative* quality, can hardly be denied to be, on some occasions, a *direct* cause of inflammation. As being productive of strong sensation, it ranks among *stimulants*. It influences also the *irritability* of contractile parts; as is shown by its corrugating the skin, or other surfaces. It may possibly act in this way, when a cold wind gives rise to inflammation of the *eye*, the *throat*, the *air-passages*, &c.

There is generally observed, in these cases, a marked interval between the application of the *cause*, and the *effect*—sometimes of several hours, or even days. In general, indeed, it is not till the natural temperature is restored, that the effect (the *inflammation*) is perceived; thus making it difficult

to say, whether *cold*, in these cases, ought to be ranked among the *exciting*, or the *predisposing*, causes of the disease.

More frequently, however, *cold* appears to act *indirectly*, in producing *inflammation*. Thus, when applied to the surface or extremities, it may be followed by *catarrh*, *sore throat*, &c.; according to the susceptibility, or predisposition, of different parts to be affected by it. Whether, in these cases, it acts by constricting the *capillaries* (the parts most susceptible of its influence,)—thus disturbing the balance of circulation, and driving the blood, as it were, into the internal parts, with consequent distension,—or in some other less obvious way—is uncertain. Hypotheses, however, have not been wanting, in order to explain the matter: amongst others, that of *suppressed perspiration*, and the consequent retention of something *noxious* in the system; but of this, there is no sufficient proof.

The tendency of *cold* to produce inflammation, is lessened by whatever serves to keep up an equal circulation over the general system; such as *warm clothing*, *exercise*, a good supply of *nutritious food*, and a moderate use of general *stimulants*. *Habitual exposure to cold*, also, within reasonable limits,

appears to render the body less susceptible of its influence, as a *morbific* agent.

5. Another *occasional cause* of inflammation appears to be a state of *general vascular excitement*, such as is produced by violent exercise, exposure to a high temperature, or the excessive employment of *stimulants* of any kind, either *bodily* or *mental*. As an example of the latter may be mentioned, *anger*, or other violent mental emotions, which may give rise to *phrenitis*; and, on the other hand, *grief* or *anxiety* which, after a time, induces fever of the low or *nervous* description.

6. A still more frequent and powerful *cause* of *inflammation* is, that excited and disordered state of circulation, termed *pyrexia*, or a *febrile state*, which, though itself always the effect of *inflammation*, as before stated, tends, in its turn, to excite the disease in other parts. The most striking instance of this is *acute rheumatism* (*rheumatic fever*) as it is called, in the course of which, inflammation often arises in the *lungs*, the *heart*, or the *brain*. And thus a disease, not in itself dangerous, (*ligamentous inflammation*;) not unfrequently proves fatal.

In cases of *pulmonary consumption*, also, where the general vascular action has been long in a state of great excitement, (*hectic fever*,) *inflammation* is almost sure to take place during the course of the disease,—most frequently in the mucous membrane of the alimentary canal, in the form of *diarrhœa*—sometimes in the *skin*—and, not seldom, in the *brain* itself, especially towards the close of the disease; as indicated by active *delirium* and other signs.

7. *Idiopathic fever*, as it is called, (by which I mean, that *febrile* state of system, that is the consequence of *cerebral inflammation*, just as *rheumatic fever* is, of *ligamentous*, and which, in both is merely *symptomatic* of local inflammation,)—seldom continues long, without being followed by *inflammation* in some organ; as, for instance, in the *abdomen*, especially where *calomel* or other *drastic purgatives*, have been largely and frequently administered, a practice by which, the danger of the disease is often greatly and needlessly enhanced.

8. Besides the *causes* now mentioned, there are others so peculiar in their nature and effects, as to require separate notice. These, as well as the *in-*

flammation produced by them, are usually termed *specific*, a convenient term, no doubt, but which, of itself, explains nothing.

These *specific causes of inflammation*, are, for the most part, of *animal origin*, and are of two orders : 1st, those that belong to certain animals in the state of health; as the poisonous matter of the *cantharis*,—the *wasp*,—the *viper*,—and other *venomous* animals : and, 2dly, those that are generated under certain states of disease, either in the human body, or in other animals; as the *virus* of *rabid* animals—the *variolous*,—the *vaccine*—the *syphilitic*,—and, probably, many more of which we are ignorant ; all of these appear to operate by producing *inflammation*, but, in each, with peculiar characters, by which they may be distinguished from ordinary *inflammation*, as well as from one another.

As another peculiarity, in regard to the *causes of inflammation*, may be mentioned, the effect of certain articles of food, as shell-fish, or other matters, taken into the stomach, which, in some individuals, are apt to be followed by *urticaria* or *nettle-rash*, and that without apparent disorder in the stomach itself. Such peculiarities of constitution (*idiosyncrasies*, as they are termed,)—are hardly to be explained.

