ARTICLE XIX.

A

VIEW OF THE MERCURIAL PRACTICE IN FEBRILE DISEASES.

BY JOHN WARREN, M. D. PRES. M. M. S.

PROSPECTIVE INTRODUCTION.

In the first part of the following treatise, it is proposed to give a short account of the introduction of mercury into use, in the treatment of fevers in New England, and other parts of the United States; and at length, in Europe and the West Indies.

The early opinions advanced with respect to its merits in general, the diseases which gave occasion to its adoption, and the analogies on which it was founded, particularly in America, and the strong prejudices entertained by many against it, will be particularly noticed.

An examination of some of the preparations of this medicine, will be necessary, for explaining their effects on the body, and the different degrees of

activity which they possess; and, consequently, the several theories founded upon them.

It may, perhaps, be made to appear, that these medicines act, in the first place, as powerful stimulants upon the body; in a manner revolutionizing the whole system, changing the existing order and modes of action in the organs; and, in the second place, that they may furnish some portion of their constituent parts to the blood in the blood-vessels, which must be highly stimulated by them, and thus be enabled to expel or correct the morbid matter, if any such exist, and bring about an entire change of action.

That therefore, in most cases, a quantity of the medicine merely sufficient to evince its action on the mouth, is competent to a cure; yet, that in some cases, this is not to be accomplished without full salivation.

This being effected, it is evident, that a more complete subversion of the present train of actions is brought about, as a new disease may be said to be induced.

Such disease, on Mr. Hunter's principle, that two general disorders cannot hold dominion in the body at the same time, may be called the artificial disease, and may be considered as substituted for the original, which is subdued or cured.

Before presuming thus to create a new disease, the nature of it should be well understood, and the method of entirely removing it should be under complete command. We should, therefore, be thoroughly acquainted with the method of managing

salivation, and the modification of the process; the means of accelerating it in certain cases, where the violence of the disease renders the system too torpid, and of moderating it when it has exceeded its due bounds, or threatens, itself, to destroy the patient.

Some of the means of assisting the operation of mercury, and of suppressing its activity, will close this part of the subject.

Sensible of the extreme difficulty of establishing any rational theory on the modus operandi of mercury, I offer these suggestions with great diffidence, far from being ambitious of originality, on the one hand, and very little studious, on the other, of conforming them to any system whatever. Such considerations as have occurred either from observation or experience, whether of others or myself, are here presented.

Indeed, the whole of the treatise was designed, not so much for the purpose of exhibiting any thing new to the observation of the physician, as to present, in one view, a summary of facts, from which he may draw his own conclusions.

This remark will more especially apply to the second part of this treatise, of which the yellow fever is the principal subject; this disease having been the occasion of bringing mercury into general use, both in the West India islands, and on the continent. The various denominations under which it is described by the different authors, who have written on its history, and the different opinions which have

been advanced respecting the question, whether it was contagious or not, as well as a considerable disagreement respecting some of its symptoms, have rendered it doubtful, whether it was of the same character at all seasons and places where it made its appearance.

The malignant pestilential fever, yellow fever, and yellow remittent, were some of the names which it received; and it is not very easy to decide, from the accounts which have been transmitted to us, whether its character was inflammatory or putrid.

No accuracy of decision, on this question, is attempted; in the first place, because the facts and descriptions are sometimes too discordantly related to admit of it; and in the next place, because, as the mercurial practice is adopted successfully in both, it is of less importance to ascertain it.

A glance is taken of the opinions of different writers on the proximate causes of these diseases, and some opinions hazarded on the question whether any definite and precise boundary can be assigned with respect to their remote causes; and whether the character of contagion is necessarily attached to either the one or the other of the two great reputed sources marsh miasmata and animal excretion.

Brief accounts are given of the fever generally denominated the yellow fever, as it appeared in various parts of the West Indies; and, as means of elucidating them, particular cases are detailed, so abbreviated, however, as to contain facts only, which immediately comprehend the treatment adopted, the

effects of the medicine administered, and, when practicable, the discoveries which dissections had afforded.

As the mercurial practice in fevers is in some measure new, at least in the extent to which it is now adopted, every fact upon which it rests should be examined, that if possible, it may be ascertained whether it stands on a proper foundation for a permanent remedy. But minuteness of detail in medical cases is generally of very little use, excepting in such as elucidate some new principle in the animal economy, some before unknown pathological fact, or some remarkable effect of medicine administered.

The hitherto doubtful utility of the practice, and the apparent subversion of the ancient theories, and even opposition to established principles, it is presumed, will be received as an apology for inserting particular cases.

In the course of this examination it will appear, that the character of phlegmasia has been considered as particularly authorizing the mercurial practice.

The determination of diseases to particular viscera being the state to which mercurial medicines were supposed to be especially adapted, this practice has been applied to intermittents, in which the same circumstance of special determination was believed to exist.

In the second part therefore will be included some observations on that subject, which, as but few instances have appeared in the vicinity of Boston, will be taken chiefly from foreign accounts.

The third part will contain a sketch of some of the febrile diseases, which have prevailed within the last thirty years in the eastern part of the States, particularly in Massachusetts.

Typhus has at several times been an endemic in this state; and the yellow fever has twice been epidemic in the town of Boston. The histories of those two diseases will be given, with the methods of treatment; the success of mercurial practice, and such information as could be derived from dissections.

Cases will be subjoined for the purpose of exhibiting the particular practice which was adopted by the physicians of this metropolis.

The fourth part will contain a short account of the endemical and epidemic diseases which have appeared in this place, both subjects of mercurial practice.

Some of those most common belonging to the class specifically contagious, are small pox and measles. With the former the people of New England claim special acquaintance, as the change which it has undergone in their hands from mercury and inoculation has been such, that it may be said in some sense to have assumed a new form from their modification.

Throat distemper and dysentery have, from an early period, been known at times to spread their ravages through many of the country towns, and some of the seaports of New England, and from their singular malignity are entitled to consideration.

THERE are few places in the world where the victims of phthisis are known to be more numerous than in the Eastern States; and as some eminent physicians have treated it with mercury, it will therefore have a place.

BRIEF remarks on some other diseases which at different seasons make their appearance, but generally are sporadic, will be added, without professing to treat methodically upon either of them; with the double view of exemplifying the mercurial practice, and of presenting a small contribution to the medical annals of our country.

IN this pursuit I was led on to an examination of the epidemic and other diseases wherein these medicines had been so largely adopted; and, finding the subject more ample than I at first conceived, and that it had swelled to a size far beyond the proper limits of an occasional communication, I determined to read at the annual meeting of the society only the pages containing the first part, together with a few practical observations by way of deduction from the facts which were offered, and submitted the whole to their disposal.

MANY facts are yet wanting to ascertain precisely to what symptoms, or to what proximate causes the mercurial practice properly applies, or wherein mercury may not only safely, but advantageously be administered.

COULD a line be fairly drawn between the diseases in which it is prejudicial, and those in which it is advantageous: and could the mode of administration

be accurately prescribed, much of that mischief which has originated from an indiscriminate use of this most active class of medicines might be avoided, and many a constitution be saved from ruin.

WITHOUT professing to accomplish these purposes, if by these sheets I should be so fortunate as to put others upon this inquiry, one object of the publication, at least, will be attained.

MERCURIAL PRACTICE

IN

FEBRILE DISEASES.

PART I.

SECT. I. GENERAL HISTORY OF THE PRACTICE.

THE use of mercury in fevers was little known till about the middle of the last century; and it is only within a few years, that it has been brought into general notice as a febrifuge, or, as some have considered it, as a specific in fever of contagious character. It has, however, been gradually gaining admission into the practice of the first medical men in the United States, particularly in New England; and, at length, constitutes a very important part of the curative treatment of these diseases.

So numerous are the genera comprehended under the class of pyrexiæ, and so great a proportion do they bear to the whole catalogue of diseases; that an inquiry into the history, local peculiarities, and proposed methods of cure, must for ever be one of the most interesting employments of the physician and the philosopher.

It was my original intention, in this discourse, to have given a general description of the different forms of contagious fever, most prevalent in this and the neighbouring states, for the last twenty years; chiefly, with a view to ascertain the merits of the mercurial method, which has been adopted within that period. The epidemics have accordingly been particularly the objects of attention. But, as endemial and sporadic diseases have also become the subjects of this treatment, they could not properly be passed over, in making this estimate.

Mercury has been very aptly denominated the Sampson of the Materia Medica. It is the dictate of prudence to be assured, before we admit it into the strong holds of the system, whether it will act the part of a friend, in defending it against the disease that assails it; or, whether it may not be likely to pull down the pillars of the human constitution. That such suspicions have existed, a history of this practice sufficiently evinces.

In investigating the effects of this medicine upon the human body, the subject naturally divides itself into the following heads:

The nature of the medicine, and of its preparations;

Its general operation upon the living body;

The particular diseases in which it has been administered, and the effects produced.

Under the first of these heads, it would be proper to examine such preparations of mercury as are in common use.

UNDER the second, to ascertain the manner of their operation upon the human constitution.

UNDER the third, to collect the experience of such practitioners, as have been in the free use of them in febrile affections, in order to determine in which of them it has proved salutary.

AS it would be of no advantage to shew, that mercury is useful in any particular disease, unless its symptoms are so minutely described, that the nature of it may be thoroughly comprehended, and, that when, in future, it shall make its appearance, it may be known to be the same affection, the history of those diseases should be noted, and particular cases subjoined, exemplifying the character of the complaint, and the method of treatment which was adopted.

AT present, those only of the febrile class of diseases, in which mercury has been considered as an appropriate medicine, will be adverted to. Small-pox and measles constitute the division of what may be called specifically contagious diseases; pestilential malignant, and yellow fever, typhus, cynanche maligna and dysentery, that of infectious fevers; cynanche trachealis, hydrocephalus internus, peripneumony, phthisis and rheumatism, the inflammatory class, in the cure of which, this method has been adopted.

THAT all of these may be properly considered as belonging to the class of pyrexiæ, will probably be generally allowed, whatever may be the difference of opinion entertained respecting their proximate causes.

THERE was a strong prejudice prevailing among the ancients against mercury. Galen considered it as a poison, which was unfit for use as a medicine; and some physicians were of opinion that it destroyed the stomach by eating holes through the coats of that organ.

THE first, who used it as a medicine, were the Arabians, who cured diseases of the skin by an external application of this metallic substance, in form of an ointment.

MR. ASTRUC thinks, it was from analogical reasoning adopted as a remedy in lues venerea, which was found to be frequently accompanied with cutaneous eruptions.

THE red precipitate appears to have been the first preparation used internally; and to this succeeded the use of argentum vivum, with rhubarb and other articles, in form of a pill.

MERCURY had seldom been used in any other than venereal complaints, till about the year 1735, when it was adopted as a remedy in the disease called the throat distemper. It had, however, according to an account published by Dr. Holyoke, in the first volume of the New York Medical Repository,* been introduced in Boston by a disciple of Dr. Pitcairn.

DR. BENJAMIN GALE, of Connecticut, in a dissertation on the inoculation for the small-pox in America, says, mercury in small-pox was resorted to first in the American colonies in 1745, when it was em-

* Page 500.

ployed with success by two eminent physicians, Dr. Thomas, of Virginia, and Dr. Muirson, of Long Island. There is no doubt, that the mercurial practice in fevers first obtained credit in America, while many prejudices prevailed against it in Europe.

From the supposed efficacy of this remedy, in the ulcerous sore throat, it was administered in other fevers; and was found useful, particularly in pleurisies and peripneumonies, which were much more prevalent fifty years ago, than at the present day, as well as in quinsies, inflammatory rheumatisms, and other phlegmasiæ.

But, however successful this practice might have proved in the hands of the most skilful practitioners of that day, it is certain, that till within these twelve or fifteen years, it had been gradually losing reputation, or at least falling into disuse, from doubts and uncertainties with respect to its effects on the human constitution.

The prevalence of the yellow fever in the West Indies, and some of the southerly parts of the American continent, has, however, been the means of introducing it again to the attention of the faculty. In that most formidable disease, perhaps partly from accident, and partly from analogical reasoning, mercury has been exhibited in quantities, which would formerly have been considered as inevitably destructive. It had been previously prescribed in inflammatory affections; and, as this fever had frequently as-

sumed that character, and a great variety of other means had been used without success, it was natural to resort to it; and that Herculean disease was attacked with a medicine, whose powers were supposed alone equal to its expulsion.

Whether the yellow fever was first introduced into the West Indies in the year 1793, as Dr. Chisholm intimates; or whether it had been known there as early as the seventeenth century, and from that period had frequently visited, or originated in these islands, it is probable he was, if not the first, one of the earliest practitioners, who considered mercury as the only medicine to be relied on for its cure.

The dissections, which had been made for the purpose of ascertaining the proximate cause of this disease, had, in some measure, demonstrated the nature of it; and had proved, that the liver was one of the organs most immediately affected, or in which the marks of derangement were most conspicuous.

The known efficacy of mercury in glandular disorders, with its supposed appropriate determination to the liver, was the circumstance which led to the experiment; and to this may be added an opinion not even at this day entirely exploded, that by some specific action of this remedy on the contagious matter, as in lues venerea, the poison was subdued and expelled from the habit. It was soon after adopted as the most certain method of controling the ravages of the yellow fever; and has gradually, from this period, insinuated itself into the method of treat-

ment in fevers of almost every description; at least in this metropolis.

That a medicine, against which such strong prejudices existed, a medicine, the operation of which was so directly opposed to the established indications of cure in inflammatory diseases, should have obtained such ground within the short period of fifteen or twenty years, is a singular occurrence in the annals of our profession.

The Physicians in New England, who first used mercury, were obliged to conceal it from the knowledge of the patient; and, if salivation ensued, which however for this reason was generally as carefully as possible guarded against, they were sure to incur the resentment of the concerned.

In the small-pox, indeed, it had been adopted, especially as part of the preparatory process for inoculation; but even here it was submitted to as an evil almost as formidable as the disease for which it was administered; and a promise of carrying the patient through it without recourse to that medicine, insured the practitioner popularity and employment.

A circumstance that evinces the strength of this prejudice, occurred in the year 1774. Dr. Latham professed to practice the Suttonian plan of inoculation, which was given out to consist in a mode of preparation, in which no mercury was used. On the faith of this supposition, a large hospital was filled with patients in a neighbouring town, and

several classes passed through the distemper with about the usual success. One of the persons in the hospital suspicious of his having taken mercury, had some of the pills which had been given to him, analyzed, and a quantity of quicksilver was revivified from them. Information of this circumstance getting to the ears of the public, a general indignation was excited against the inoculator, as using a noxious and deleterious medicine; and the business of inoculation was soon after suspended.

Thus was this article secretly used among physicians; and the quantities which they ventured to prescribe were such as at the present day would be considered as of very little importance in the curative process. One or two grains a day was as much as was considered safe in violent diseases, and even by that quantity the constitution was suspected to be weakened; and whatever disease happened within ten or fifteen years after the use of it, was imputed to the influence of this medicine. Instead of one or two grains, one or two hundred grains a day have of late been administered, and, as its advocates declare, with safety and advantage.

SECT. II. MERCURY AND ITS PREPARATIONS.

It is well known that mercury in its native form, or quicksilver, has no effect upon the human body, in whatever quantities it may be taken, otherwise than by its ponderosity.

THE various preparations of this mineral, in which the globules are rendered invisible, possess various degrees of activity in consequence either of the chemical or mechanical changes which they undergo in the process.

THERE are several forms of this medicine in which, by some, the change has been considered as the effect of mere trituration and mechanical combination with certain other substances. The blue pill and common mercurial ointment were the articles in which this mode of combination was supposed to take place.

IT is well known that by triturating for a short time (a few minutes) a quantity of quicksilver with honey and rhubarb, the globules will disappear, and the article be converted into a medicine of very different properties from what it possessed before the operation. From the facility with which this is effected, it has been urged that it was impossible that any oxygen could have entered the composition. If this change is produced by mere mechanical mixture, the only difficulty is to reconcile the activity of its operation with the inert nature of the metal itself, which is said to have been swallowed, frequently to the amount of one or two ounces a day, by many persons, under a foolish persuasion that it secured them from contagion. The preparation of the mercurial ointment too was supposed to consist in the mere trituration of the metal and its minute division and mixture with the lard that was used in the pro-

cess. It has been urged that in this form also it was improbable that the metal should have become oxidated, because lard has a stronger affinity to oxygen than mercury, as appears from boiling lard with an oxide, when the metal will be revived, at least in considerable proportion.

It has therefore been concluded that neither of these preparations possesses the property of an oxide of mercury.

Dr. Glover seems however to have satisfactorily proved, that oxygen actually enters into combination in both these medicines.* Having carefully triturated a quantity of quicksilver with rhubarb and molasses, until the metal disappeared, he submitted it to the test of washing, which was calculated for the purpose of determining whether the mercury had undergone a chemical change. The rhubarb and molasses are readily miscible with water, the quicksilver not so. On the supposition that the particles of the latter were only divided and mixed with the other articles, the metal ought to have subsided as soon as the rhubarb and molasses, which were interposed between its particles, were suspended in water. On rubbing the blue pill in a mortar with water, and repeatedly pouring off the liquid, till the powder or syrup was fairly washed out, there was no revivification of the mercury, but this part of the composition fell to the bottom of the vessel in the

* Vide Medical Repository, vol. 6, p. 244.

form of a black oxide. It was therefore chemically changed by the preparation.

The oxidation of mercury in the blue ointment is rendered extremely probable, from the obvious difference in the effects of bland and rancid oil, or lard, upon this substance, when exposed to their action by trituration. That it owes its rancidness to the absorption of oxygen is incontrovertible; and that the most rancid lard will soonest extinguish the globules of quicksilver, is equally certain. In the act of trituration, the particles of this metal are exposed in all directions to the action of those of the lard, the superoxygenation of which adapts it to the purpose of reducing that substance, by parting with a portion of its oxygen. As even the most recent lard contains a quantity of this principle, it seems probable, that in all cases, when it is used for a similar purpose, it produces the change by means of its oxygen.

Experiments have been made for the purpose of determining this question on the principle of an increase of gravity in all bodies which absorb oxygen. As most of them have been made, however, by trituration with certain substances, which were capable of supplying a sufficiency of oxygen to oxidate the quicksilver, the weight of the compound could not have been affected, the quicksilver gaining as much weight as the other articles lost, and consequently the result was inconclusive.

Mr. Alyon asserts, that mercury is oxidable even by agitation in air. Whether he weighed the oxide after this operation, I have not been informed; but, admitting the truth of this proposition, there can be no future doubt of the absorption of oxygen in the variety of preparations of mercury; and this would very naturally suggest the suspicion, that the activity of the medicine, in its various forms, on the human constitution, is not only dependent upon, but proportionate to the quantity of this substance which enters into their composition.

Oxygenated muriate of mercury contains most oxygen, and accordingly is the most active of the mercurial preparations.

SECT. III. THE GENERAL OPERATION OF MERCURIALS ON THE BODY.

There appear to be only three modes in which the phenomena attendant on the use of mercurial medicines can be explained.

Their mechanical operation on the fluids.

Their specific action on the noxious matters themselves in the animal body, separate from the consideration of the diseased actions in the body.

Their action as a stimulus on the system.

Mechanical action. The superior specific gravity of quicksilver gave origin to an opinion, that, whatever were the effects it produced upon the body, they were to be imputed to the momentum of its particles circulating in the blood, after having

been minutely divided by the digestive organs, and received into the mass through the lacteals and thoracic duct.

THE discovery of the circulation, about the middle of the seventeenth century, led to the application of mechanical principles in explaining the animal phenomena. The theory of obstruction corresponded with this hypothesis; and mercury was conceived to remove those affections by the force with which it impinged upon the resisting particles of peccant matter which it met with, either in the larger blood vessels, or their capillary ramifications.

WHEN these particles were determined to the intestinal canal, and operated as purgatives, they were considered as expelling the morbid matter accumulated in these passages; and when to the glands, the salivary in particular, they were supposed to carry with them the poisonous substances, which had been retained in the system. While passing through the small vessels, they were believed to attenuate the too viscid lymph and other constituents of the mass of fluids; to force through obstructing matters, contained in the vessels, by an impulse proportionate to the weight of the particles of mercury; and thus to promote a freer circulation, and the removal of disease.

MR. ASTRUC says, the globules of mercury, in proportion to their momentum, must increase the circulation by more forcibly striking against the sides of the vessels, and, that wheresoever the poison

is lodged, whether in the blood vessels, glands, or other parts, the mercury will seek it out, subdue, and at last expel it by some of the secretories of the body.

But the form which mercurial preparations, in their extremely divided state, must assume in the blood, is such as to render this theory utterly untenable; for, though it may be very difficult to detect their chemical properties, yet, if they acted upon mechanical principles, they might undoubtedly be discovered by their weight; whereas no such ponderous particles have been demonstrated in the blood: nor, if there were any, would it be easy to account for such an elective power upon the poison.

The second solution of the modus operandi of mercurial medicines, supposes the specific operation of this agent on certain morbific matters in the system. It would be still more unphilosophical than the first, and having been assumed as a cloak for the ignorance of its advocates, it has been rejected by a more enlightened theory.

Physicians, at the present day, recognise no specific medicines; and are willing to keep open the door of investigation on such subjects as are unexplained, by acknowledging their want of information, and exciting an inquiry into the more abstruse and unexplored regions of medical science.

The opinion, that mercurial medicines produce their effects on the body by acting as stimulants, is probably the most prevalent and the best supported of any yet advanced.

THE property of irritability in the animal body is the basis on which this doctrine is constructed.

STIMULANTS may be defined to be such powers as are capable of increasing the action of parts. This they do by operating on the irritable fibre, even when separated from the brain; and by producing sensation under other circumstances. The most obvious effects of mercurials on the body are such as correspond with the phenomena of excitement, or the action of a stimulant, on the irritability. Whether it be called by the name of irritability, or excitability; whether it be considered as existing separately and independently in particular parts, or as one entire aggregate through the whole system, it is certain, that the natural, as well as diseased actions of the body, depend upon certain agents which operate upon it.

THAT mercury, in a combined state, is a stimulant, is evident from the following considerations.

MERCURIAL preparations increase the action of the stomach and intestinal canal. The peristaltic motion of those organs is by most of the preparations of this mineral sensibly, and by some of them *powerfully* excited; and the emetic and cathartic effects are among their most active properties.

THEY act very powerfully on the glandular organs by increasing their secretions, and promoting discharges from the excretories of the skin, salivary glands, and other emunctories, almost without exception, throughout the body.

They increase the action of the heart and arteries, quickening the pulse in some instances, and in others rendering it stronger and fuller; consequently increasing the momentum of the circulating blood, and in this way rousing the whole system into action; and it is this action which constitutes the febris mercurialis of salivated patients.

SECT. IV. OPERATION OF MERCURIALS AS STIMULANTS.

Whether mercurial preparations produce their effects by acting upon the surfaces to which they are applied, and so affecting other parts of the system by sympathy, or whether they are absorbed into the vessels, and hence extend their stimulant powers over the body, has been questioned.

That the emetic and cathartic operation of these medicines depends on their action as compound bodies on the stomach and intestines, I should suppose would hardly be denied, when it is considered, that no known powers exist in these organs, capable of decomposing them so speedily, as those effects are observed to take place. If the ordinary powers of digestion were capable of deoxygenating mercury within their cavities, according to the common rules which govern that function, a longer space of time, it should seem, would be required for the purpose. It is known that no degree of heat exists in the stomach sufficient to reduce these oxides; we may,

therefore, venture to conclude, that their evacuant effects depend upon their compound action on the surfaces to which they are applied.

It may be next inquired, whether these medicines are absorbed into the blood-vessels, being taken up by the absorbents of those surfaces, and carried into the common mass of blood, thus pervading the ultimate ramifications of that system, even to the secretory organs and exhalants of the body; or whether they act upon the glands, and other remote parts, from sympathy alone.

If it could be proved, that they exert their whole effect upon the first passages and the absorbent surfaces in general, there would be no reason to suppose the necessity of any absorption into the system. It would then be granted, that they acted in the same manner with opium, ardent spirits, and animal nutriment, upon first entering the stomach, with an almost infinite number of other articles, many of which have never been supposed to be absorbed.

The phenomena of salivation might then be solved on the principle of sympathy; and both the metal and the oxygen be considered as essentials.

On the supposition that the very extensive effects of those medicines upon the constitution are not to be accounted for on this hypothesis, search has been made for them in the blood and other fluids.

If no deoxygenation could have taken place previous to absorption, (admitting absorption to have taken place) the mercury must have existed, at some period, within the system in its compound state.

For the purpose of detecting any mercury that might have been absorbed into the mass of fluids, I had a number of experiments made upon a patient under the full influence of a mercurial course. In eight days he had taken two hundred and eighty-seven grains of calomel, and used eight ounces of strong mercurial ointment by friction. The experiments were little varied from those of Dr. Physick, made in Philadelphia, with the same views, and the results were the same. They furnished no evidence that either the blood or the saliva was impregnated with the metallic substance.

But these experiments, it is apprehended, are not sufficiently conclusive to prove that mercury is not absorbed into the system. It is possible, that some minutely divided particles may lurk in the fluids, though under such forms as to elude discovery. In its combined state, within the blood, it must possess properties very different from those of the simple metal; and its oxygen may render it insusceptible of discovery, by the tests which have been employed.

The phenomena attendant on its use justify this conjecture; and that there are many other substances existing in the blood, too subtle for investigation, the phenomena of poisons and of contagion seem to prove.

Drs. Beddoes and Girtanner originated the doctrine, that mercurial medicines act in consequence of their oxygen alone; and Dr. Alyon declares, that he has prepared an oxygenated ointment, which was

far superior to the blue ointment, and which produced the same effect; and that the hyper-oxygenated muriate of potass, more certainly heals venereal ulcers, than any preparation of mercury.

It may be true, that oxygen is an essential constituent of most salivating medicines; and yet, that the activity of mercurial preparations may not depend upon this alone. Opium and seneka, it has been observed, will salivate also; but no oxygen is furnished by these articles.

That the general stimulant power of oxygen is strengthened and extended, by its union with the quicksilver, appears probable; and several considerations favour the conclusion, that it is absorbed into the blood vessels, besides the fact that no separation of the two constituents is evinced by deoxygenation in the stomach.

Mercury is found to produce no sensible effects upon the salivary glands, even in the highest doses, in less than twelve hours; but if it operated in this way, sympathetically, or as a stimulant, merely by first acting upon the surfaces of the primæ viæ, or of the skin, it might be expected to act sooner. This seems to support the opinion of absorption.

Dr. Chisholm says, that oxygenous gas, obtained from mercurial oxides, almost always holds a quantity of mercury in solution; and Chaptal saw two instances of speedy salivation, where it had been used for diseases of the lungs; a strong instance of the facility with which this form of administration

may be used. From breathing pure oxygen alone, we do not learn that salivation has ensued.

Oxygen from the oxygenated muriate of potass will not salivate.

That which is furnished by the nitrous acid, which is thought by some to partake of metallic properties, will uniformly salivate in hot climates.

The use of the metallic part of the preparations of mercury, as well as the last mentioned article, may be to convey the oxygen to all parts of the system, there to suffer a gradual evolution of this part of the compound, in an equal and uniform manner, and communicate it to every part of the body; thus acting as a powerful stimulant upon the blood vessels, particularly pervading the glands, exerting an increased action in their secerning and excretory ducts; for the purpose of effecting which, the nature of the oxide, and the universality of its distribution, are so admirably adapted.

There are several ways in which these medicines are employed, with a view of introducing them into the system; but all of them are by the skin, or the alimentary canal. By the latter, comprehending the stomach, the large intestines, (when by enema,) and the inside of the mouth, the introduction of the medicine is, in general, easily effected; but by the former, it is sometimes found to be not readily accomplished.

The absorbents of the skin have been thought freely to imbibe such articles, especially in a fluid

form, as are presented to them, unless their peculiar qualities prevent their admission. Modern discoveries, however, have rendered it doubtful whether such powers exist in the degree, which has been generally believed; and have proved, that without mechanical means, (forcible frictions,) it is difficult to introduce medicines in this way. This difficulty may on some occasions render it necessary for the physician to avail himself of all the auxiliary means which he can command, to effect his purposes; and in no cases is this more urgently called for than in those where the speedy introduction of mercury is demanded by the violence of disease, and yet the irritability of the stomach is such as precludes the administering of it through that organ.

THE orifices of the absorbents are so seated under the cuticle, that it is, sometimes, almost impossible to make mercurial unguents enter them, without removing that covering.

DR. CURRIE immersed the body of a patient, for a considerable length of time, in warm water, of a temperature from 87 to 95 degrees, in a state of great inanition from fasting; and, on comparing the weight of the body after the experiment, with that which had been noted before it, found little or no increase from absorption.

M. FOURCROY has published a number of experiments made by M. Seguin, which confirm the same fact.

THE vapours of turpentine, garlic, musk and camphor, being respired, the urine becomes strongly

impregnated with these substances; but by immersing the arm in them, and anointing the body with them, without admitting the vapours into the lungs, no such effects ensued.

In whichsoever way, whether by the skin or by the mouth, mercury is received into the system, the preparation probably undergoes a gradual decomposition, by a sort of digestive action of the vessels, the metal giving, if I may use the expression, a kind of fixation to the oxygen, by which it is conveyed and applied to the extremities of the secreting or exhalant vessels.

That it actually pervades the system, and passes through the cutaneous vessels to the surface of the body, is evinced by its there producing the proper mercurial influence upon such other metallic substances as are exposed to it, for instance, in the hands or pockets of the salivated subject.

Admitting that the medicine is thus actually absorbed, it is true, on the supposition that the oxygen is partly expended upon the blood or solids of the body, it would be reasonable to expect, that the metallic part of the medicine should, some where, appear in its separate form.

But is there any thing unphilosophical in conjecturing, that this deoxygenating operation may be a mere animal process, the vessels not only separating the oxygen from the metal, for certain purposes, in the mass of fluids, but also expelling the latter from the surface, in such manner as not generally to admit of detection?

Who is sufficiently acquainted with all the circumstances of digestion in the stomach, to pronounce, absolutely, upon the nature of that function, or upon the changes which the variety of substances which are exposed to its action undergo? The processes which take place within the blood vessels and the absorbent and exhalant system, are equally concealed from our researches.

That mercury in a revivified form has sometimes been found in the body, there are many apparently well attested cases to support.

Dr. Hamilton detected globules of quicksilver in the milk of a salivated woman.

Fourcroy's authority may be adduced to confirm a similar fact when he declares it as his opinion, that the hydrargyrus found in the bones arises from the superabundant part of the oxygen being absorbed by the stomach.

The above reasoning, with respect to the stimulant effects of mercurial oxides in the system, seems to derive some support from a fact attested by several writers of high authority, that in intermittents (particularly) speedy cures are effected by recourse to those remedies; but that oxygen from oxygenated muriate of potass is of no use whatever.

If this be true, is it not strong evidence of the instrumentality of the metallic part of those combinations, in consequence of their absorption into the blood?

SECT. V. OPERATION ON DISEASE AS STIMULANTS.

THE absolute effects of mercury on the body, having been thus, in some measure, ascertained, the most interesting part still remains, which is, to determine how far the properties of this medicine are adapted to the cure of febrile diseases.

IF the process of deoxygenation does ever actually take place within the body from vascular action, there is no doubt but that some very important purposes are answered by the oxygen thus disengaged in the system.

THAT some fevers may be attended with a deficiency of oxygen, has generally been supposed; and, if this is the case, there might appear to be some plausibility in the conjecture, that mercurial oxides may supply this deficiency.

THERE are certainly very important differences in the forms and symptoms of fevers, from which the indications of cure are to be deduced. So difficult is it, however, to discover their proximate causes, that some physicians have despaired of attaining them, and confined themselves to symptoms alone.

REMOTE causes are still more uncertain, but that different remote causes must produce different forms of disease, is so obvious, that they have been divided into two, marsh miasmata, and human effluvia; and a general division of pyrexiæ has been made into putrid and inflammatory.

Dr. Huxham was of opinion with Hippocrates, Galen, and most of the ancient physicians, that fever in general is an effort to expel morbific matter. The offspring of this theory was the doctrine of concoction, and the distinction of critical days its consequence.

Some distant analogies between this doctrine, and the opinions entertained with respect to contagion, led modern practitioners to the use of mercury for the fevers in which this quality was discovered.

The humoral pathology having been of late nearly exploded, this practice was at first adopted with very limited expectations; but on experience of its benefits, a new theory was found necessary to explain its modus operandi, and the supply of oxygen to the blood was supposed to afford it.

M. Fontana, having made a number of experiments with the poison of a viper, on the living blood vessels and nerves of a rabbit, found, that when applied to the nerves, it produced no effects upon the body, but, when presented to the blood vessels it was followed by all the usual symptoms of that virus. The nitrate of silver was found to destroy the activity of this poison, and muriate of mercury that of the venereal virus. Here the oxygen was supposed to be the cause of the change, operating on parts most susceptible of the poison. Dr. Russell, in his account of serpents, asserts, that the famous medicine known in the East by the name of the snake-pill, which is said never to have failed of curing the bite of the

most venomous serpent, consisted of the oxides of mercury and arsenic.

Dr. Cruikshank, of Woolwich, in March, 1795, destroyed variolous virus by oxygenated mucilages.

Without, however, supposing that oxygen has a specific power over the poison, in these cases its action may easily be accounted for on the principle of a stimulant exciting the system to defend itself against it, or totally to expel it.

It is a well known fact in pneumatic medicine, that oxygen prescribed in small quantities invigorates the constitution, without exhausting the excitability.

May we not then conclude it probable, that mercury may cure contagious fever by furnishing oxygen to the blood and the solids by a sort of digestive power separating the oxygen and, perhaps, expelling the metallic part of the oxide from the surface of the body; and, that the success with which it has been used in putrid fevers, in which the deficiency of oxygen is generally, I believe, acknowledged is derived from its supply.

Indeed, Dr. Darwin supposes that the sensorial power, which is in fact the same thing with excitability, is secreted in the brain from the oxygen in the blood. If so, the utility of the mercurial oxides in supplying the mass with that material is obvious; and it needs not to be remarked how much this circumstance must co-operate with the stimulant effect of the oxygen, in increasing the sum of excitement in the system.