Of Predisposition to Inflammation.

The *exciting* or *occasional* causes of *inflammation* are, as to the greater part, uncertain in their operation; they act with more or less effect, according to the *disposition*, or *susceptibility*, of the part to which they are applied.

A more than ordinary tendency or *disposition* to *inflammation*, may be *connate*, or natural to the individual:—on the other hand, it may be *acquired*, and proceed from different sources.

Great natural *irritability* of system, disposes to *inflammation*. Thus infants in general, and many adults, likewise, especially females, are liable to attacks of *inflammation* from slight causes, such as have little or no effect on others. Particular organs, also, may be unusually *irritable*, and more disposed, in consequence, to fall into *inflammation*. Hence, certain individuals are observed to be prone to particular diseases, rather than to others; as those of the *brain*, *lungs*, *ligamentous structure*, &c., all consisting in *inflammation*.

A *predisposition to inflammation* may also be acquired; as from *age—climate—season*—and particular *habits and modes of life*.

1. AGE has considerable influence, in disposing to inflammation in particular organs and structures. Thus, in *infancy*, there is a great tendency to inflammation in the *brain* and its membranes: at a somewhat more advanced period, the *glandular system* is more prone to inflammation: and, as the *adult* age approaches, a tendency to inflammation is more observable in the *lungs*; by which, a foundation is often laid for those slow and gradual changes of structure, (tubercles and the like,) which, sooner or later, terminate in the most fatal of diseases, *pulmonary consumption*.

In *advanced life*, the tendency to inflammation is particularly observable in the lining membrane of the *air-passages*, showing itself in the form of *catarrh*, and *asthma*,—and, also to what are termed *rheumatism* and *gout*; both consisting in inflammation of the *ligamentous structure*. There is likewise, at this stage of life, a disposition to inflammation in the *brain*; commonly of a chronic and inactive character, and ending in change of structure, with a tendency to serous or sanguineous effusion;

thus giving rise to *vertigo*, *paralysis*, *apoplexy*, or *fatuity*; in various shapes and degrees.

2. CLIMATE has great influence in disposing to particular forms of disease, all consisting in inflammation. Thus, *hot climates* tend to produce inflammation in the *organs of nutrition* in the form of *liver-disease*, *dysentery*, and others. *Cold climates* on the contrary, are apt to generate inflammation in the *respiratory organs*; and also in the *ligamentous structures*.

Diseases induced by *climate*, are best relieved by change,—in other words, by avoiding the *predisposing cause*. Thus, *phthisis*, or *pulmonary consumption*, is now and then effectually cured by removal to a warm climate, if resorted to at a sufficiently early period. On the other hand, diseases originating in *hot climates*, are best got rid of, by removal to a *cold* or *temperate* one.

3. SEASON has an effect very analogous to that of *climate*, both in inducing, and in removing, disease. In *hot summers*, inflammations in the organs of nutrition are commonly rife; as, for example, *cholera*, *diarrhœa*, and *dysentery*. In *winter*, the organs of respiration, and the ligamentous structure, are especially prone to inflammation.

4. HABITS, and MODES OF LIFE, have also their share, in giving a tendency to certain diseases, rather than to others. This is a subject pretty generally understood:—as an individual example may be mentioned, *excess in the use of intoxicating liquors*, which disposes to *mental disorders*,—*delirium tremens*,—apoplexy,—palsy, and other cerebral affections; all originating in a more or less active inflammatory state of the brain, or some of its parts.

5. COLD, which has been alluded to above, as a *direct* or *exciting* cause of inflammation in certain instances, is also to be ranked among the *predisposing*; as in the case of *chilblains*. The inflammation here does not commonly arise during the application of *cold*; but afterwards, and when the natural temperature of the part is restored: so that in this case, *heat* may be said to be the immediate *exciting cause*, while *cold* only gives the *predisposition*.—Many other instances of what is called *taking cold*, are open to the same remark. The actual disease (which is *inflammation*,) does not commonly appear till after an interval of many hours, or even days.

Having shown the *characters* of inflammation in general, (by attention to which, it is presumed, the disease may, in almost every instance, be easily recognized); and having also pointed out the principal *causes*, both *exciting* and *predisposing*, by which it appears to be induced, I shall next inquire a little into the *intrinsic nature* of the affection; by which I mean its *physiological condition*, as compared with the healthy state, or what is usually termed the *proximate cause*. Such an inquiry, as far as it is successful, will enable us to act upon *rational indications of cure*; instead of *empirically*, as we are otherwise, of necessity, obliged to do.