SECT. VI. OPERATION OF MERCURIALS, AS EFFECTING A CHANGE OF ACTION IN THE SYSTEM.

BUT besides the effects of mercurial oxides, operating immediately as stimulants on the vascular system, and furnishing a quantity of oxygen for the blood, there is a third principle, by which the action of the medicine in disease may be accounted for, and that is the change it produces in the constitution of the patient.

A NECESSARY consequence of the highly stimulating power of mercurial oxides upon the system is the universal revolution which the constitution must undergo whilst subjected to their influence.

THAT certain functions of the animal body acquire a relation to each other from habit, independent of that unknown principle of connexion between different parts which has been denominated sympathy, is an undeniable fact. The order in which those actions originally take place is, perhaps, dependent on the nature and the structure of the parts.

THERE is an aptitude in the body to repeat actions, which have been once performed; the oftener they are performed, the more likely are they to be reiterated; and thus a habit or association between them is, at length, established; and the strength of

that association depends, cæteris paribus, on the frequency of the repetition. Hence the functions of the animal body depend in a great measure on this principle.

The habit of action in the stomach, in calling for food at the accustomed hour of the day; and in the muscles in general, in accommodating themselves to a state of action at the usual hour of awaking in the night; the motion of the limbs in particular directions, the interruption in the order of which immediately produces confusion; and of the eyes, when moved in any other direction than that which is necessary for the meeting of their axes, are all dependent on this principle.

Diseases stand in the same relation to the whole tribe of animal functions, as these interruptions do to the established order of voluntary motions. But no sooner is the natural order of action broken, than a new train of motions ensues. Diseased actions, as well as healthy, become associated with each other, and a new order of affinity, if the term may be used, takes place among them.

A remote cause then, calculated to interrupt the regular order of the healthy actions, if extremely powerful, may suddenly dissolve it; and thus, a person may be reduced, without any predisposition, to extreme danger from the violence of disease, whilst a more moderate cause would leave the constitution free from injury. On the other hand, if predisposition existed, a cause much less active would be required to break the healthy associations.

By whatever means this new or diseased train of motions is introduced, the longer it exists, or the oftener the actions, in which it consists, are repeated, and the more completely these actions are changed, or the farther they are removed from their natural order, the more difficult it will be to restore them. So that the longer the disease has existed, and the more violent it is, the stronger will be the force of the new associations, and more powerful must be the means to destroy them.

That these morbid habits or associations do take place, as well as the healthy, is proved by a great variety of phenomena in febrile diseases.

The person, who has been afflicted with a tertian of two paroxysms, will with more difficulty be cured after a third. The inverse of this proposition is established in the fact, that, if one paroxysm has been broken, and the period of it passed over, the next will either be more easily prevented, or will return with less violence, than the preceding. The same thing is probably true with respect to the regular evening exacerbations of continued fever; if the patient by any means be made to miss one of them the return of the next may be more easily prevented.

It is this important principle in the animal economy, that appears to me more rationally to account for what is called the vis medicatrix naturæ, than any other that has been assigned. It is probably the same with what Hippocrates called Nature, and which was described by Stahl as the soul directing the motions of the body. This salutary power, till totally

destroyed by chronic and confirmed disease, is ever operating in the animal body, to overcome the morbid catenations; and, as the remote causes of disease seldom continue in operation for any length of time after the disease commences, the force is sufficient of itself to restore the healthy order of actions, provided that by any means the new order of diseased actions be broken. For the purpose of breaking the association of diseased action, medicine frequently becomes necessary; and so soon as this is effected, the accustomed order of the healthy habits immediately takes place, and, like the power of elasticity, restores the body to its usual state.

It may be objected, that health is frequently restored without medicine to break the morbid catenations. Is it not possible, that even the stimulus of external agents, such as healthy food, the natural proportion of oxygen in the air we breathe, and in the fluids taken into the body, without which life cannot be maintained, does, in diseases of moderate force, imperceptibly indeed but very effectually, break the new association, though with less expedition and certainty, than when aided by medicine, and thus restore the system from diseased to healthy action.

In diseases of great violence, as in many of the pyrexial class, these common agents are not sufficient to effect this purpose. Medicines, therefore, active in proportion to the violence and continuance of the disease, are required to break the association, which

being effected, the vis medicatrix, or the established order of healthy relations, takes place.

Many circumstances appear to confirm this theory. Diseases are frequently known to be entirely changed, suspended, or cured, by the occurrence of causes calculated to produce very powerful effects of any kind upon the habit.*

Terror has often removed, or prevented diseases. The instance related by Kau Boerhaave is well known, in which the recurrence of violent fits was prevented by threatening to bore the tongue with a hot iron. The horror excited by the swallowing of spiders has often cured intermittent fevers by changing the actions of the system, and thus preventing the return of the paroxysms. The sudden plunging of maniacs, or epileptic patients, into cold water has sometimes effected a cure by the same means. The Indians cure fevers by sweating with heat, and then plunging the body into cold water. That one disease is cured by another, and that all are cured by their contraries, was the doctrine of Asclepiades ;† and it is

* Upon this principle, with due limitations, may be adopted the aphorism of Dr. Jackson in his treatise on fever. Decided practices of whatever description succeed; and the complete recovery of health in the same disease is frequently the effect of means directly opposite; but what is done, ought to be done whilst the disease is forming, not when actually formed.—P. 255.

† This doctrine seems to have been misapplied by the University of Salamanca, in prohibiting bleeding in local diseases; except in the side opposite to the affected.

well known, that the system will not admit of two general diseases at the same time; thus rheumatism is cured by a fit of the tertian.

The febris mercurialis is an artificial disease which, by removing the original, throws the patient into the hands of art, and gives the physician the advantage of employing his skill upon a state of action better understood, and more easily controlled, in most cases, than that of the primary disease.

SECT. VII. OF SALIVATION.

It is a question of some consequence, whether it is necessary to salivate in order to cure fevers. As the natural effect of this process is to produce indirect debility, it seems to be generally agreed, that in most cases of fever, especially those of the less violent kind, salivation may with propriety be avoided. It is doubtful, however, whether mercury will generally produce its salutary effect in the habit, without stimulating to a degree that shall affect the mouth; but, as the soreness of the gums and mouth is the only index of the degree to which the mercurial impregnation of the blood is carried, this mark is usually aimed at, as a proof that the object has been attained.

But the expediency of salivation seems to depend on the nature and violence of the disease; and it has been judged safer, by large and frequent doses to risk salivation, than to endanger the life

of the patient by delay, especially as this more certainly produces a new order of things in the constitution. And this more decided character of morbid affection, on Mr. Hunter's theory, will more certainly cure the original disease.*

Whether the exhibition of mercury is safe and proper in all the stages of fever, is also a question of much importance in practice.

As an evacuant it may doubtless be used in any stage of the disease. It was, indeed, an axiom of Hippocrates, that purging in the beginning of diseases was dangerous; but as his opinion was founded on the doctrine of concoction, little attention is paid to it in modern practice. Mercurial cathartics have in some instances been preferred, particularly in malignant and pestilential fevers, on the idea of their more particularly cleansing the biliary ducts; but it is doubtful whether they differ much in that respect from others. However, as they are more easily administered, and the stomach is in many cases more likely to retain them, they are often the most proper means for emptying the first passages.

With this view, according to Dr. Rush, Mr. Anderson and some other eminent physicians, they are

* Hector M'Lean says salivation sometimes puts an end to the disease, but becomes itself a new one. Richter is much of the same opinion. Vide his medical observations.

The former thinks salivation is a dangerous practice in warm climates, and yet it is in those where it has been so extravagantly applauded.

of the utmost consequence in fevers of the malignant kind. But some reasons have led to doubts, whether mercurial purges are more beneficial than others as has been supposed, especially when carried to the degree that has been recommended.

The reduction of stimulus and the expulsion of morbid bile were the objects of this practice, but other purgatives may answer the same purposes in proportion to their activity alone.

Dr. Rush, having noticed the success of accidental salivation when mercury had been employed for purging, was first induced to make use of it with other views. In the first stage of inflammatory fever, attended with effusions in the throat, he ascribed its success to its action in diverting them from the more vital parts. In the second stage he considered it as a stimulant, and aimed in all cases to produce salivation as soon as possible.

Dr. Jackson, in his treatise on fevers endemic and contagious, thinks the use of mercury proper only in the sinking stage. Dr. Fordyce, on the contrary, rejects it as too apt to produce evacuations, and therefore by no means proper to fulfil the indication for giving strength in the weak stage of fever, for which he considers wine as the only proper medicine, as it increases the force of the pulse without frequency, and has a narcotic power, which cannot be said of mercury. Even spices, which were formerly much depended on in this stage, excepting in cases of extreme flatulence, as well as mercury, have been

considered as noxious, since they render the pulse smaller, quicker and weaker.*

But the general testimony of practitioners, who have been much in the use of this medicine, is in favour of its exhibition in all stages of febrile disease, even in the very commencement of the fever, or before it is formed; and it need not be remarked, that when the blood is once filled with it, its effects will probably continue through all the stages, because it is not often the case that it can suddenly be expelled from the habit.

Some practitioners have thought it advisable to premise evacuations. One of the most experienced of the writers on malignant fevers, Dr. Chisholm, says that in morbid states there are certain conditions necessary to the success of mercury; and these are, first, reduction of plethora at the commencement, and secondly, increasing the vis vitæ in the advance; and also, that in some cases the latent mercury has been brought into action by bleeding, which diminishes the tone of the system: so that a certain determinate degree of tone seems necessary to the mercurial effect. Bleeding, however, has been supposed to diminish the attractive power of the fibre for oxygen. Dr. Rush promoted the first of those conditions by blood letting and purging; and in this he has been followed by many other physicians of high reputation; though few of them have pursued it to the same extent. The second has been

* Spices act immediately on the stomach, which is not the case with mercurials in general.

effected by opium, wine, and the Peruvian bark which has been supposed to aid the efficacy of mercury by giving tone to the system and enabling it to absorb a larger quantity of oxygen from the preparation.

The operation of oxygen in other forms, and particularly in the nitric acid, may be explained on the principle of its giving activity to the mercury which had hitherto lain dormant in the system; thus, in certain diseases, effecting a cure sooner than either of them would have done separately; and enabling the constitution to support it better. We well know that nitric acid and oxygenated muriate of potass, administered alone, are by no means to be depended upon in malignant fevers; but in all cases they may accelerate the action of mercury.

It may be proper however to observe here, that a case is related by Dr. Kentish wherein mercury salivated so soon as to do no good;* and if I am not mistaken, I have frequently seen such instances; and the inference is, that a simple interruption of the train of morbid action is not, in violent cases, sufficient to effect the cure, without some continuance of its operation.

As the great object in violent cases is to introduce the medicine into the system, as fast as may be convenient, it becomes necessary to make use of such preparations and such modes of application as may best answer this intention; and the doses must be according to the torpor of the system. The medi-

* Beddoes and Watt on factitious airs. Vol. 2, part 4, p. 4.

cine in most common use is calomel; and this is upon the whole the best calculated for an irritable stomach; but as it is sometimes too slow in its operation, a more active form has been sought.

Dr. Davidson used mercurius calcinatus, (oxydum hydrargyri rubrum.) He began with half a grain joined with two thirds of a grain of opium, doubled the dose the second hour, trebled it the third.—The patient continued taking it in this way from six in the morning to eight in the evening of the same day, when the breath had a strong mercurial smell. On the following morning, after having taken twenty grains, the mouth being very sore, every symptom of disease was gone. In the second case the fever subsided without salivation. In the third, the effect was similar. A grain of this preparation is a sufficient dose.

The murias hydrargyri has also been used by him with the same intention; and a grain and a half is said to be sufficient to produce salivation. Further experience, however, seems necessary for ascertaining whether the uncertainty of these preparations, and the danger attending their administration, may not be more than a balance for the advantages derived from their superior activity. It has been observed, that this last mentioned preparation discovers its influence principally, by producing hemorrhage from the gums.

The torpor of the absorbent system, in extreme cases of fever, is generally so great that it is with considerable difficulty that much effect has been

produced by mercurial frictions; but in aid of the other means they should certainly be put in practice. They have been used with success on the soles of the feet; and the patient himself, when able, should always be the operator in this process. As the stomach is sometimes extremely irritable, this may be the principal resource remaining; and as blisters in this circumstance will often be indispensable, the dressings should be made with the strongest mercurial ointment. The cuticle being raised, the mouths of the lymphatics are denuded, and some absorption will take place, perhaps more than, when that is entire, from long continued frictions.

But there is one other mode of evading the evil arising from an irretentive state of the stomach, and that is by mercurial injections with opium.

Clysters of strong mercurial ointment, rendered miscible with water by means of a mucilage, never failed, in Dr. Chisholm's practice, to produce a salivation, and were remarkably successful in their ultimate effect; but this must depend in some measure upon the stage of the disease, for when the vital powers are much reduced, no absorption taking place, the medicine is inert. A more convenient form of the injection was afterwards used, consisting of from two to four grains of calomel in a strong solution of sago with two teaspoonfuls of laudanum, or the watery solution of opium.

The retentive power of the stomach may be assisted by ether, assiduously persevered in, and by clysters of assa fætida dissolved in water.

It has been observed, that many medicines produce a more sensible effect, when several of them are combined, than either of them do alone; and on this principle the peruvian bark has been used with mercury to great advantage, especially in the advanced stages of yellow fever; and in the same manner the nitrous acid may act as an auxiliary to this medicine, both rendering the system, by their tonic power, more susceptible of mercurial stimulus.

Jalap not only assists the cathartic effects of calomel, but has appeared also in some instances to have increased its activity in promoting salivation.

The management of a mercurial course, when it is used *short of salivation*, is by no means difficult; but in case of this event, which will often occur, whether we intend it or not, this new disease must sometimes become formidable; the means of curing it, therefore, should first be well understood, before we undertake to substitute it for another. The primary indication must obviously be to check the too profuse ptyalism, or to remove it altogether, when it has answered the purpose for which it was brought on.

That sulphur has the power of subduing the activity of the mercurial oxides, has generally been conceded; and it is the medicine most commonly in use for rendering the mercury inert in the system.

Hydro-sulphuret of potass is supposed strongly to counteract the oxygenating power of mercury, by taking from the metal its oxygen; and Dr. Garnet

asserts, that this effect may extend so far as to deprive even the blood of its vivifying principle.

Cathartic medicines have been much relied on for the cure of the febris mercurialis; but an experiment of Dr. Fordyce seems pretty clearly to have demonstrated the futility of the practice.

He chose forty patients as nearly similar to each other as possible, who were under salivation. To twenty of these he exhibited purgatives, and to the other twenty no medicine whatever; the salivation ceased much sooner in those patients who took nothing, than in those who were purged.

But the most extraordinary method of avoiding, or curing this affection, when it happens, is that which Dr. M'Lean has proposed, by calomel. Considering salivation as a disease of indirect debility, he asserts, that it takes place only from the sudden intermission of the mercurial course. The immense quantities of this medicine, which were used in Calcutta under his and Dr. Yeates's treatment of East India diseases, must often have excited salivation; yet he declares, that it never happened, if the doses were gradually diminished after the disease had been subdued; but, that whenever by accident it was entirely omitted, after a full course, salivation ensued, and was removed again by a recurrence to mercury. Though he gave large doses at short intervals, under the persuasion that the effect of each dose continued only one or two hours, yet it seems he avoided salivation, supposing it to be utterly unnecessary to the success of its administration.

The experience of other practitioners does not appear to support this extravagant doctrine. The duration of mercurial action, which is probably much longer than that which he has assigned, seems to be an objection to the validity of the theory; and indeed it is difficult, on his principles, to conceive how a salivation could ever take place in the midst of an uninterrupted mercurial course; but we know it is under this cirumstance, that, in the usual practice, it generally appears.

Opium has been frequently combined with mercury, in the cure of fevers, partly with a view of accommodating it to the irritability of the stomach; but it also, under certain circumstances, may undoubtedly aid the action of that medicine. Though opium alone will sometimes produce a soreness of the mouth even to salivation; yet it has been extremely useful too, in obviating many of the inconveniences of this circumstance. Is not opium a much safer and more certain method of curing salivation, than mercury?

It has been urged by some, that opium is injurious in inflammatory diseases, but De Haen, Storck, Huxham, Butler, and others, have sanctioned the use of it. Dr. Crawford employed it to check salivation; though he observed, it often occasioned violent pains in the bowels; which were instantly removed by lime juice.

Plentiful dilution with a mucilage of gum arabic, and other demulcents, has a similar power in restraining ptyalism. The tepid bath is also useful

in the same intention. Exposure to cool air sensibly restrains the effects of mercury.

The action of a mercurial course, in inducing a particular diathesis, may often claim the particular attention of the physician. The loosening of teeth, hemorrhage from the gums and from the nose, are frequently very troublesome, and sometimes very alarming consequences of this practice.

On the hypothesis of a tendency in the blood to dissolution, which however is not readily admitted, such medicines as give tone to the system, and if there are any, such as condense the red globules, are obviously indicated. The effects produced in the constitution, especially on the solid fibre, certainly require a strengthening and restorative course of medicine and diet; and the peruvian bark, wine, and cold bath are peculiarly fitted to this purpose.