SECT. III. *Of the Nature of Inflammation.*

The prevailing opinions regarding the *intrinsic* nature of inflammation, or what is usually termed the *proximate cause*,—various and contradictory as I have shown them to be, may all be classed, (according to the modern phraseology,) under the two general heads of *Humoralism* and *Solidism*:—the former having reference to the state of the *animal fluids*;—the latter, to the *sensitive* and *moving* powers of the body.

The notion, that the essence of disease was to be looked for in the blood, and that it consisted in the presence of something noxious, that required to be either corrected, or expelled from the system by some of the natural outlets, is as old as the time of HIPPOCRATES. Such an hypothesis was quite natural in a rude state of the art, when the structure and functions of living beings were but very imperfectly known, and the laws of *vitality* little studied; while it seemed to be confirmed by the striking fact, of the *spontaneous* termination of diseases, in

numerous instances, by some natural evacuation; such as *vomiting*, *sweating*, or *purgings*—all of them very frequent occurrences in hot climates, where the hypothesis in question took its rise: The supposed *morbific* matter was thought to undergo a sort of fermentation, (or *concoction*, as it was called, not altogether dissimilar to the fermentation of ordinary liquids, and, like this, requiring a certain time for its completion,) previous to its expulsion, (*elimination*,) from the system. The same hypothesis seemed likewise, to account for the somewhat regular duration of *fevers* and *inflammations* in general. Upon this, also, was founded, doubtless, the doctrine of *critical days*, upon which so much stress was formerly laid.

The *chemical* and *mechanical* doctrines of the middle ages, were but modifications of the *Humoral Pathology*, which, in one shape or another, prevailed very generally till the time of VAN HELMONT, who attributed all the changes that are taking place in the living body, to a superintending principle, to which, (in the language of PARACELSUS,) he gave the name of the *archæus*. Half a century after this, STAHL, a German writer, of great and deserved celebrity, employed the term *anima medica*, as less metaphorical than the *archæus* of VAN HELMONT,

in order to explain the movements of life. I hardly need observe, that both these are but figurative expressions, serving to denote the operation of some unknown power, which we now denominate, in simpler language, the *vital principle*.

HOFFMAN, a voluminous writer of the same period, ascribes to the *nervous system*, what VAN HELMONT did to his *archæus*, and STAHL to the *anima medica*. He refers, more especially, to the *moving* or *contractile* fibres, as being liable to *spasm* and *atony*—a doctrine that furnished the groundwork of Dr. CULLEN'S elaborate system of '*Debility*'—'*Spasm* of the capillaries'—and '*reaction*.'

These doctrines, under the name of '*Solidism*' or '*Vitalism*,' have, with but few exceptions, prevailed nearly to the present time, when, attempts are making to revive the *humoral pathology*, and it must be admitted, upon a more rational, if not a more durable, basis, than heretofore; and which, from the zeal and ability displayed in its support, is doubtless entitled to great respect. The reasons, however, which led to the abandonment of the *humoral doctrines* of former times, may naturally be expected to operate more or less against their revival in the present day—but, more especially,

their insufficiency to explain, fully and satisfactorily, the various forms and circumstances of disease.

It is not at all necessary to call in question the fact, of the occasional, or even frequent, deviation from the healthy state, of the general mass of blood, or any of the animal fluids ;—nor of such deviation being the occasion, at times, of particular forms of disease. The blood may easily be conceived to become vitiated in its properties, in various ways : as by deficiency either in quantity or quality, of the *ingesta* :—by imperfect or disordered action of any of the parts employed in the processes of *digestion* and *assimilation* :—or, again, by defective or disordered action of any of the organs of *secretion* and *excretion*. Other causes might easily be suggested, as calculated to affect unfavourably the composition of the animal fluids, so as to give rise to *inflammation*, as well as other forms of disease. The admission of all this, however, might still fail to show the *intrinsic* nature of disease, which, as it appears to me, can hardly be otherwise understood than as consisting in *defective* or *irregular movements* of the *animal machine*, and of which the ill condition of the fluids in the cases supposed, should be looked upon as merely the *exciting cause*.

That *inflammation*, with all its essential pheno-

mena, may, and frequently does, arise altogether independent of any previous change in the general condition of the blood or other animal fluids, is proved incontestably from its almost instantaneous production by external causes; such, for instance, as the application of intense heat to any part, and that where the body is in the most perfect health at the time. This, alone, would seem to furnish an insuperable argument against the *humoral pathology*. The occurrence of the disease, in such cases at least, cannot possibly be referred to an altered state of the fluids, and is only to be explained by reference to disordered action of the *moving powers*. The speedy subsidence of the disease, on numerous occasions, either spontaneously or by the operation of *local* remedies, appears equally inconsistent with the *humoral* doctrines.

Upon these grounds, I confess I am still inclined to follow in the steps of STAHL, of HOFFMAN, of BAGLIVI, of HALLES, as well as a host of other most able pathologists of later times; and last, though not least, of our distinguished countryman, JOHN HUNTER; all of whom have advocated the cause of *vitalism*, as applied to *inflammation*, as well as to most other diseases; considering a vitiated state of the *fluids*, when it does occur, as being it-

self, for the most part, the *effect* of disordered action of the *solids*; and to be viewed rather in the light of an *exciting cause*, than as constituting the disease itself.

Considering *inflammation*, then, as an affection of the *living solids*, and as consisting in *disordered action* of these, we may proceed to inquire somewhat more particularly into the *physiological* condition of the inflamed part, as compared with the healthy state—that which is usually termed the *proximate cause* of the disease, a knowledge of which, (supposing it attainable,) cannot but materially assist us in our endeavours both to prevent the disease, and to control it, when it actually takes place.

There are but two ways, apparently, by which we can usefully proceed in such an inquiry. The one is, by observation of the *phenomena*, and effects or consequences of the disease, during life,—the other, by a *post mortem* scrutiny, by the aid of *dissection*. The latter, however, is far from being adequate to the purpose. *Dissection* serves only to show the effects or consequences of disease, but not the disease itself. *Inflammation* is a *vital process*,—a modification, merely, of *living action*. All

the essential *phenomena* of the disease, cease with life; and no examination *after death*, whether *anatomical* or *chemical*, can possibly throw much light upon the subject; except, indeed, in the way of *inference*. *Dissection* may shew us, that the disease has existed; and perhaps, point out its seat; though it is not always competent to do even this; for disease may, and often does, arise, and prove fatal, without leaving behind it any visible traces of its previous existence. And even where such traces do appear, they are not always or necessarily to be considered as the type of what actually existed during life: they may be merely the result of changes occurring after death. “*Neque est quidquam stultius,*” says CELSUS, “*quam quale quod vivo homine est, tale existimare esse moriente, imo jam mortuo.*”

Looking, then, to the *phenomena* of the disease, as they present themselves during life:— It is admitted, on all hands, that the vessels in an *inflamed part*, both *arteries* and *veins*, are in a state of unusual distension, and contain a greater quantity of blood, than in the healthy state. Their *vital* condition, however, has been, and still is, a matter of much dispute. The followers of Mr. HUNTER maintain, that the blood-vessels in *inflam-*

mation, are *more active* in their movements, and transmit the blood with greater force and velocity, than in health. Others assert the contrary; calling the distension a state of *congestion* merely,—a term which seems intended to imply, that the vessels are distended from *weakness*, or want of contractile power. This difference of opinion, in regard to the point in question, is a matter of no small importance, when it is considered how much the *treatment* of the disease is likely to be influenced by such speculations. Thus we find, Dr. BILLING, in his '*First Principles of Medicine*,' asserting, that "the way to reduce inflammation, is to *increase* the action of the arteries. This may be done," he adds, "by the application of *cold* or *astringents* to the part, which make them contract—in other words, *strengthen them*."—Upon this I would only remark at present, that although both *cold* and *astringents* are occasionally useful agents in the treatment of inflammation, they probably act in a way different to that here suggested.

That the blood is in more rapid motion in the vessels of an inflamed part than in health, is shown by arguments that it would be difficult, and indeed as it appears to me, hardly possible to controvert. In the first place, the blood is found to flow more

rapidly from an inflamed part when wounded, *secondly*, the *veins* coming out of it are evidently enlarged, and bleed more freely when punctured. Now as these circumstances take place without any change in the action of the heart itself, and also without any increase of the general circulation, it is difficult to refer them to any other source than an increased activity of the blood-vessels themselves. And that this is really the case, is further shown by the increased redness, and augmented temperature, of the part—both of them the ordinary results of a more rapid movement of the blood.

Further, it is found, that all the *vital properties* of the part are in an exalted state—its *sensibility* is heightened—its *irritability* is increased—and all its *movements*, in consequence, performed with greater energy. There is either a greater production of fluids from the part, in the way of *secretion* and *excretion*,—or its bulk is augmented, by a new growth. This tendency to a new production of parts is strikingly displayed in the case of an inflamed cornea, where new vessels are almost seen to shoot out—a fact that it would be difficult to reconcile with the idea of weakness. To this may be added the important fact, that all the obvious and direct causes of the disease, are *stimu-*

lant in their nature ; that is, such as are calculated to excite and increase action in living parts.

Notwithstanding these strong, and one would think, conclusive proofs of *increased activity* of the blood-vessels in *inflammation*, and incompatible, as they seem to be with the notion of *debility*, there are, nevertheless, not a few who still maintain the opposite opinion—namely, that, in *inflammation*, the action of the vessels is *weakened*, instead of being *increased*, and the circulation in the part carried on more slowly and feebly than in health.