But, as all these methods for controlling salivation or obviating its effects, may sometimes prove slow, or ineffectual, the safest way in general is, by a careful administration of the medicine, altogether to avoid it. The mere soreness of the mouth is probably nothing different from ptyalism, but in degree; it may therefore be expected, that, in general, that degree may be sufficient to produce the new order of association.

The stimulant effect of the doses, though not so lasting as has been imagined, is not of so short a continuance as one or two hours; but, even supposing that it were so, does it follow, that they

ought to be repeated so frequently as has been advised, at the end of these periods?

Many medicines, when repeated at short intervals, require larger doses to produce, or keep up an excitement; and some of them altogether lose their power of acting by frequent repetition, and hence the advantage of changes of medicine in diseases of every description; but there is some reason to believe that the exhibition of mercury in such prodigiously large doses, and at such short intervals, as have often been used, may be unnecessary in diseases of any character whatever.

It has indeed been urged with much plausibility, that this practice is indispensable in cases of yellow fever, because there is invariably an organic lesion and engorgement, as it has been called, existing in, if not constituting, the disease, and the violence of the symptoms demands remedies proportionably energetic. Many cases appear, notwithstanding, to resist the largest quantities; and it is possible, that in those instances, where it is capable of affecting the mouth at all, smaller doses might have answered the purpose; and the danger of introducing a train of consequences not absolutely necessary, nor altogether so manageable, as could be wished, be entirely avoided.

In some instances of inflammatory fever in this country, even under the pressure of very dangerous symptoms, small doses, at longer intervals, have speedily excited salivation. This is the more remarkable, when it is considered, that heat promotes

the action of mercury, whence we should infer, that it would require greater medicinal powers to produce this effect with us, than in tropical climates.

Indeed, with respect to stimulant medicines, it is well known, that the immediate effects produced by them are not always in proportion to the quantity administered. Ipecacuanha is a striking instance of the truth of this remark.

Dr. Wright, of Barbadoes, says, he never found it necessary to use such enormous quantities of mercury as had been administered by others in yellow fever. Ten grain doses were given two or three times a day, as evacuants, after which, two grains every three hours, till symptoms of resolution appeared; and it generally produced a moisture on the skin, and a removal of the fever. But he confesses also, that there was no instance in which it had been given so as to affect the mouth, which was not successful.

PART II.

SECT. I. GENERAL DESCRIPTION OF EPIDEMIC FEVERS.

THE epidemic, denominated the yellow fever, has been the occasion of bringing mercury into vogue, as a febrifuge, and of elevating it to the high rank it sustains in the materia medica of the present day.

WHETHER this disease be of an inflammatory, or typhoid character, is a question which has been agitated with considerable warmth by their respective advocates.

BY adverting to a few of the most prominent characters of inflammatory and of putrid diseases, and comparing them with the appearance of any of the fevers in which mercury has been largely exhibited, we may be enabled to form some rational conjectures on this head.

IT may hence appear, whether, as Dr. Wright has asserted, jail-fever, ship-fever, yellow fever, &c. are probably different degrees of the same disorder.*

FIRST. In inflammatory diseases the pulse is usually full, hard, and strong; in typhus, small, frequent, and weak. It should be remarked, however, that the pulse is often in these fevers extremely deceptive.

* Vide Annals of Medicine for 1797, p. 346. Treatise on Diseases of the West Indies.

Secondly. The muscular strength is more suddenly reduced in typhus, than in inflammatory diseases.

Thirdly. Inflammatory diseases are most prevalent in hot climates, where they have also earlier and more distinct crises.

Fourthly. The appearances of local affection are, perhaps, almost peculiar to inflammatory diseases; for in typhus there is seldom a complaint in any particular organ.

Fifthly. Petechial eruptions are less frequent in inflammatory, than in typhoid diseases.

Sixthly. Typhus, in variable climates, is more prevalent in cold, than in hot weather.

Attempts have been made by some, towards drawing a line between these two forms of disease, by attributing them to different remote causes, marsh miasmata being considered as producing, exclusively, diseases of the putrid diathesis; but is there not some reason for suspecting that this is not an invariable law? In many instances it has been highly probable, from facts that inflammatory fevers also have arisen from vegetable and animal substances in a state of putrefaction, impregnating the atmosphere with gases of a noxious quality; some of which may, from defect, and others from excess of stimulus, produce disease, or at least predisposition to it; and there can be no doubt from the variety of substances constituting these exhalations, that their properties must be variant accordingly.

In the history of epidemics it will probably appear, that some of the diseases, which have obviously arisen from these causes, have been typhoid, and some inflammatory.

It has been alleged, that inflammatory fevers are most prevalent in hot climates, where vegetable matters most luxuriantly abound, and where, being exposed to the action of solar heat, they contaminate the air by the decomposition of their substances; whilst, on the other hand, putrid fevers are most prevalent in colder climates, or at colder seasons, wherein the various matters of animal elaboration are so altered, by the heat of the body alone, as to extricate gases of very different properties. But remote causes are often obscure and uncertain. The characters, therefore, of inflammatory fever, and of typhus fever, ought not to be deduced from their supposed remote causes.

Contagion too has been considered as a test of discrimination between these fevers.* This has been assumed as a property peculiar to one class of fevers, and as originating from human elaboration, or vascular action. Those, which are the effect of chemical operation on marsh miasmata, were supposed to be incapable of propagation by any changes, to which they were subjected in the human body; and therefore always to cease in the individuals on

* C. Smith, p. 43, on jail distemper, makes two divisions of contagious diseases; specific, which can infect but once, and general or putrid, in which there is no limitation.

whom their generating causes had acted; and these should be denominated infectious diseases.

But, that the autumnal putrid fevers, as they have been generally denominated, are sometimes contagious,* I think any man, who has been conversant with those diseases in Boston, (however contrary it may *appear*, to the uniformity of natural causes) must suspect; and Dr. Cullen has assigned contagion to typhus as one of the distinguishing characters of that genus of fevers.

The opinion has been entertained by some, that even intermittents are contagious.† It will scarcely be doubted, that they are generally of putrescent origin. It is nevertheless, true, that the activity of contagion in the atmosphere is not increased by heat;‡ and, indeed, the state of the atmosphere in hot climates is probably unfavourable to its extension; and among the numerous histories of their epidemics, which have been published, there are very few, in which incontestible evidence of contagion has been exhibited.

* Chisholm says the remittent may be contagious, and the pestilential may be remittent, owing to the mixed action of the substances.

† Dr. Clark is decidedly of opinion, that marsh miasmata may produce contagious fever; and Dr. Cleghorn thought that even intermittents were contagious.

‡ By solar heat larger quantities of noxious gases are extricated from putrefying substances in hot seasons than in cold; but it is doubted whether they are rendered more active by heat *when in the atmosphere.*

As there is a great difference of opinion on the subject, it is possible, that the advocates for both hypotheses may be right.

Dr. Wright's experience in these fevers has induced him to believe, that diseases arising from foul exhalations will, under certain circumstances, be contagious, especially those of the typhoid kind.* The principal objection against it is, that as these sources are spread throughout the globe, and exist every where, if the diseases arising from them were capable of multiplying themselves, the world would soon become depopulated. But as we do know that the progress of contagion is frequently suppressed, this argument seems to be of little weight.

A great variety of circumstances may unite to favour the activity of contagious disease, some one of which, being detached from the combination, the desolating calamity may be arrested in its progress. Happily too for the existence of our race, the all-wise Creator has rendered the limits of contagion much narrower than has generally been conceived.

Even the plague, the contagion of which is now doubted, is capable of infecting, at farthest, but at the distance of a few yards. Dr. Russell, in the plague of Aleppo, in 1762, took his station at a window fifteen feet above the pavement (where patients attended for prescription) with impunity. A ball of cotton filled with as much small-pox

* Vide Dr. Rush on yellow fever, p. 160, who agrees with the former. The writers on tropical fever in general do not admit of contagion in intermittents.

matter as it could absorb, has been placed on an oval table, by Dr. O'Ryan, the shortest diameter of which was half a yard, and around it were seated six children, who never had the disease, and neither of them received it on several trials.*

In fact the matter of contagion, in common states of the atmosphere, seems sometimes to be almost confined to the body in which it exists, and probably never has been communicated to a greater distance than eight or ten feet. And it is a circumstance, perhaps, worthy of remark, that the particular condition of the atmosphere, which is most favourable to contagion, locally considered, seems to be that of humidity. But, as in most climates there is a considerable portion of the seasons, in which a contrary condition prevails, no great length of time can elapse without the intervention of causes which will at least be less favourable to its continuance and multiplication.

The above mentioned effect of humidity in the air is apparent from the stenches arising from foul water, or from other sources of impurity, which are always most offensive in foggy or damp weather; and it has been supposed to operate by weakening the power of oxygen to combine with, and neutralize the noxious effluvia.†

As to the chemical changes, to which the body is subjected under inflammatory fever and typhus, it

* Dr. Haygarth supposes that the variolous matter is not communicable, in the open air, to a distance more than half a yard. Vide Beddoes's Hygeia, Essay xi. p. 40 and 41. vol. 3.

† Vide Fordyce on Fevers, p. 125.

has been conjectured, that they are principally dependent on the proportions of oxygen,* with which the blood is united. A combination of oxygen and azote was thought by Dr. Chisholm to constitute what he called malignant pestilential fever, which was contagious; and a combination of hydrogen and some other unknown principle, what he calls the yellow remittent fever; both of which he supposes to be sometimes epidemic in hot climates, and both curable by mercury.

That both of these have been by different authors described under the denomination of yellow fever, will readily be discovered by any one, who will give himself the trouble to peruse the writers on that subject; and they have been sometimes considered as the same disease, differing only in the forms and degree of their action.

There is one circumstance of some practical importance in tropical climates. Those fevers, to which strangers are particularly incident on their first en-

* Dr. Mitchell supposes oxygen and azote to have a stronger attraction for caloric than for each other in their gaseous form; therefore they are only mechanically mixed in atmospheric air. The abstraction of the matter of heat gives an opportunity for a chemical union of the azote, septon, or nitrogen, with oxygen. This union is made up of different proportions of oxygen, and constitutes what are called the gaseous oxides of azote. That in which the smallest proportion of oxygen is contained, is supposed to constitute the matter of infection, and to be furnished by putrid animal and vegetable substances mixed together, and to contain 37 parts of oxygen and 63 of nitrogen.

trance into hot climates, or what are called seasoning fevers, are always inflammatory,* and, generally, the more so, as the subjects are natives or inhabitants of colder regions; for it is a common law of the animal economy, that after being subjected to the influence of cold, heat will be productive of increased action.

After cold, the sudden application of heat must produce the violent action, which constitutes inflammation.

The effect, in this case, is of the same nature with what is usually observed in *taking cold.* The symptoms are ascribed to the cold, and are the effects of an inflammation of the schneiderian membrane, which lines the nostrils, but it is the heat, which is the immediate cause. We do not feel that we have taken cold, till we are exposed to the action of heat, as when we come into a warm room, or are in a warm bed, after exposure to a cold atmosphere; and similar consequences are known to follow the application of heat to frozen limbs, viz. inflammation and mortification of the parts.

The inflammatory seasoning fevers are not contagious; and as this quality is more commonly attached to fevers of cold climates and seasons, than hot,† this circumstance may furnish us with one of the diagnostics of contagious diseases, which are generally aggravated by winter, and spread with at least as great rapidity, as in warmer seasons,

* Hector M'Lean, p. 194. Moseley on Tropical Fevers, p. 416.

† Jackson on fevers, p. 218.

whereas endemics invariably decline on the approach of winter.

From the foregoing remarks, it may appear reasonable to suspect, that contagion is not peculiar to fevers,* either of the inflammatory or of the typhoid form, but is in some measure accidental; or, at least, dependent on a combination of causes, which have not been discovered; and that both inflammatory fevers and putrid have been contagious.

The nature of contagion, and the reason why, in some forms of disease, it is incapable of acting more than once upon the same constitution, are both equally beyond the reach of human investigation. No chemical examination has, I believe, ever yet satisfactorily demonstrated the matter of it in the habit.

It is perhaps an observation of some importance, that what are called critical days are more observable in endemic, than in contagious fevers.† That the human body is subject to certain changes, dependent either on the diurnal revolution of the earth, or the established habits of life, is certain from the phenomena of health, the regular exacerbations of continued

* Dr. E. Miller's proposed new Nomenclature of Fevers, founded on remote causes, supposes the matter of contagion to be invariably the production of animal, and miasmata of chemical action, on matters emanating from dead animal and vegetable substances. Vide Med. Repository, vol. 7. p. 370.

† Vide Dr. Jackson on fevers, p. 244. and Annals of Medicine, for 1801, for an account of the termination of fevers on critical and uncritical days, p. 326.

fever at a particular hour of the day, and the stated return of paroxysms on the periodical days of an intermittent.

In those fevers, where contagion is most conspicuous, there are doubtless some such changes; but in general, the powers of action in the body are so far suppressed by the influence of the morbific matter, that they are not capable of exhibiting those marks of energy, which in fevers of other descriptions denote the struggle which the healthy associations are making to surmount the disease.

In endemic fevers those changes are evident. There is certainly a propensity in those, and, I believe, most other fevers, to a remission of symptoms every other day; and of course crises, when they take place, will be likely to appear on odd days. As mercurial medicines must be supposed to counteract the existing diseased action, and by that mean to enable the system to recover its interrupted associations, it is to be expected that favourable changes will manifest themselves on odd days; and the fever, which would commonly run on to the fifth, or seventh, may often be subdued on the third or fifth day.

SECT. II. PRACTICE IN EPIDEMICS WITH MERCURY.

As the principal object in the following histories is to ascertain, in what diseases, and with what success mercury has been employed, such circumstances only will be noticed as may, either directly or remotely point to these objects.

The yellow fever stands at the head of these diseases, both with respect to the violence of its nature, and to the degree in which mercurial medicines have been administered. If the character of this disease could be ascertained, some inferences might be drawn respecting the treatment of other disorders partaking of the same general properties and causes.

The circumstances, then, which at any particular period of its prevalence, must chiefly bear upon these questions, and which may tend to resolve them, are, first, the nature of the disease, so far as it can be ascertained, whether inflammatory or typhoid; second, the form of mercurial preparation given; third, the quantity of the medicine; fourth, the effect. These are to be collected in a desultory manner only, from the different writers upon the fever.

It has already been observed, that though Dr. Chisholm was in some measure the father of the mercurial practice, he was not the first person who had used it in that disease. As early as the year 1721, a fever had appeared at Barbadoes, and the history of it, to 1738, had been given by Dr. Warren, who assigned to it an Asiatic origin. This disease, as he described it, was contagious, properly denominated pestilential, and imported; though Drs. Hillary and Towne* were of a different opinion.

Dr. Warren appears to be the first, who mentions mercury as having been used in inflammatory

* Towne wrote in 1726, and called it febris ardens biliosa; and Hillary in 1759, and called it putrid bilious fever.

fevers of the West Indies, calling it an odd and unwarrantable practice, and gives as his reason the injury the tender substance of the brain must sustain from this medicine. The practice, which he adopted, was that of sweating copiously by alexipharmics. He had a strong prejudice against the use of blisters.

Dr. Home has also given an account of this fever in Barbadoes, in 1735. The symptoms were chills, faintness, pains in the head and loins, redness of the eyes, vomiting, soreness and oppression of the precordia, stricture of the chest, and difficulty of breathing, generally, with a strong full pulse. After about forty-eight hours, the pulse became moderate, the blood florid, crassamentum of a loose texture, skin dry, or moist only at the pit of the stomach, neck, face and eyes changed to a yellow colour.

About the end of the third, or beginning of the fourth day, the blood became so dissolved, as to ooze out of the mouth, nose, ears and eyes, and the skin, when the cuticle had been removed by blisters. At this time the pulse sunk, fluttered, and sometimes intermitted; the patient became comatose, delirious, and tremulous, and the black vomit commenced with a sediment of dark filiments, like coffee-grounds; and sometimes grumous blood was discharged by the anus, and mixed with the urine; a death-like coldness of the extremities ensued, frequently with livid spots, after which the patient died.

The ardent stage, the yellow stage, and the sinking stage, seem to constitute the course of this fever, which was usually terminated about the seventh

day; but, when violent, sometimes in twenty-four hours.

On dissection of a number of bodies, the liver was found indurated, discoloured, and enlarged; the gall bladder distended with bile, but its duct not obstructed; the stomach and duodenum inflamed, and in some mortified.

The method practised was to bleed first, but not profusely, as he found this unsuccessful in some of the first cases. He was deterred from vomiting by the appearance of inflammation in the dissected stomachs of those who had died. He then used and repeated gentle cathartics, such as manna and cream of tartar, and directed blisters and the bark in the advanced stages.

This has marks of what is called the seasoning fever, as is evident from its attacking chiefly those, who had lately arrived in the islands. It appears not to have been contagious.

The same fever also prevailed in Jamaica in 1741 and 1742, and the treatment was, generally, little varied from the above.

A return of the sick admitted into the hospital in Jamaica, in 1741 and 1742, with the proportion of deaths under this mode of treatment, may serve for a comparison with the success which attended the mercurial mode of treatment afterwards adopted.