The chief argument adduced on this occasion, seems to be derived from the enlargement of the vessels of the part ; *distension* being considered as necessarily implying *weakness*. Thus, Dr. Billing, in the work already quoted, observes “that the natural action of the arteries is *contraction*. Now, as the arteries in an *inflamed* part, are larger than before, they must have contracted less ; and, consequently, have acted with less force.”

Another distinguished teacher and writer, of the present day,* expresses himself to much the same effect. Speaking of *determination of blood* to a part, he denies that this is caused by *increased*

* See ‘*Principles of Medicine*,’ by C. J. B. Williams, M.D., Professor of Medicine in University College, London.

action of the arteries, "*because*," he says, "the only *active* property we know these vessels to possess is that of *slow* or *tonic* contraction; and this would *diminish*, instead of *increasing*, the motion and quantity of blood proceeding to the part." "The enlargement of vessels," it is further said, "where a *determination of blood* takes place, is effected by *arterial distension from behind*, acting on a tube that has already lost some of its contractile power. The arteries, thus enlarged, become channels for the conveyance of more blood, and with more force, into the *capillaries* and *veins* leading from them; these will become, in like manner, enlarged, and share the increase of force and motion thus supplied to them." But if, as here alleged, the distended arteries of the part are in a *weakened* state, and the only active property of arteries is that of *slow* or *tonic* contraction,—whence, it might be asked, is derived that "*arterial distension from behind*," which is said to produce the enlargement of the vessels of the inflamed part, seeing that the action of the heart is not at all increased in these cases? It is, besides, not easy to understand, how an enlarged tube "that has already lost some of its contractile power," in what is called *determination of blood*,

should *thereby* become a channel for the conveyance of more blood, "and with more force," into the capillaries and veins leading from it, the contrary, rather, should be the case, according to ordinary hydraulic principles.

The notion, that the only active property possessed by *arteries* is that of "*slow* or *tonic* contraction," (as maintained both by Dr. Billing and Dr. Williams), leads to a denial of their having any share in the general circulation of the blood, this office being supposed to be performed by the heart alone; as, indeed, has been of late contended for also by Dr. Marshall Hall and a few other physiologists. The fallacy of this, however, was so clearly pointed out by Mr. Hunter, that one wonders so unfounded a supposition—one so inconsistent with the most striking facts—should still be held.

The frequent changes taking place in the distribution of the blood at different times, and from different causes, without any corresponding change in the action of the heart, are a sufficient proof of the important share the arteries have in regulating and determining the movement of the blood. As instances in point may be mentioned, the effect produced by local *stimulants* of various kinds ap-

plied to the skin ; and, more especially, the almost instantaneous determinations of blood to particular parts, that take place as the result of different *mental emotions*, which it is hardly necessary here to particularize,—all, however, serving to prove that arteries possess an *active* power in the circulation, quite independent of, and, (taken altogether), superior, probably, to that possessed by the heart itself. There is no difficulty in admitting this, when it is remembered, that many animals exist without a heart at all, yet in which there is a circulation of the blood : and also, that in *fishes*, the only office performed by the heart, is that of sending the blood to the *branchiæ*, or gills ; the general circulation, in them, being carried on by the blood-vessels alone. Other arguments to the same purpose might easily be adduced.

If, then, the arteries have really so large a share in the office of circulating the blood, it must be by some power very different to that of “ a *slow* or *tonic* contraction ;” for this could only serve to impede the current, by its tendency to bring the sides of the vessel in contact. There must, of necessity, be an action of a *propulsive* kind (which this is not) exerted by the arteries, namely, an *oscillatory* one—*contraction* alternating with *re-*

laxation;—such, in fact, as is possessed by the heart itself, though much less extensive in its range; sufficient, nevertheless, to move a portion of the blood forwards.

This *oscillatory* power of the arteries is first called into action, by the *stimulus* of distension. Thus, when a fresh portion of blood is thrown into the aorta by the *systole* of the heart, the artery is excited to contract, in order to get rid of the distending cause. The blood is thereby impelled onwards, and cannot retrograde, for obvious reasons. The same process will be repeated, successively, throughout the whole course of the artery. In this way, and by the gradually-increasing muscular power of the arteries as they approach their terminations, the whole business of the circulation will be completed.

This movement, the *oscillatory*, may be excited in another way, and which deserves attention in a practical point of view: as when the vessels on the surface of the body are suddenly, and generally, contracted by *cold*, (the *tonic* contraction,) the blood is repelled, in an undue quantity, upon the internal vessels; and, by distending them, occasions an increase of their *oscillatory* movement, so as to produce what is called *reaction*. This

may prove a source of irritation to diseased parts, by which the disease is liable to be aggravated. The organs of respiration often appear to suffer in this way. .

But, again, it is denied, that the arteries have such an *oscillatory* power, *because*, as it is urged, instead of becoming sensibly dilated when the stroke of the heart drives the blood into them, they preserve a nearly uniform state of distension. This circumstance, however, when properly considered, rather goes to prove the contrary. If the artery possessed only a "*slow* or *tonic* power of acting," it would yield to the force of the stroke, (which is very considerable,) and so present a *pulsatory* appearance. That it does not do this in any very perceptible degree, is only to be explained, as it appears to me, by supposing, that the instant the vessel begins to feel the distension, it is thereby incited to contract; and that with a degree of force not merely enough to prevent any very perceptible dilatation, but sufficient, also, to drive onwards a portion of arterial blood; regurgitation being prevented by well-known causes. We have a striking proof of the *propulsive* effect of the *oscillatory* contraction of muscular fibres, in the case of the *peristaltic* movement of the

intestines ; by which alone, and without the aid of any *vis a tergo*, (such as is possessed by the heart,) the contents of the alimentary canal are carried forwards.—This, by the by, affords another proof that *distension*, in muscular canals, does not necessarily imply *weakness* ; for the intestines appear to act with equal force, under very different degrees of distension : and the same may be said of the urinary bladder.

I may observe further, that in judging of the real state of the arteries in inflammation, the *vasa vasorum* appear to have been too much overlooked. It is fair to presume, that these have their action increased in inflammation, as well as the arteries to which they belong ; while it is scarcely to be doubted, that the latter would acquire an increased power of acting, by such an additional supply of blood to their coats ; and that they are really thus supplied, appears from the additional redness they exhibit under inflammation in common with the rest of the inflamed structure.

The actual state of the *absorbents* in inflammation it is less easy to judge of, their movements being scarcely open to observation. But that they are actively employed, in common with the *blood-vessels*, may be inferred from the great changes,

both in figure and in bulk, which the part appears to be constantly undergoing.

Such are the chief grounds that may be adduced in favour of the opinion entertained by Mr. Hunter and his numerous supporters, with regard to the *intrinsic* nature of *inflammation* considered as a *vital process*; namely, that it is a state of *increased activity*, chiefly observable in the *blood-vessels* of the part, these being the principal agents in effecting the various physical changes that are taking place.

But while it is contended, that in *every inflammation* there is an increase of *vital activity* in the part affected, it is of great importance to bear in mind, that it is not *simply* a state of *increased action*, but an action of a preternatural or morbid kind, and subject to new laws, widely differing from those of health; as is proved by the results, above stated. Of the *intrinsic* nature of this, however, we are, and probably ever shall remain, ignorant. We know it by observation alone, and by comparison with the healthy state. Its proper management, likewise, as a matter of practice, is only to be learned in the same way, namely, by observation and experience. And even these are but uncertain and insufficient guides; because the

disease is subject to be influenced by a variety of circumstances, many of which are unknown to us, and many beyond our ability to control. This acknowledgment of the imperfection of our art, should inspire caution, in the application of remedies; more especially in the present day, when the *Materia Medica* consists, to so great an extent, of the most deleterious articles.

SECT. IV.—*Of the Varieties of Inflammation.*

Although *inflammation* is, (physiologically speaking,) at all times, and essentially, one and the same disease, it is nevertheless greatly varied, both in its characters and treatment, by a number of circumstances which it is of importance to be well acquainted with: of these, the following merit especial notice.

1. *Degree.* Inflammation may differ in degree, from the mildest, to the most violent and quickly-destructive form.

2. *Duration.* It may subside after a few hours duration, or even less than this; or it may continue for an almost indefinite period.

These differences, as to degree and duration, have generally been designated by the terms *acute* and *chronic*; which, however, do not indicate any essential difference, there being every possible gradation between the two extremes. The term *sub-acute*, lately introduced, is little better than an

affected refinement, and imports nothing that is intelligible.

3. *Age*. This has a material influence on the disease, modifying both its characters and treatment.

From the greater *excitability* and *mobility*—(the higher degree of *vitality*, in fact)—that belong to the period of infancy, inflammation is more readily excited, and, consequently, more frequent in its occurrence, than in after-life; and it runs its course with greater rapidity and violence. On account, also, of the greater *sensibility*, and the stronger *sympathies* that then prevail, the rest of the *brain* system, in particular, is more readily excited and disturbed by the *local* disease. Thus it is, that the same degree of inflammation that, in adults, excites only a general febrile state, often gives rise in infants to *epilepsy*, or other disturbance of the cerebral functions.—The *female* constitution resembles somewhat that of infants in these respects. *Old age*, again, is prone to certain inflammations rather than others; as of the air-passages, in the form of *catarrh*: also to slow and partial inflammation towards the basis of the brain, giving rise to *hemiplegia*, and *apoplexy*—frequent occurrences in advanced life.