In 1741 were admitted into the hospital sick, 6363, of whom 1154 died.

In 1742, 4437, of whom 499 died.

Making 10800, of whom 7000 were supposed to be sick of this fever. Of this number about 1500* died, something less than one in four; but those were seamen, and the mortality was always observed to be greater among the troops, from their exposure to the sun and land exhalations.

Dr. Mosely denominates this fever the endemial causus, and his description of symptoms, in 1780, differs but little from those above recited.† The strong pulse, however, was not always noticed; it was sometimes quick, low, and vacillating, with burning in the eyes, white tongue, and all the interior surfaces oozing out blood. His stages are, as above. On dissection, the duodenum was found to be more frequently inflamed than the liver, and often grangrenous; but the latter organ was never so diseased as to be followed by suppuration.

His method of cure consisted in copious bleeding, moderate purging, and sudorifics; and as fever never existed after the first stage, he used the bark, when the stomach would bear it; recommended blisters; and, on account of the inflammation, condemned opium.

Dr. Wright, in his practical observations on the treatment of acute diseases in the West Indies, assures us, that a considerable time before 1764, when he began to use calomel himself, Dr. Smith, of Savannah le Mar, had used it in the cure of acute diseases.

* The rest of those who died had other diseases.

† Dr. Moseley wrote in 1792.

In the year 1788, a destructive yellow fever occurred in Grenada.

Dr. Lindsay, and Mr. Denholme, administered calomel with camphor and Dover's powder, in large and repeated doses, after proper evacuations, and cured eight out of ten by opening, as they observe, the biliary ducts, procuring a vast number of bilious stools, and removing the suffusion of the skin.

Dr. Chisholm has described two different fevers, which appeared in the West Indies; one in 1793, 4, 5, 6; the other, subsequent to these periods, under the names of the malignant pestilential fever, and the yellow remitting fever. The former an epidemic, originating from contagion; the latter endemic and sporadic, and arising from marsh miasmata.*

In both these fevers mercury was his sovereign remedy;† and this practice, which began to be much spoken of about the year 1789 or 90, he was doubtless one of the first to embrace.‡ An epidemic, which

* Dr. C. Smith observes, that these fevers must have possessed some qualities in common with each other, from a circumstance mentioned by John Pringle, by which it appears that he used the same medicines in both. Vide C. Smith on yellow fever, page 28.

† Speaking of a publication in which Drs. Clark and Rush were mentioned as having proposed the use of mercury in these fevers, he observes, that he had recommended it before either of them. Vol. 1. p. 189. Chisholm on the malignant and pestilential fever.

‡ When the mercurial practice first began to excite general attention in the West Indies in 1789 and 90, particularly in Jamaica, it was generally ridiculed.

prevailed at Grenada, he affirms to have been the malignant pestilential fever, the same with that at Philadelphia, 1793, and differing only in degree from the plague.

He accounts for the failure of Dr. Stevens' plan of tonic treatment, which he at first recommended in Philadelphia, from his having supposed, that it was the usual bilious remitting fever of the West Indies, whence, though mercurial medicines were useful in both description of fevers, the bark which he had used was serviceable only in the latter;* but there is sufficient reason to believe that with respect to contagion, at least in the fever at Philadelphia, Dr. Chapman is mistaken.

The pestilential fever almost disappeared, from September 1793, to February 1794, after which it raged with violence, till near the end of 1796, when it ceased altogether; and it is remarkable, that its termination was at nearly the highest degree of heat, the thermometer standing between 80° and 92°; a strong evidence of the power of heat in destroying the matter of contagion in hot climates.

Dr. Chisholm was induced, by the success with which he had given mercury in an anomalous hepatic fever in 1786, to adopt the mercurial treatment in what he calls the malignant pestilential fever.

* Dr. William, Wright in his report on diseases of the West Indies, says, the fever which prevailed there in 1792 and 5, was exceedingly contagious, and he supposed it to be a form of jail fever. Vide medical commentaries for 1797. p. 345.

The symptoms of this disease were as follow: the attack was sudden; it was attended with vertigo and falling down in a state of insensibility with extreme coldness, which subsiding, heat instantly took place, together with a quick, small, but sometimes full and hard pulse, pain in the forehead and in the right side, inflamed eyes, heat at the pit of the stomach and vomiting, intolerable pain in the small of the back and calves of the legs.

After eighteen, twenty-four, or thirty-six hours, a general coldness took place with coma and delirium resembling intoxication. After about sixty or ninety hours, the patient became rational, and supposed himself free from danger. But a sudden fit soon came on, with foaming at the mouth, rolling of the eyes, and a violent agitation of the limbs. In this fit he generally expired. But this event was sometimes preceded by an efflorescence of the skin, and dilatation of the pupil of the eye. In fine, he describes it as agreeing in most respects with the plague described by Dr. Russell at Aleppo.

The dissections generally demonstrated the liver to be considerably diseased, and the stomach, or duodenum highly inflamed; and the lungs, and the blood-vessels of those organs extremely distended with dark coloured blood. In some instances the brain exhibited marks of inflammation.

In the description of these morbid appearances, a reference is made to dissections in Boston, 1798, in which, the doctor says, the appearances very exactly

corresponded with those, which had been made in Grenada, excepting the enlargement of the liver.*

From 1796 to 1799, a fever of a different character prevailed, which has been described by Dr. Chisholm, as wholly originating from marsh miasmata and not contagious, under the denomination of the remittant fever, indigenous to the country.

The symptoms of this fever were general febrile complaints for a day or two, often under the type of an intermittent; pain in the head, but not confined to any particular part of it, and in the lumbar region, as well as the lower extremities; and oppression at the scrobiculus cordis and sense of fulness and uneasiness in the right hypochondrium. The countenance was highly flushed, skin very hot, pulse full and rebounding, beating from one hundred to one hundred and thirty in a minute; the exacerbations and remissions very distinct. The whole surface acquired a deep yellow colour, and numerous petechial eruptions were discovered. The eyes from being extremely red were covered with a gelatinous exudation, and the iris was much dilated without loss of sensibility.—Vomiting did not come on till the third day. It was at first bilious, and at length attended with a discharge of a dark brownish coloured fluid like coffee grounds; and this was accompanied with intense pain in the stomach, and a diminution of urine, which, as well as the matter of perspiration, was deeply tinged with a yellow colour. Hiccough ensued with a tranquillity

* This fever at Boston was inflammatory and not contagious.

resembling sleep, and the patient expired. The subjects of this fever at first were chiefly strangers.

The difference between these two descriptions of fevers is exhibited in the following particulars. But whether these constitute sufficient diagnostic marks for discriminating them as really different diseases, will be submitted to the judgment of the reader.

First. In the *pestilential* fever, at a certain period, a total absence of external heat takes place, with a most pungent internal heat, and a singular change of the pulse.

Second. The delirium in *this* is more in the form of fatuity, whereas in the yellow remittent, it is of the furious kind.

Third. The pain of the legs being fixed to the gastrocnemii muscles, is peculiar to *this*, the pestilential fever; the pulse is more variable, and never intermittent.

Fourth. Hemorrhages are frequent only in *this* genus of fever.

Fifth. The change of voice, which almost invariably takes place at the commencement of the second stage, is also peculiar to *this* fever.

Sixth. The oppression and debility are extremely great.

Seventh. The colour of the skin is not generally yellow, but dingy, like what takes place from the extravasation of blood in contusions. The biliary ducts, as is discovered by dissection, being pervious in *this*, but obstructed in the yellow remittent; thus giving the skin a high degree of tinge.

But the principal difference was supposed to arise from their causes; that of the contagious fever being the gaseous oxide of azote; while that of the remittent is hydro-carbonate, or hydrogen in combination with carbon. But we have already objected to this mode of discrimination founded in remote causes.

The obvious indications of cure in pestilential fever were to discharge from the primæ viæ acrid matter, and to counteract the effect of contagion.* The first was fulfilled by cathartics; and the second by mercury.

Dr. Chisholm, having been led, as we have observed, to this practice by his discovery in dissections, that the liver was principally diseased; and by experience, that mercury was the sovereign medicine in hepatic complaints, confluent smallpox, and hydrocephalus internus, where the brain was compressed, after moderate evacuations, gave a pill consisting of five grains of calomel, two of an antimonial powder, and one of opium, eight times in twenty-four hours. In one case four hundred grains were given, before the salivary glands were affected.

In 1794, from his former experience, he began the use of calomel without previous evacuations, and pursued it, till salivation was induced; and did not lose a patient, in whom this practice was pushed to the full extent. Ten grains of calomel, with an equal

* Dr. Crawford, in 1770, salivated in a fever, which he calls putrid, on board the Earl of Essex. This is suspected to have been the same fever with that of the West Indies. Vide Philosophy of Medicine, vol. 5. p. 44.

or double quantity of jalap were, however, given usually for the first dose, which likewise evacuated the bowels in one or two hours, after which he gave ten grains every three hours, with, or without opium, according to the effect on the bowels, till salivation was produced, which was generally in twenty-four hours.

The action of the mercury was generally perceived after the third dose; the patient becoming calmer and less anxious; the skin softer, and of an agreeable heat; the stomach recovered its retentive faculty, and the patient was free from the disease. Salivation was supposed to be necessary, but immense quantities were required to effect it.

The following are specimens of the symptoms and his methods of cure in the malignant pestilential fever of 1793, as exhibited in the practice of Dr. Campbell, who adopted his mode, and from these histories the reader must judge of the nature of the disease and its distinctive character.

1. March 18, 1793. J—— was seized suddenly with violent headach, dimness of sight, a cold shivering, which was succeeded by convulsions. On recovering from these, he became extremely hot, with severe pain in the legs and thighs. These symptoms, notwithstanding a profuse perspiration, continued without any abatement, till the end of thirty-six hours. He was then very low, his pulse pretty full, but stopped by the slightest compression; his eyes and skin yellow, the latter without heat; his stomach incapable of retaining any thing. He had violent pain in the right side, a few spots of a dull

purple colour on his breast and shoulders; his urine was small in quantity, of a pale yellow colour.

On the 21st, he was ordered a pill of four grains of calomel, and half a grain of opium every four hours. 22d, symptoms the same; he vomited up some of the pills, but was ordered to continue them. 23d, kept down the pills. 24th, he was spitting plentifully. Every symptom disappeared.

2. Mr. Taylor was seized with the usual symptoms, on the 9th, took the calomel and jalap as a purge; and on the 10th, began the pills as in the first case, with the addition of the antimonial powder. On the 12th, a ptyalism took place with relief from every complaint, excepting weakness.

3. T. S. took, first, a purge of jalap and calomel on the 11th of June; on the 13th, six grains of calomel every four hours; on the 14th, eighteen grains of calomel with two of opium, twice in the day; 15th, the same quantity was repeated, mouth a little sore. The pulse then had become remarkably small and quick, but soft. 16th, pulse full and more natural, yellowness diminished. 17th, mouth very sore. 18th, salivated. Recovered.

4. June 14th, R. M. began with the calomel, eight grains at a dose every eight hours; increased the quantity to forty and fifty grains a day, till at length, on the 22d, he took fifty four, at which time he had taken 254 grains without affecting the mouth, and without its purging him. From this day the calomel was discontinued; but on the 24th, his

mouth became sore. On the 25th, he was salivated, after which he began to recover.

5. D. R. began with the calomel on the 25th of July, from which time to the 29th, he took 130 grains without affecting the mouth, and died the first of August.

6. J. B. was seized on the 25th of July. On the 26th, he took five grains of calomel, with one grain and a half of opium. The calomel was repeated every three hours. 27th, quantity doubled. 28th, continual vomiting; coma and delirium ensued. Died in seventy-two hours from the attack. Blisters, bark, James's powders, and other auxiliary means were occasionally used in these cases; but, as no remarkable effects from those means were noted, they are not related in the above summary of the treatment. The pulse in these cases, when a ptyalism took place, was generally slower and softer.

The following are subjoined as cases of the yellow remittent.*

1. W. S. aged 21, April 13, 1798, was seized with total insensibility; pulse indistinct, skin very warm; on being bled the pulse instantly rose. 14th, pulse softer, still indistinct; insensibility continued.

He took in the course of the day, eighty grains of calomel. In the evening was more sensible.

* As it is extremely difficult, if not impossible to determine, from the descriptions that have been published, the precise nature of the various epidemic fevers in the West Indies; and, as the mercurial practice was adopted in all of them, we shall not attempt very precisely to draw the line of distinction between them in the following statements.

15th, outrageously delirious; fifteen grains of calomel, with ten of camphor, and three of James's powder, were given every four hours; pulse 130, tongue whitish. 16th, Had intervals of sensibility; belly open, skin cool; calomel continued in doses of ten grains. In the evening pulse ninety-two, skin cool, perfectly collected in his mind; pains across the forehead; tongue covered with a thick white crust; eyes much inflamed. 17th, Highly delirious, pulse 108, skin soft, and moist, tongue dry and brown in the middle, moist towards the edge; calomel continued. 18th, Pulse 108, tongue moist; has had much sleep, is perfectly sensible, crust separating from the tongue. 19th, mouth sore; had rested well, has a return of appetite, and afterwards continued to recover.

2. July 1, 1798, J. B. was seized with pains in his loins, across his eyes, and generally through the head, with some degree of heat, which continued through the 2d, when he took a purge of calomel with James's powder; after which he had a remission of symptoms, but on the 3d, headach returning, he took thirty grains of calomel with two of opium in the course of the day. 4th, had an easy night; but in the morning, a violent return of pains; took pills with jalap and calomel, sixty grains of the latter, without any evident effect whatever. 5th, Vomiting alarming, with black and ropy discharge like coffee grounds; pulse 106, clammy sweats, without particular pains; pulse in the evening 116; continued the calomel. 6th, Pulse 110, vomiting

incessant; a mercurial clyster was injected every four hours, consisting of

Ung. Hydrargyri ℥j.
Submur. Hydrargyri ℥ss.
Tinct. Opii ℥ij.
Mucilaginis q. s.
Aq. tepidæ ℔ss.

And the parts on which blisters had been drawn were drest with the mercurial ointment.

After the third clyster the vomiting ceased, the mouth became sore, and a gentle spitting came on, very troublesome hiccough ensued; pulse eighty-eight. 8th, Salivation was increasing with discharge of blood from the gums. 9th, This last circumstance continued, but the patient was somewhat better; and on the 12th *much* better—recovered.

In the case of J. W. ten grains of calomel were given with one grain of opium every four hours, from December 6th to 9th, when the patient was relieved, the mercury suspended, and angustura bark prescribed. On the 10th day he relapsed and died. On dissection the membranes of the brain were found to be much inflamed; and much dark blood flowed on opening the cranium.

Water was found in the ventricles, and also in the pericardium. The stomach was diminished in size, and the interior coat abraded. The liver was of the usual size, but of a cineritious colour. The gall bladder was tinged with excessively black bile;

the spleen enlarged, and the inner surface of the intestines covered with pus.

But the quantities of mercury exhibited in these cases are small in comparison with what were given in many others; and there seems to have been no other rule of prescription as to quantity, than to give it in proportion to the existing degree of torpor in the system, and till this was subdued.

In one instance in Port Royal 2500 grains of mercury, in different ways, were used before the glands were affected.

In 1799, W. G. took sixty-four grains by the mouth. 2040 by clyster, and thirty-six hundred grains of triturated mercury were carefully rubbed into his arms and thighs in five days, amounting in the whole to 5704 grains, and the cure was astonishingly rapid.

1793, J. B. took at first twenty grains of calomel five times a day, and when the case became apparently desperate, sixty grains at a dose till the 9th or 10th day, when, after having taken 800 grains, he was salivated and recovered.

In the fever at Tortola 1100 grains have been given by Dr. Porter, who lost one in seven, without salivation; and 1000 by Dr. Sanderson. At Jamaica 1600 with advantage. But it has been observed, that the greatest success was insured, when the modes of application were varied. Instances have been adduced, wherein this disease, in a tropical climate, has resisted 2000 grains of calomel.

The success of the mercurial practice in Grenada has been supposed to justify it; and, though it is a fact, that in the Royal Artillery, on whom it was first tried, the mortality was greater, than had ever been known in a tropical climate; yet, compared with other modes of treatment, it was on the whole the most successful. About one in forty-eight, in whom the salivary glands were affected, died; and it was remarkable, that not one relapsed.

We have the testimony of Dr. Lindsay to the comparative effects of this practice, in the army under Sir Charles Gray, in which it was largely used; and of that in the army under Sir Ralph Abercrombie, where it was not adopted; and the mortality was much less in the former.

Mr. White in the same fever practised this method; and did not lose one in whom he could affect the salivary glands.

About the same time, or a little before the yellow fever commenced its ravages in Grenada, it appeared on board the Busbridge, East Indiaman.

The treatment adopted by Dr. Bryce was commenced by first evacuating the contents of the bowels with mercurial cathartics. These were frequently repeated, and from their favourable effect, compared with that of other cathartics, he was induced to suspect, that the disease was seated in the liver, pancreas, or spleen. Hence he concluded, that it was necessary to excite the action of the vessels; and from the known operation of mercury, he presumed it to be well adapted to that purpose. Mercurial frictions on the

region of the liver were observed almost invariably to produce, soon after, one or more alvine evacuations of foul matter. Vomiting was the most troublesome attendant of this disease, the irritability of the stomach, in hot climates, being always extremely great. During the intervals of vomiting, calomel, given in large doses, had the happiest effect. All the excretions were promoted, particularly those of the liver, which was the principal seat of the complaint.

It is remarkable, that about the same time, those two practitioners, Dr. Chisholm, and Dr. Bryce, should have come to the same conclusion, with respect to this disease and its remedy, by different paths; the one, from the diseased state of the liver, and the other abdominal viscera, having inferred the aptitude of mercury for the cure of the disease; the other, without the help of dissections, from the success of mercury having deduced the nature of the complaint. This circumstance may, perhaps, with justice be urged as strong evidence in favour of the treatment. Three only out of three hundred are said to have died under Dr. Bryce's practice.

In Trinidad, Dr. Clark observes, with respect to the fever which prevailed there in 1793, that, where there was time for salivating, mercury was always successful.

In Dominica, the same fever was treated with mercurials, and Dr. Fullin asserts, that the proportion of mortality under it was about as 1 to 5, and as 1 to 2 under any other mode.

Dr. Johnson makes the proportion who died under the same treatment as 1 to 7.

In Grenada, Mr. Campbell, in 1796, lost about 1 in 7.

In Antigua, Dr. Byam used mercury only on the decline of the epidemic; and the proportion of mortality was as 1 to 2.

In St. Christophers, Dr. Armstrong in the same fever used mercury, and lost but 1 in 20. At the next period of its return, he aided the action of this medicine by the cold bath, and found this increased its activity. Dr. Noble declares, that when it affected the gums, the patient was secure; and that the cold bath was not incompatible with the process.*

1769. In St. Lucia, where the yellow remittent fever prevailed more than in any of the other Islands, calomel was given in doses of eight or ten grains, every three hours; and when the mouth was affected,† which was expedited by the cold bath, an amendment was observed. The mortality under this practice by Dr. Allan, was as 1 to 7.

In St. Vincents, the principal dependence of Dr. Davidson was on salivation.

In St. Thomas', this practice was recommended by Dr. Stevens; but the success was not great.

The fever, which prevailed in St. Domingo, according to Dr. H. M'Lean, was not contagious;

* Dr. Muttlebury adopted this practice in 1796 on a batalion of Grenadiers on board the East Indiaman Valentine, and strongly testifies in favour of his success in comparison with other methods of treatment.

† Dr. Peter and Dr. Sanderson found that the operation of mercury was surprisingly assisted by a few grains of Jalap.

and differed essentially from that described by Drs. Chisholm and Rush.* He considers it as the common remittent, owing to chemical changes from miasmata promoting irregular determinations to particular organs, in consequence of diminished energy of the affected parts. An increase of the secretion of bile was a common attendant, and evident marks of inflammation in the stomach, and the black vomit, which is probably a mixture of the common juices of the stomach with blood, proceeding from the surcharged vessels.

Though Dr. M. seldom used mercury but as a purge, and was of opinion, that it was too slow in its operation; and that when it salivated, it was a dangerous circumstance in hot climates, because not easily controlled by medicine; yet, in bilious habits, which he always found difficult to correct, he used a slight mercurial course; and observed, that when the system was fairly loaded, the symptoms abated.

Dr. Todd gave 500 grs. to a woman in the same fever at Jamaica without any effect upon the mouth, and without success, even though a common cathartic operated on the bowels.

In Demarara a fever of the usual character prevailed in 1796. The mercurial practice was adopted by Messrs. Macbeth and Ord, whilst the other

* Dr. Wade lost none in the treatment of what he calls the bilious fever out of forty eight, whom he treated with mercury in Grenada in 1791, and Dr. Chisholm but one, provided the *salivary glands were affected.* And not a single relapse occurred. Vide Dr. Rush, p. 291.

practitioners used bleeding, antimonial evacuants, and peruvian bark. These latter almost universally failed, whilst the former as frequently succeeded ;—and it is worthy of remark, that small quantities of mercury produced salivation, as it is said, in consequence of the moisture of the atmosphere.

The Flora Transport, in 1796, bound to the West Indies, had 23 of her crew taken sick with this fever. Dr. Renoldson gave 10 grs. of calomel every three hours, and continued it, till their mouths were affected. In thirty six hours 18 were convalescent. Of the whole crew, about 50 of whom were sick in their passage, he lost only three, whom he could not salivate, though their breaths were affected. It was observed, that those treated with mercury never relapsed, whilst those, who had been apparently cured by other means, often did ; and were afterwards cured by mercury. One was a woman who was salivated during the catamenia without interruption to the curative process.

At Port Royal Dr. Davidson had an extraordinary case, in which calomel was given every three hours in doses of 10 grs. He began the treatment on the 22d of July; the mouth was affected in the evening, and the fever entirely gone off. The calomel was omitted. 23d, the soreness of the mouth went completely off, and the fever returned, with violent pains in the head, back, and legs. The mercury was administered again; in the evening the mouth became sore, and he again desisted from the use of it. On the morning of the 24th the mouth was well again,

and all the symptoms returned. This obliged him to have recourse a third time to calomel, which was followed up, till the mouth was very much affected; and the patient recovered in a few days.

Dr. Bishop, at the same time, lost only two patients out of forty five, whom he salivated.—Salivation was always the signal of returning health.

SECT. III. THE GENERAL USE OF MERCURY IN FEVERS COMBINED WITH HEPATIC AND OTHER VISCERAL AFFECTION.

The circumstance of phlegmasia or visceral inflammation is considered as the direct and appropriate object of the mercurial practice. All the diseases of this character are believed to submit to its empire, and particularly those, in which the liver is concerned.

In several of the more malignant and concentrated forms of fever, the method is founded on the suspicion, that hepatic affection is one of the constituents of the disease.

Hence arose the new practice with mercury in the cure of the epidemic, which, since the year 1793, has spread such terror and devastation throughout the West India Islands, and some parts of the continent of America, under the denomination of the yellow fever.

That this term is by no means strictly appropriate to any one genus of fever, is readily evinced by the inconstancy of the quality which it is used to denote.

Yellowness appears under certain circumstances of almost every febrile disease. The biliary duct may be obstructed, and the bile may be absorbed into the system independently of the principal affection.

In most intermittent fevers, as well as the yellow remittent, a tinge of bile is observed in the skin; in the latter, however, it is usually in higher degree, and more constantly an attendant.—In the malignant pestilential fever, as it is called, in which contagion is supposed by some to constitute the distinguishing external character, the yellowness is by no means a general appearance. In neither of these does this colour appear to arise from obstruction in the biliary ducts, as is supposed in the case of jaundice.

In most subjects, which have been dissected, they were completely pervious.—In a great proportion of the sick, neither the eye nor the urine was coloured with bile. The dusky appearance often observed in the latter stage of the disorder is produced by an escape of part of the red globules, and the same change is brought about by the action of the vascular parts, as takes place in contusions, in which it is extremely common to find this yellowness appearing several days after the extravasation had been made.*

There are indeed some instances of dissections, in which the ductus cysticus has been wanting. Such an instance was noticed in the dissections at Boston in the fever of 1798. The gall bladder in this

* Even in jaundice, when the skin has been excessively yellow, the biliary ducts have sometimes been found, on dissection, entirely free from obstruction.

case was entirely obliterated.—The patient had nevertheless laboured under that almost pathognomonic symptom of yellow fever, a burning sensation of the stomach. That this symptom should have predominated under this state, is by no means surprizing.

The deficiency of bile in the duodenum, and the torpor from defect of stimulus, will readily account for the suspension of the digestive process, and the spontaneous fermentation in this intestine and the stomach, with which it is connected.*

But in common cases this symptom must arise from a different cause; for the ducts are not only usually open, but the quantity of bile poured through them into these organs is often enormously increased. In hot climates, especially, this circumstance constitutes the bilious habit so generally complained of, (and which, when once established, is so difficult to remove), between the tropics.

The activity of this fluid too is there observed to be increased in an equal ratio with its quantity. If the increase of secretion in the liver is dependent on the red globules, as has been asserted, the observation, that athletic persons are most subject to what are called bilious complaints, is easily explained.

* The sick headach is supposed to be owing to deficiency of bile in the duodenum from spasmodic stricture at the duodenal extremity of the ductus communis choledochus, in consequence of which that intestine falls into an atony for want of stimulus, and the stomach sympathizing with it, generates an acid. This headach I have experienced to be almost invariably relieved by a few grains of calomel. Drinking a draught of warm water at bed time dilutes the acid, and gives temporary ease.

But in what manner does mercury remedy these complaints? It has been generally supposed, that it increases hepatic secretion; and indeed, it has been asserted, that the influence of this medicine on the liver is equally determinate with that which it exercises on the salivary glands.*

Dr. Sanders remarks, that the gall bladder and ducts are destitute of muscular irritability. This explains the phenomenon, so generally noticed in dissections, a turgid state of that sac, and a redundancy of the fluid in its cavity, but at the same time somewhat increases the difficulty in solving the salutary action of mercury; because it weakens the hypothesis of a stimulant effect on that organ, by which it might promote a discharge of the viscid bile contained in it, and obviate the causes of future stagnation.

The use of mercury, in the East Indies, in hepatitis is well known; and the sovereign efficacy of this medicine in the cure of that disease, has long been promulgated throughout the medical world. Dr. Sanders, however, is of opinion, that in recent inflammation of this organ, as well as in jaundice with symptomatic fever, mercury has a tendency to promote suppuration.

The East India practice, it seems is, not to use it till after the first inflammation has subsided, when

* Mercury is said sometimes, however, to have produced schirrossity of the liver in the same way as dram drinking. Vide Beddoes's Hygeia, Essay 8th, p. 126, Vol. ii. This is doubted. Mercury does mischief in patients who are scorbutic.

it acts as a spur to the vascular system of this organ. Some of the practitioners, however, thought it necessary only to observe the precaution of bleeding before using it; after which, it might be given with safety. This was the mode adopted by Dr. Dick of Bengal. He gave calomel in doses of from 2 to 5 grs. every night, until the mouth was affected; and, almost invariably, within ten days cured the patient. Suppuration under this course never ensued.

Dr. Sanders supposes acute inflammation to be seated in the hepatic artery, and chronic in the vena porta.

In cases of schirrosity, mercury was supposed to excite the action of the torpid vessels, and, carried to the point of salivation, it generally succeeded. When suppuration had taken place, it was of no use.

Dr. Hamilton had eighteen years' practice in complaints of this kind; and found it invariably advantageous.

Dr. James Currie, physician to Guy's hospital, who had been in India in 1786, testified in favour of mercury in hepatic complaints, but used it merely for the purpose of emulging the ducts, not of salivating; and found calomel the only medicine to be relied on for this purpose. The astonishing success of this treatment, in the hepatic affections of India, induced Mr. W. Scott, at Bombay, in 1793, to make some experiments to ascertain, whether there might not be some chemical affinity between this metallic substance and the bile which is so generally concerned in diseases of that country.

He mixed the resinous base of the bile of a buffalo with half its weight of the red calx of mercury and 10 or 12 ounces of water. On heating the whole, he was surprized to find, that the bile became more soluble in water. This he supposed was owing to the oxygenation of the resin by the pure air of the calx.

These diseases of the liver being supposed to arise from deposition of the resinous parts of the bile upon that organ, it was readily inferred from this experiment, that they were cured by the oxygen of the mercury uniting with the resin, and rendering it soluble in animal fluids.

M. Fourcroy had before proved, that similar effects were pruduced by nitric acid consisting of four parts of oxygen and one of azote; and it was said to have answered the same purpose as mercury in these complaints, free from some of its inconveniences.

But neither of these hypotheses seems satisfactorily to explain the power of this medicine in *checking* the tendency in the liver to *increased* secretion, one of the usual attendants on yellow fever.

This, it is suspected, must be sought for in the known stimulant power of mercurial oxides. By exciting a new action in the hepatic system, the morbid affection is superseded; and consequently, the cause, which produced a superabundant secretion, is removed.

That this new stimulus is calculated to produce increased secretion in some torpid affections of the

liver, where it is deficient, is indeed undeniable; and it appears in this way also to diminish them, where they are already too great, the medicine having a sort of equalizing or balancing influence over the system. When this new order of things has once taken place in the liver, as well as in the other organs to which mercury has a special determination, the process is in the regular course of mercurial action, and the healthy state of the organ is restored so soon as this course is performed, the healthy functions assuming their customary order, as that introduced by the medicine subsides.

A SIMILAR power is exercised over the blood vessels in fevers. Mercury quickens the pulse in health; in disease it renders it slower by subduing the morbid excitement.

THE difficulty of producing a new train of action in these diseases is, generally, in proportion to their violence,* or rather to the degree of organic lesion; and the impossibility of doing it, in some cases, arises from the destruction of parts, by which the principle of vitality is extinguished. In these cases dissection commonly demonstrates incipient mortification or suppuration of the viscera.

IT has indeed been objected to the mercurial method of cure, that it is too slow in its operation to

* In the Philosophical Transactions is a table, in which certain classes of medicines are adjusted, mathematically, to all ages, classes and constitutions. It is suspected that the disease in question would have confounded the calculations on which it was founded.

answer the purpose in very acute cases; and the circumstance of invariable recovery where salivation has been produced, was supposed to prove only the mildness of the disease. But the sudden changes frequently produced under some of the most dangerous circumstances, appear strongly to support the efficacy of the treatment.

From the foregoing details, a considerable difference in the symptoms of yellow fever is observable, but whether this epidemic, which within a few years visited so great a proportion of the West India Islands, was one and the same disease, it will be extremely difficult for an impartial inquirer to decide.

Dr. H. Jackson, though at first of a different opinion, from further experience concluded, that the yellow fever is the ordinary epidemic of the West Indies. The varieties of constitution, climate and season, must undoubtedly produce a very considerable variety in the forms of the same disease; and the state of the organs, as discovered by dissection, will of course be dissimilar in different subjects, and in different climates.

In most of the histories which have been given of this fever, in places where it has appeared, we find cases of both descriptions, of strong and weak action.

It is a fact, that inflammation of the stomach is usually attended with depressed pulse. In all diseases too, in which the parts principally affected are those, between which and the stomach a sympathy

is established, the same affection of the artery has been noticed. The pulse in these cases is quick, small, and hard.

May not this established principle in the animal œconomy account, in some measure, for the different phenomena observed in the commencement of these fevers, and solve the enigma which the strange disagreement among writers on this subject, in their descriptions of the fever, has presented to the view of the medical inquirer.

It may perhaps be answered, that though this hypothesis may account for a difference in the symptoms of some few individuals labouring under these diseases, yet we have no authority for believing this principle to constitute the character of any of the epidemics which have been known to prevail. But may we not conceive it probable, that amidst the great number of discordant histories of epidemics on record, the characters of some of them may have been derived from such individual cases.

It is well known that in some seasons affections of one particular organ are most prevalent, and in other seasons of some other; and had dissections of those who have died been more general, this might have been demonstrated.

The dissection of persons who have died of epidemics apparently of *different* characters seems to prove, that these determinations to different organs are not peculiar to either of them in particular, as they have been found in both.

The dissection of persons, who have died with yellow fever in particular, have proved indisputably, that the viscera are locally affected by this disease.* Dr. Lind, in the fever of Cadiz, in 1764, found the stomach and intestines inflamed, and the liver and lungs bordering on putrefaction. Dr. Home, in Barbadoes, found the biliary organ full of bile, the liver enlarged, the stomach and duodenum inflamed and on the point of mortification, the gall duct not obstructed.

Dr. Sanderson examined eighteen bodies, and found the appearances in the brain different from those in Grenada and most other places. In two, the cystic duct was obliterated or totally obstructed.

In Grenada, the vessels of the brain were found extremely distended with dark blood; the liver was either shrunk or uncommonly flaccid, and of a cineritious colour; the lungs were highly inflamed, as were the stomach and duodenum.

In Philadelphia, Dr. Rush observed, that the liver was less affected in the fever of 1793, than in that of 1762; but is notwithstanding of opinion, that congestion is the cause of death. Dr. Annan, in a dissection at Bush Hill, found the brain distended with blood. In Dr. Mitchell's dissections in Virginia, in

* Drs. Physick and Cathrall, in their dissections in 1793, at Philadelphia, found the stomach and beginning of the duodenum to be the parts most diseased; with gangrenous spots; the bile in the gall bladder to be extremely viscid, and the matter of the black vomit to be an altered secretion from the liver. Dr. Rush on the yellow fever, p. 120.

1737 and 1741, the gall bladder was full of viscid bile. Dr. M'Kittrick, in his inaugural dissertation on yellow fever, observed the same thing.

The remote causes producing these affections are various; in general, they were found to be most prevalent in dry situations. Dr. Jackson observes this to have been the case throughout the West Indies In Barbadoes, in 1753, this was remarkable, according to Dr. Hillary, after very dry and hot weather; and delirium has been observed to be more common after the commencement of frosty weather. Dr. Rush conjectured, that the stimulus of the disease determined the fluids more particularly to the liver, stomach and bowels, and disposed them to inflammation, as the contagion acts specifically on them.