4. *Individual constitution.* This, like the other circumstances, has no small influence over inflammation. Thus, *strength* and *weakness*—*irritability* and *torpor*,—all tend, more or less, to modify the character and treatment of the disease.

The distinctions, made of late, of *tonic* and *atonic*—*sthenic* and *asthenic*—*active* and *passive*—as applied to the inflamed part, and as intended to indicate either a state of *increased*, or *dininished* action, respectively—seem to be without foundation. In regard to the part itself, there is sufficient reason to believe, that inflammation is always a state of morbidly-increased activity; whether it takes place in the *weak*, or in the *strong*.—The effect of these states on the treatment of the disease, will appear hereafter.

5. *The nature of the part affected.* Every individual structure, and every individual organ indeed, has its peculiarities; serving to modify more or less, both the character and treatment of this disease. To mention a few instances in point:—inflammation of what is called the *mucous membrane*—(that which lines the different passages of the body, *inlets* as well as *outlets*)—is of less importance, generally speaking, than inflammation of

the *serous membranes*—(those that line the close cavities and invest the organs contained within them).—In the former, (the *mucous membrane*,) inflammation has a greater tendency to subside spontaneously; and, commonly, by increased discharges, so as, in most cases, to require little aid from art;—while, in the latter, (inflammation of *serous membranes*,) the symptoms are apt to be more distressing, both by disturbing the general system in a higher degree, and by interfering frequently with organs of importance to life; calling, in consequence, for prompt and active treatment.

From what has been now said, it must be evident, that the names of diseases should, as far as possible, have reference to the particular structure or organ affected. Such, however, is far from being the case at present: in innumerable instances, the names in general use, even among the faculty themselves, refer to a *symptom* merely, and one that has little or no reference to the part affected; while it sometimes suggests an unnecessary, or even injurious, mode of treatment. It will suffice to mention the terms *catarrh*, *diarrhœa*, *rheumatism*, *debility*, *relaxation*,—as well as many others.

It was remarked by Mr. Hunter, that the parts

which derive their nerves from the *great intercostal*, (the *ganglionic system* of the present day,) are attended, when inflamed, with symptoms of *lowness* and *depression*, accompanied with a weak and small pulse, although the general strength might, in other respects, be good. In such cases, *bloodletting* may still be proper, or when imperatively called for; though to be used always with more caution and restriction than on ordinary occasions. We learn from this, that the *pulse*, alone, is not at all times a sufficient guide, in regard to the use of this remedy. Indeed, in these cases, the pulse generally rises after a moderate loss of blood: so as to warrant, on many occasions, a repetition of the remedy.

6. *Habits and modes of life*.—These have a material effect, in creating a tendency to inflammation in particular structures. Among various instances that might be mentioned, the diseases of the brain deserve notice, as *apoplexy*, *palsy*, *epilepsy*, *insanity*, and others of the same class; all of which, come within the category insisted upon at the onset of the work, “as either consisting in actual inflammation, or as consequences of it, more or less remote.” These diseases are

found to occur most frequently in persons in whom the *brain* has been over-excited and disturbed; as by intense thinking, mental anxiety, or the excessive use of inebriating liquors or narcotic drugs.

7. *Climate and season.*—These have a considerable influence in begetting a tendency to particular forms of disease—all, however, consisting in inflammation. Thus, *hot climates* dispose to inflammation of the *brain*, under the names of *sun-stroke*, *phrenitis*, and *fevers* of different descriptions—also to inflammation of the *liver*, (*hepatiolis*)—and of the *alimentary canal*, in the form of *cholera*, *diarrhœa*, and *dysentery*. *Cold climates*, on the other hand, give a propensity to inflammation in the *ligamentous structure* (*rheumatism*, &c.); but more especially, in the *organs of respiration*. *Cold* and *hot seasons* have effects corresponding, in a great measure, with those of *climate*.

8. *Nature of the exciting cause.*—This has a considerable effect in modifying the character of inflammation, and in some degree also in determining its seat. Thus, *cantharides* excite super-

ficial inflammation on the skin, with *vesication*: the same poison frequently gives rise also to inflammation of the *urinary organs*. *Tartarized antimony*, on the contrary, when applied to the skin, excites the disease in a *pustular* form. *Mercury*, in its different forms, of *calomel*—*grey powder*—*blue pill*—*blue ointment*—or any other, and however applied—manifests a strong tendency to produce destructive inflammation of the *gums* and neighbouring parts; ending, in numerous instances, sooner or later, in a premature loss of the teeth; thus furnishing a powerful argument against the employment of so noxious an agent in any but urgent circumstances, and where no sufficient substitute can be found.

The greatest difference, however, in the characters and consequences of inflammation, as depending upon the nature of the *exciting cause*, is that produced by what are termed *morbid poisons*, such as are generated in the body itself, or that of other animals, when labouring under certain forms of disease, termed *specific*, *e. g.*, *small-pox*,—*cow-pox*,—*measles*,—*scarlet fever*,—*syphilis*—and probably many more that are little known to us. These all have the common characters of *inflammation*, though accompanied with

certain peculiarities, by which they may be distinguished from ordinary inflammation, as well as from one another. They constitute, in fact, (practically speaking,) so many different diseases, which are governed by particular laws, and require to be treated upon different principles; the knowledge of which is only to be acquired from observation and experience. The same may be said of the *non-febrile* diseases of the *specific* kind—*syphilis* and *carcinoma*; both of which are but modifications of inflammation.

It may be questioned, whether *scrofula* can be properly ranked among the *specific* diseases as the result of a *morbid poison*. All its processes, however, evidently consist in inflammation, and require to be treated as such; subject, nevertheless, to the modifications that experience has suggested, and which are pretty well known.—The claim of *gout* to be considered in the light of a *specific* disease, and as resulting from some peculiar *matter* in the general mass of blood, is still more dubious. The best-established mode of treatment, gives little countenance to such a supposition.

Inflammation appears, at times, to be subject to *intermission*, or, more properly speaking, perhaps,—to *remission*. The most simple and best marked instances of this kind are *toothache*,—*neuralgia*,—*tic douloureux*, and other affections of *nerves*; where the pain recurs at more or less regular intervals. In these cases, there exists, probably, some degree of permanent inflammation in the part affected, although the severity of the pain is only occasional, the result of temporarily increased excitement. That there is such slow and continuous inflammation going on in the case of *toothache*, is shown by the gradual disorganization of the part. In many instances, likewise, of what is called *tic douloureux*, morbid changes of structure, such as could only be referred to *inflammation*, have been found at the origin of the nerves in the brain. *Periodical headaches*, terminating, as many of them do, in *apoplexy*, *palsy*, and the like, afford additional proof of what is here suggested.

Nor does there appear any great difficulty, as far as I am able to judge, in applying the same principle to ordinary *intermitting fevers*, in which the brain seems to be the organ primarily and

essentially affected; as may be inferred from the state of feelings and functions of the part, both during the paroxysm, and after its subsidence. During the paroxysm, indeed, there is little room for doubt: the heat of the head, although the surface and extremities are cold—the throbbing of arteries in the head—and the more or less disturbed state of the *proper* cerebral functions of *sensation, voluntary motion*, and (not seldom also) of *intellect*—these, taken together, appear to be sufficiently convincing proofs of the *locality* of the disease—while the general *febrile symptoms*, with the foul and coated state of the *tongue*, are but the ordinary concomitants of inflammation, wherever seated. In these cases, the general *febrile symptoms* decline after a few hours; but the *local* affection, that of the *brain*, still continues, though in a greatly-reduced degree; and the *tongue* retains its crust—a proof of continued *febrile action*, and therefore of *inflammation*, its sole exciting cause.

The case of *phthisis pulmonalis*—the result, invariably, of slow and destructive inflammation in the lungs,—with its attendant *hectic fever*, recurring by paroxysms scarcely less regular than

those of an ordinary *intermittent*, furnishes an additional argument to the same effect.

If it be said, in opposition, that these *nervous* disorders, as they are termed, as well as *intermitting fevers*, are not curable, by the lancet, (as undisputed cases of inflammation are generally *supposed* to be,)—but, on the contrary, require an opposite mode of treatment, namely, the use of *stimulants* and *tonics*,—it may be said, in answer, that although, generally speaking, a *stimulant* and *tonic* plan is the best suited to the purpose, it is no less certain that *antiphlogistic* remedies, (including even *bloodletting* in all its modes,) are not only safe, when prudently administered, but capable, on many occasions, not only of mitigating, but of effectually subduing, every one of these affections. In the case of *intermitting fevers*, I have again and again witnessed the effect of small and repeated *bloodletting*, in putting a stop to the disease altogether. And the same has been observed by others, whose testimony cannot be questioned.

It is, besides, a well-known, and generally-admitted fact, that obstinate *intermittents*, which have resisted all the ordinary means of cure, have,

in numerous instances, been brought under the remedial power of *the Peruvian Bark* and other *tonics*, by a judicious and cautious use of the lancet.

END OF ESSAY I.