That these organic determinations do constitute a very prominent feature in yellow fevers in general, is incontestibly proved by a twofold evidence; for not only the sufferings of particular parts during life, but examinations after death have also demonstrated the fact. An engorgement of the brain, and a congestion of blood in the liver, in the stomach, and intestines, as well as sometimes in the lungs, prove, that the balance of the system is destroyed, and call for means that shall restore it. To equalize the circulations and promote absorption, seem to be the great object in these cases; and mercury has ever been considered as most effectual for these purposes.

Mercurial medicines have been generally considered as particularly adapted to diseases of contagion

and of inflammation. That intermittents partake of neither of these properties is generally allowed.

A SIMPLE ephemeral fever which has but one paroxysm terminates in twenty-four hours, is never contagious; nor is it probably inflammatory.

INTERMITTENTS appear to be made up of similar periodical paroxysms, and are nothing more than a repetition of them, owing to an imperfect crisis in the first or preceding paroxysm.

FROM the symptoms of intermittent fever, then, there is no indication to be deduced in favour of mercurial treatment, if we except the yellowness of the skin, which however, is not characteristic of the disease. From a view of the remote causes of this disease, marsh miasmata, it might possibly be thought consistent with analogical inference, that a process of this kind would be justifiable, from the relation subsisting between these and the endemic remittent fever, through their remote causes. This latter disease has also been generally attributed to causes of a similar nature with marsh miasmata.

HENCE as mercury is supposed to be the proper remedy in remittent fever, the application of the same medicine to intermittents might be not altogether indefensible.

BUT a stronger argument is furnished in favour of this practice by the proximate cause of intermittents, as discovered by dissection.

DR. CLEGHORN examined the bodies of near one hundred persons, who died with these fevers, and constantly found the omentum, mesentery, colon,

&c. of a deep black complexion, or totally corrupted; the gall bladder full and turgid, and the stomach and intestines overflowed with bilious matter; the spleen enlarged, weighing four or five pounds, and extremely soft and friable.

THOUGH it does not fully appear that the liver is the principal sufferer in these genera of diseases; yet, that local affection, which has commonly been considered as the proper object of mercurial practice, is at least a part of the proximate cause, seems so fully established, as to need no further support. But as a much surer and almost unfailing remedy is supplied by the peruvian bark, mercurials are seldom employed in the course of intermittents, and are resorted to only in complaints consequent on the disease. A torpid state of the affected parts is frequently observed to take place after the fever is removed; and mercurial stimulants have been used with success to restore to them their action.

A SINGLE dose of bark will sometimes break the force of the succeeding paroxysm, though exhibited but just before its access; and like spices, ardent spirits, and opium, will produce its effects upon the system at large by its immediate action upon the stomach alone.

THAT mercury does not act thus immediately on the stomach, but exerts its stimulant effect on the system in consequence of absorption, and breaking the morbid catenations, has been before observed; and this constitutes a very material discrimination between these different articles of the stimulant class.

By its well known effect in restoring the equilibrium destroyed in all cases of visceral lesion, it may, after having had time to enter the system, prevent the paroxysm by the same means which are employed by nature to restore the equality.

From this immense weight of evidence, in favour of mercury in yellow fever, it might be considered as scepticism in any one who should doubt the success of this practice. And one might be almost tempted to exclaim, with Dr. Chisholm, in India, in England, in North America, and in the West India Islands, medical gentlemen totally unconnected with each other, have recurred to the same practice, and hesitate not to declare to the public, that the event has been uniformly the same.

Its success has, however, been controverted.

At the head of the opposition to this practice stands the very able and intelligent Dr. R. Jackson.

He admits, that, as an evacuant, it has been employed with superior advantage; but, as a general remedy, he doubts its efficacy; and thinks, that the result of Dr. Chisholm's testimonies does not warrant a favourable conclusion; for the mortality in the detachment of royal artillery, on which it was first tried in its full latitude, he thinks, was greater than common.

From the use of it in St. Domingo, he concludes, that in slight cases of yellow fever, when the mouth is affected, the fever is observed to be diminished, but this seldom takes place till the disease has abated; for when the symptoms are violent no salivation can

be produced. Hence he advances the opinion already recited, that salivation, instead of being the cause of the abatement of the disease, is only a signal of its departure.

Dr. Lind's experiments are adduced to support this opinion. Fifteen cases were treated with mercury from the earliest stage, (the first day,) of the disease. Five died, in three of whom salivation took place. Five, who were not salivated, recovered. The other five, who recovered, were salivated, but, as usual, not till the violence of the symptoms were abated. Of four, that were put under his care on the second day of the fever, none died. One only was affected (apparently) by the mercury. One, brought to him on the third day, died. Mercury was used, but no salivation could be produced. One brought on the fourth day died also, without salivation, and one on the fifth, who was salivated. In none of these was less than ten drachms, and in most, not less than two ounces of strong mercurial ointment employed, with all other usual means calculated to promote the expected effect. But as this method often endangers life, and is extremely uncertain as to the sensible operation, he thinks the practice dangerous.

Dr. Sanders expresses strong doubts of the utility of mercury in bilious fevers; but he admits, that febrile poison has a strong tendency to promote congestion in the liver; and suspends a final judgment on the question, on account of the discordant opinions of writers on this subject. The fact of increased biliary secretions might, perhaps, lead him to

these doubts respecting mercury which is supposed to promote them. Dr. Nassy condemned it, together with many of the ancients, because he supposed it dissolved the blood.

But the force of these objections will in some measure be weakened by two considerations. First, That, though in Dr. Lind's experiments the abatement of symptoms preceded soreness of the mouth, it does not follow that this might not have been owing to the action of the medicine on the disease, before its effects became sensible. This indeed may operate as an argument against the necessity of salivation, but is inconclusive, as it respects the mercurial efficacy in removing the disease. Secondly, That the power of mercury in diminishing morbid secretion may be explained on the principle of changing the mode of action. And, third, That no evidence has been offered to prove, that the blood is dissolved by the action of mercury.

PART III.

SECT. I. PRACTICE WITH MERCURY IN TYPHUS.

As the descriptions of the West India epidemic have comprehended some variety in the forms of fever, and as it has been urged, that yellow fever, and jail, hospital, or camp fever are only varieties of the same disease, the discussion of the use of mercurial medicines in typhus may be considered as in some measure anticipated in the foregoing pages.

We presume not to determine, whether typhus icteroides, as it has been called by some authors, or typhus cum flavedine cutis, as, in the nosological arrangement of Cullen it has been denominated, is the same disease, which in tropical climates has been commonly described under the name of yellow fever; but of one thing we are fully convinced, which is, that in this place, the typhus, or as it has often been called slow nervous or putrid fever, is of a totally different character from yellow fever, as it appeared in Boston in 1798 and 1802.

The typhus, which has often prevailed here, has, (as has been suspected,) been sometimes contagious. In the year 1780 it was prevalent in the Alliance frigate, which on her arrival in Boston had a large number of persons sick, who were immediately sent

to the hospital in this town: The symptoms were entirely different from those of the yellow fever, which afterwards spread such alarm throughout this part of the United States; and the disease doubtless originated from human contagion, commencing on board, from the peculiar circumstances of that ship. In an attendance on a large number of these cases scattered in various parts of the town, as well as contained in the crowded hospital, destitute of many of those accommodations which, under any other than the existing circumstances of the country might have been afforded, I had the misfortune to be attacked with the disease, and noted its progress with particular interest.

An extreme degree of lassitude, which, under circumstances of extraordinary bodily and mental exertion, might have been mistaken for the mere effect of fatigue, usually commenced the disease, and continued three or four days, before the complaint excited much attention from the patient. Then ensued pain in the loins, temples, and back of the head; yellow tongue, weak and quick pulse, yellow and dry skin, and extreme thirst, without any relief from drinks. After the fifth or sixth day the fur upon the tongue usually assumed a blackish colour; and the intestinal canal was obstinately constipated. To these symptoms succeeded, in fatal cases, slight delirium and coma, gradual diminution of all the vital powers, and, on about the 11th or 12th day the death of the patient.

Dr. Huxham had remarked, that in slow nervous fever spontaneous salivation, without aphthæ, proved salutary; calomel at this time was nevertheless used, only to evacuate the stomach and bowels, being combined for the most part, either with tartarized antimony or rhubarb. Three or four grains of calomel with one and a half of tartarized antimony, were usually prescribed in the commencement of the fever, and generally produced the most happy effect by evacuating very large quantities of, apparently, very vitiated bile; and a repetition of the dose was often judged necessary within the first week of the disease. If this did not produce copious evacuation from the intestines, as well as the stomach, which was, however, usually the case, the famous ten and ten, as it was called of Dr. Young, was resorted to, and with very salutary effects. This was a powder of 10 grs. of calomel and 10 of rhubarb, and was, at that time, considered as a powerful cathartic.

Dr. Young had been a physician in Boston, till within a few years of this period, and had acquired the reputation of a rash practitioner from his use of this medicine. That it generally operated powerfully, I can attest, and recollect having seen a patient, whom, between thirty and forty discharges produced by it, brought to the brink of the grave.

How it happens, that in the present day a dose of this magnitude is very seldom found to operate very forcibly, it is not easy to decide—that jalap instead of rhubarb was sometimes combined with the calo-

mel is probable, but it is certain, that the common form of Dr. Young's prescription in Boston was rhubarb and calomel.* This however is a very strong instance of the efficacy of combination in medicines of this class, as the effect produced far exceeded the ratio of their respective quantities. After these preparatory means, the cure was commonly committed to nauseating doses of antimony; and occasional repetition of rhubarb and calomel. The peruvian bark was resorted to at the close of the febrile stage; and even before this period, if any of those marks which are usually considered as denoting putrefaction, such as blackness of tongue or putrid evacuations from the bowels occurred. The remissions were, in most cases, sufficient to admit of this practice.

The use of mercury, as a general medicine in typhus, had not at this time even been proposed to the consideration of the American physicians; and indeed, it was long after this that it obtained much credit in any place.

In the autumn of 1796 a similar fever with that above described, made its appearance in Boston, and excited much alarm among the citizens from an apprehension that it was the yellow fever, which had recently made such havock in Philadelphia.

Its symptoms were similar in most respects to that of 1780, but with more severe pain in the limbs, and oppression at the præcordia. Jalap and calomel

* Dr. Rush changed rhubarb for jalap in the hospital at Philadelphia.

were exhibited to the first patient without effect; and she died at the end of the fourth day. The second had calomel and opium, but could not retain a single dose of any thing in the stomach, and she died also on the fourth day. Neither of these had any yellowness of the skin.

On the second of September, seven days after the first person was attacked, a son-in-law of one of the above patients who had died, and within three days from that time, three others of the family, his wife and her two brothers, were seized with the fever. Three of these recovered, after large and repeated doses of jalap and calomel, aided in two instances by emetics; and in one by affusion of cold water. The other, without any other treatment than the purgatives, from certain unfavourable circumstances at the time of seizure, died on the fourth day. In two of these cases the attack was in a milder form, and the disorder ran on without very alarming symptoms, but with a thicker and darker fur on the tongue, till the eleventh day, before any sensible change was observed; after which the recovery was slow as in common typhus, and was not completed until the fourth week.

In a few of the subsequent cases petechiæ were discovered in all parts of the body, accompanied with dysentery or diarrhœa. In some cases a sense of heat at the stomach was a prominent complaint, and hemorrhage from the nose continued for several days to be a troublesome circumstance without any mitigation of the symptoms. Large discharges of bile

were common from both stomach and bowels; the urine was highly tinged with bile. The crises were seldom very sensible or perfect, but when they did take place, were usually in the form of diaphoresis. From ten to fifteen grains of calomel alone, frequently repeated, commonly effected the cure with more certainty, than when preceded by emetics. Antimonials and blisters were superadded to this treatment; and in the highest stage of the fever the cold bath was used with great advantage. In two cases the black vomit took place.

A VERY great proportion of the sick inhabited the neighbourhood of extensive flats about the easterly, southerly, and westerly parts of the town, and the vicinity of the docks and wharves of those quarters.

IN most families, where one person was seized, others became sick, and in some almost every adult person became ill.

OF fifty persons under my care, nine died; two from circumstances foreign from the disease.

ABOUT thirty died in the whole town.*' The black vomit, which took place in two only of the whole number, can by no means be considered as pathognomonic of yellow fever, as I have seen it take place in puerperal fever from uterine inflammation, as well as in other cases of visceral affection, without marks of malignity.

As to importation in the above recited cases, there was not the shadow of a reason to suspect the possibility of it.

* Vide Medical Repository, Letter to Mr. Eliphalet Pearson, p. 136. vol. i.

The congestions, which have been so commonly attendant on yellow fever, were not noticed in this; extreme irritability of the stomach was, notwithstanding, sometimes a very troublesome symptom, supposed to be consequent on an inflammatory state of that organ.

On these occasions calomel and opium given in pills to the amount of one, two, or three grains of the former, repeated at intervals, till copious evacuations from the bowels took place, had a salutary effect. Some of the early advocates for this plan in more concentrated forms declare, that it is equally successful in those slow fevers which would be called nervous by European physicians. The opinions and example of Dr. Rush, and other learned physicians of Philadelphia, had recommended the use of mercury in typhus, and the same treatment had been adopted by the physicians of Boston.

Dr. Rush, in typhus mitior, found, on salivation taking place, the pulse becoming full and slow with evident relief.

The petechial eruptions in typhus are supposed by Dr. R. Jackson to be owing to a loss of tone in the venous system; and the stimulant power of mercury seems well adapted to the purpose of restoring it.

On dissection in typhus, Dr. Crawford discovered that the intestinal canal was coated with a thick mucus. This circumstance I have often observed attendant upon patients labouring under protracted cases of typhus; and in many instances, after a mercu-

rial course had been unsuccessful in the beginning, I have seen surprising effects from a return to the medicine.

Where calome had even affected the gums, it would sometimes happen, that, either from the relief not being so immediate as had been expected or from some peculiarity of constitution, it had been thought proper to suspend it, and the disease continued to run on, till the patient's strength was so far exhausted that apprehensions were entertained for his safety.

The debility in these cases had become excessive, and the febrile action being reduced, wine and bark had been copiously prescribed with a generous restorative diet, but with very little benefit. This coated appearance was exhibited by the tongue, even long after the direct effects of the mercury had subsided; and probably extended far into the alimentary canal.

A few doses of calomel excited the system to action, and the patient began immediately to recover; and, I may venture to say, in no cases of typhus had I seen more evident advantage from mercurials than in these.

Sporadic typhus has appeared at all seasons in this place; but more especially in the commencement of cool weather in autumn, and in the beginning of winter. It has generally been treated with bark and wine after mild evacuations; and the mineral acids, especially the muriatic, have often been conjoined with these medicines.

Calomel, with opium, has sometimes been administered, but not generally to the degree of ptyalism.

Since the year 1796, this disease has never been epidemic in Boston. But almost every autumn it has been known to run through some whole families, and even to infect the visitors that came within the sphere of its action. In these, small doses of calomel, in the beginning of the fever, have been principally relied on; and bark in its decline.

In the winter of 1804 and 1805, a typhus with uncommonly malignant symptoms made its appearance in this town. As the circumstances which attended it, were, in some respects, peculiar, and different modes of treatment were adopted for the cure of it, a short history of some of the cases may not be altogether useless to the medical inquirer. Having been occasionally called in to visit several of the patients, I was witness to some of the most striking appearances which attended them; but for such of the minutes of the particular cases as my own attendance did not enable me to supply, I am indebted to Dr. Rand, sen. whose judicious treatment may be considered as an example of the most correct mode of practice, and who attended several of them from the beginning, alone.

First case. T. E. aged fifteen, employed in a store on Central wharf, in the beginning of December, 1804, began to complain of slight pain in the head, languor and lassitude; and being too unwell to continue his services in the store, returned to the house

of his father, situated in Middle-street, near the head of Cross-street. The house is of brick, rather small, and with a northerly aspect. When visited by his physician, which was in the middle of the month, his countenance was remarkably pale, his appetite gone; he had nausea and slight vomiting; his tongue was covered with a thin whitish fur, pulse small and frequent; he had universal uneasiness, but was free from pains, excepting slight ones in the back and limbs. He had a constant chilliness, which made him unwilling to leave the fire a single moment, in consequence of which, he insensibly blistered his legs.—These symptoms were attended with restlessness in the night, which deprived him of sleep, and with obstinate constipation of the bowels.

An emetic was administered, which operated kindly; and the next day an infusion of senna, which produced copious evacuations of a black and very offensive nature.

On the day following, as the debility was extreme, and the surface of the body appeared destitute of colour and warmth, cinchona and snakeroot were liberally prescribed. Blisters were applied to the neck, temples, behind the ears, and on the extremities.—Wine, porter and cyder were freely allowed him. On the third of January, 1805, the course having been varied occasionally with ether, tinct. cinnam. and laudanum, he died, it being about the twenty-seventh day from his seizure.

The spots, which had been blistered by the fire, before his death, assumed a purple hue; and others

had appeared about his ears, but immediately subsided.

Second. On the twenty-third December, G. E. brother to the deceased, after five or six days labouring under the precursors of fever, became the subject of medical attention. He had slept with his sick brother, though efforts had been made to have him removed. He first complained of pains in the head, loins, and most of the muscles of the body, was alternately, at short intervals, cold and hot; had a nausea, and was costive; his tongue was covered with a dark fur in the middle, and a whitish mucus on the sides.

He was ordered an emetic, which operated well, and afterwards a purge, which caused discharges of large quantities of black, putrid, and very offensive fœces. The next day he began with calomel in small doses, which soon affected the glands of the mouth. The fever, notwithstanding, ran through its various stages; the tongue became black and dry; he fell into a state of insensibility, and continued in it without speaking, for a number of days before the termination of his fever. Ether, laudanum, blisters to the back of the neck, behind the ears, on the temples and the extremities, were the principal remedies used after he became insensible. Very little of nutriment or drinks could be forced into the stomach, till about the nineteenth or twentieth, when the fever left him, and he recovered his senses. He was soon after able to sit up in his chair; his appetite returned, and was, perhaps, indulged to his injury. He began to acquire flesh, till being carried below stairs, at his urgent

request, to see his deceased brother, after five or six days convalescence he relapsed. A colliquative diarrhœa having set in, and exhausted his strength to an alarming degree, it was corrected and restrained by rhubarb, tinct. of cinnamon, and laudanum. At this period of the complaint I visited him with Dr. Rand, and found him extremely debilitated, and affected with a remarkable tumefaction on the right side of his face. On inspecting the inside of the mouth, an incipient mortification was discovered. The next day it had so far advanced, that he with great facility extracted the grinders of that side with his fingers; and it was remarkable, that no blood followed. At this time a small black spot began to shew itself on the outside of the right cheek; this in a few days extended itself over the whole of that cheek, which now became quite black; and all that side of the face became mortified from the inferior edge of the lower jaw to the orbit of the eye, and as far back as the ear.

The eye was destroyed, and the face so distorted by the tumefaction on that side, that the countenance was a spectacle too shocking to behold. Liquids taken in by the mouth were discharged through the cheeks. He never lost his senses after the relapse, and took every day more than a bottle of Madeira wine, besides porter, brandy punch, cider, and as much liquid nourishment, as when well. The gums were sore from the calomel; but he expired on the twentieth of January, about the fourteenth day from the return of his disease.

Third. E. E. was seized on the twentieth, with the same disease, under similar symptoms. Calomel in small doses was given him, and as he could, neither by force nor persuasion, be induced to take any other, the case was trusted to this medicine alone, excepting the application of blisters to the nape of his neck and behind his ears; his mouth became sore, and he recovered, after a large abscess behind his right ear, which suppurated and healed kindly.

Fourth. E. aged ten, was at about the same time taken sick. She was immediately put under the use of mercury; and being speedily removed into another house, rapidly recovered, after having taken only half dozen pills, containing each one grain of calomel.

Fifth. Eliza E. during the chief part of the illness of her brothers and sisters, had laboured under leucorrhœa so profuse, as extremely to debilitate her; and had, in consequence, been confined, part of the time, to her bed in the same room with one of the sick; but as she made no great complaint, she was not particularly attended to; and there was no suspicion of her having any other disease till at an advanced period, when she first became the object of medical attention.

On the first examination were discovered, on her feet and legs, large petechiæ with elevations of the cuticle filled with a black sanious fluid. The whole surface of her body was covered with vibices, and black stripes in various directions. Her pulse was very small and quick, with coldness of the extremities.

In a few days she became delirious, screaming as if in extreme pain, but incapable of pointing out its seat. Her face early began to swell, and was of a cadaverous hue. The discharges from the bowels were black, putrid, and highly offensive. Swellings of the face and abdomen alternated with each other. She received very little nourishment, and scarcely a particle of medicine, it being impossible from her delirium and state of the stomach to get it down; and she died the last of January. The body became yellow after death, and putrefaction advanced with unusual rapidity.

Sixth. Sarah E. had scalded her feet a little before her eldest brother Thomas had sickened, and was confined in the chamber unable to walk, being carried to and from the bed. She lodged with one of the sick children, until the death of her sister Eliza. Notwithstanding her breathing the contaminated air of the sick chamber, so long as the sores discharged,* she continued in health, with a great appetite, and slept as well as the groans of the sick and dying would permit. The sores healed, and she immediately became sick. She was removed to a house at the westerly part of the town, and was directed to take the calomel. This she pursued for three days with evident advantage, though no ptyalism was produced. A blister was applied to the nape of the neck, and she appeared to be on the recovery.

* Dr. Carmichael Smith, on jail fever, observes, that persons who have issues are seldom affected by contagion, p. 48.

On the 30th of January she was sent home to her father's family. On the 31st I visited her, and the symptoms at this time were a hot and dry skin, pulse 140 in a minute and very small; tongue covered with a fur perfectly black; breathing remarkably good, and slower than in the common ratio to the pulsations of the heart: this organ performed rather more than four systoles at a single complete act of respiration; but a troublesome cough at times interrupted these functions, and she for some days expectorated very freely; but nothing more than a yellow mucus was thrown off the lungs.

February 1st. Symptoms nearly as yesterday. The cold ablution had been proposed, but on account of the increase of the cough the tepid was preferred. She had muscular strength enough to enable her, with a little assistance, to walk to the fire, where she was placed, naked, in a chair, and was sponged with vinegar and water, which afforded her much refreshment, and brought on a moisture upon the whole surface of her body. She was ordered to take a table spoonful of diluted muriatic acid made pleasant with conserve of roses, every hour. Pulse 135.

2d. The ablution was used much colder than yesterday; passed a comfortable night, and had an universal moisture.

3d. The muriatic mixture produced vomiting; it was therefore suspended, and the haustus salinus, in doses of a table spoonful every three hours, was substituted, which kept the bowels open. The

sponging was directed to be used entirely cold, this evening.

4th. Had a restless night; increase of cough and heat. Pulse 145; medicine continued.

6th. Symptoms the same; complained of a pain in the back of her neck; had a blister to the part. The fur on the tongue beginning to cast off; drank freely of wine. A delirium having come on in the course of the day, she had her head shaved, and a blister on the part.

8th. Had a good night—A diarrhœa having taken place, an anodyne was directed, and the haustus salinus and muriate mixture, alternately, through the day. Urine extremely turbid, with a whitish sediment; stools yellow.

9th. Diarrhoea continued; urine and stools bloody; pulse 140. Prescribed tincture of cinnamon, and the muriatic mixture.

10th. Worse in every respect; total loss of strength, and delirious at night. Tongue covered with a yellow fur.

11th. All the symptoms aggravated; pulse 148, scarcely to be counted; skin hot and dry. Directed the hands, arms, breast and neck to be frequently washed with cold water; and ordered her to be placed on the sacking of another bedstead, and washed all over with cold water; then to be replaced in her bed, and the re-action promoted by universal friction. Cold water allowed for her drink with as much ice, which she was fond of taking, as she could dissolve in her mouth. Two spoonfulls of

Huxham's tincture were given every hour, and as much wine as she could be prevailed on to take.

12th. Pulse too quick at night to be counted; in other respects apparently better. Urine discharged without blood.

13th. Passed a quiet night; pulse 120; respiration 32 in a minute. Cold ablution ordered to be used every day; heated parts to be washed occasionally with cold water. She had two alvine discharges of proper quality; moderate perspiration. Ordered the tincture of bark every hour. At night respiration difficult from stricture; changed the bark for muriatic mixture, which immediately relieved it.

14th. Had a restless night with delirium; fur on the tongue; pulse 120. Continued the muriatic mixture, which invariably produced a moisture when from use of the bark the skin had become dry, and obviated costiveness.

15th. Pulse 140, irregular and intermittent. Had a bad night; could not be persuaded to take the medicine; fur on the tongue increased; no perspiration.

16th. Pulse 140. She was more restless, but less delirious; was extremely deaf. The weather being excessively cold, and the cutaneous heat much diminished, the ablution was discontinued. She had an appetite for animal food, which was allowed her.

17th. Had a good night; was stronger; walked from the bed to the fire. Pulse 130, very small; tongue became clean; urine deposited a favourable

sediment, respiration perfectly easy; skin moist; cough subsided. Took wine and bore the cinchona; was indulged in animal food more largely.

20th. Gradually recovered; had a number of very large and painful phlegmons on her back and arms, which suppurated slowly. From this time her strength increased, but the pulse continued very small and frequent, and on the 14th of March it was 110.

No calomel was given to this patient after her relapse. The case was considered as desperate from the beginning, as an instance of recovery with so bad a pulse had scarcely ever been known; and it was supposed, that there was not vitality enough remaining to admit of any advantage from this medicine; the strength appearing to be almost totally exhausted.

I have never seen a more fair experiment of cold affusion than in this; and in every repetition where the heat was great and the skin dry, the relief was great.

Cases more completely malignant had seldom been known in this place. That the disease was contagious, was strongly suspected by many, from the number of persons attacked in the family. One of the relations who had assiduously employed herself in kind offices at the sick beds of those who had died, was seized with the disease, and shortly after died. Yet it is a fact, that other persons, who were constantly in the infected chambers, escaped; but every precaution was made use of to prevent the contamination of the atmosphere; the walls of the house

were white washed throughout; the floors and wainscots scoured; and fumigations employed to purify the air.—Every part of the house was searched; but no probable source of the mischief could be discovered.

Remarks. 1st. This disease was totally different in its character, from what is called the yellow fever; for it was generated in the coldest weather, whereas yellow fever ceases on the approach of frost.

2d. It was in most of its symptoms correspondent with the jail, hospital, or camp fever, which is known to be the product of animal action, or the altered excretions of the human body.

3d. Calomel, in doses comparatively small, had a beneficial effect in two cases as a general, or (as it has been called) an alterative medicine.

4th. The running from the sores of the patient, who was scalded, doubtless prevented her receiving the infection as long as that discharge continued.

5th. The cold ablution had a favourable effect, when the heat of the skin was considerable; but after that subsided, ceased to be useful.

6th. The muriatic acid had a remarkable effect in opening the bowels, promoting perspiration, and probably in checking the hemorrhage from the intestines and urinary organs.

7th. Abcesses, which did not take place till the convalescent stage of S. E. were the consequence of increased energy in the vascular system.

In June, 1804, in a family living in the neighbourhood of the mill pond, a fever of the same kind which had so frequently in years past made its

appearance at the southerly part of the town near the flats, commenced in the person of Mr. R. H. He was seized on the 8th of June with slight chills, and other symptoms, as usual in this disease. He had pains in the head, back and limbs; hot and dry skin, pulse small and frequent, tongue covered with a yellowish fur. He was affected with uneasiness at the præcordia, a slight degree of nausea and constipated bowels.

An emetic of calomel and tartarized antimony was first prescribed for him, which produced evacuation upwards and downwards. On the tenth, pills of calomel and opium, consisting of two grains of the former, and one quarter of a grain of the latter, were given him every four hours. Antimonials were ordered between these doses. Calomel with jalap was given at intervals of two or three days, to prevent accumulation in the intestinal canal, and evacuations of bilious or fæcal matter were produced.

The symptoms increased very gradually, till the 13th, when the distress in the abdominal region became alarming. A sense of heat in the episgastrium, and tumefaction of the whole abdomen now constituted the prominent features of the case. The pulse became daily weaker and more frequent, the tongue more furred and of a darker colour, with irritability of the stomach.

Mucilaginous fluids were injected into the rectum, and sometimes those which were more stimulant, but they produced very little effect. The abdomen became exceedingly tumid, especially

about the region of the stomach, with great tenderness of the part.—The mouth had become slightly sore from the calomel; but as the symptoms increased, this affection subsided, the pulse still smaller, the respiration more difficult from the distension of the abdomen, and scarcely any diaphoresis could ever be produced. Tonic and stimulant medicines, the bark, snake root, ether, and wine were freely administered. A blister was applied over the whole abdomen, which vesicated properly, but without relief. The tongue became darker, the strength exhausted; and on the 18th, dissolution ensued.

A NURSE in the family, two children of the deceased, his wife, and her brother, were seized with similar complaints; and with a few doses of evacuant medicines readily recovered, excepting Mrs. H., who was taken on the 1st of July, after the others had recovered. She was treated in the beginning much in the same manner as her late husband; became extremely ill with similar symptoms, excepting the distress and swelling of the abdomen, and did not become convalescent till near the middle of August.

3d. MRS. C., mother-in-law to Mr. H., who had visited the family, was seized with this fever on the 24th of July, was evacuated in the beginning, took opium and calomel; had a sore mouth; was better; relapsed, and died on the 5th of August.

4th. MISS W., niece to Mr. H's father, having visited in the family, was taken sick on the 29th of July, and was treated much as the last. She became delirious about the third week, had the most unfa-

vourable appearances, till towards the latter end of August, when she began to mend; and after several weeks recovered.

Within the abovementioned period, about as many as fifteen persons, who had communicated with each other, were taken sick, but most of them slightly, and were restored to health, chiefly, by moderate evacuations.

Dissections. The body of Mr. H. was examined. Immediately on opening the abdomen the tumefaction was discovered to be formed, principally, by air, not contained loose in the cavity of the peritoneum, but in the transverse division of the colon, near the convex and anterior edge of the stomach.—An immense quantity of fœtid flatus was discharged from this intestine, which on examination was found to be highly inflamed, with its coats thickened, and slightly adhering in some parts to the peritoneum.

The stomach was found, in that part of it nearest to the intestine, to be in a small degree inflamed, the liver of a colour somewhat bordering upon red, but all the other viscera in their sound and natural state.

In this case, the existence of a local organic disease was the reason why the soreness of the mouth so suddenly subsided; for the difficulty of keeping up a salivation is, undoubtedly, proportionate to this affection.

SECT. II. YELLOW FEVER IN BOSTON.

THE yellow fever, which made its appearance in 1798, had never been known as an epidemic in the town of Boston till that period.

THE first case, which was suspected to have been of this nature, presented on the 17th of June, after a long continuance of hot and dry weather. About the middle of July three young men were seized with it within three days of each other, and all died.

THESE were chiefly persons, whose daily employment led them to pass the greater part of the day in stores near the easterly shores of the town.

THROUGH the remaining part of July, and the whole of August, the atmosphere was so calm, that the smoke was seen by the inhabitants of the adjoining country constantly hovering over the town like a cloud, with scarcely the least apparent motion for near six weeks, a part of which time the heat was extreme, from 72° to 96° Fahrenheit.

THE disease continued to rage with violence in the neighbourhood of the docks and wharves at the eastern and southeastern borders of the town, and on the southerly side of Fort Hill, until about the middle of September. From that time it began to abate, and by the end of October, after rains and frost, altogether ceased.

No persons could produce any evidence of importation of the disease. There was no instance of its being communicated from those who removed

out of the sphere of its supposed origination, viz. the docks, declivity of the hill, and flats, of the shore, or places where large quantities of putrifying raw hides from the West Indies and the Cape de Verd Islands, together with spoiled beef in barrels, and pickled fish, had been stored.

The symptoms of this disease were much in the form of that described by Dr. Rush, which prevailed in Philadelphia, in 1793. The number of the sick has never been accurately estimated; but about one hundred and forty-five persons died. Most of those who were seized within the first two or three weeks died.

The bodies of several of the deceased were examined, and the liver, lungs and stomach were found to have been highly inflamed, the veins being excessively turgid with black blood; and in one instance the thorax contained a large quantity of blood extravasated from the ruptured vessels of the lungs. After these dissections, several of the practitioners in the town, convinced of the congestion under which those organs laboured, adopted a much freer use of calomel than had heretofore been practised; and the success of the method appeared to justify the means. Candour requires us, however, to mention that the greater number of recoveries in the latter part of the season, was not to be imputed, solely to this improved mode of treatment, but in a great measure to the mitigated form of the disease.

Calomel was usually prescribed, after bleeding and a purge in doses of two or three grains every

two hours, till the mouth became sore; upon which the disease invariably gave way;—in many persons, however, this could not be accomplished. In some cases of salivation, dangerous hemorrhages ensued.

E. S. was seized with common symptoms. After the usual evacuations, he commenced the use of calomel in pills, combined with about one quarter of a grain of opium. Though the symptoms were among the most violent I had ever seen, and the case was as hopeless, yet when salivation began to manifest itself, which was on the 4th day, the disorder submitted. A very copious ptyalism greatly added to the debility produced by the disease; and on the third week a very alarming hemorrhage took place from the gums.—Cinchona, red port wine, the vegetable and mineral acids, cold water, ice, astringent and styptic applications to the part, compression with sponge, sulphur, with other laxative medicines, and every possible attention that could be afforded, had very little control over the bleeding, till from mere exhaustion, after about eight or ten days continuance, it altogether ceased; and within a day or two he expired.

One other instance of dangerous hemorrhage from these parts fell under my care, but easily yielded to the remedies above mentioned.

Although many of the towns and cities of the more southern states had been visited with this terrible calamity, the town of Boston had been exempt, since the first invasion of the disease, till 1802, when it again made its appearance with all the circumstances of its former malignity.

The first person attacked with the yellow fever in Boston, in 1802, was H. K. Hall, who lived at the bottom of Summer street, near the head of Tileston's wharf.—He was taken on the 25th of July. His symptoms were of the most acute kind. He died on the 29th. The second was Hannah Fessenden, who lived in a house near the former. She was seized about the same time with Mr. H. with violent pains whilst employed in washing. She died on the 30th.

Mrs. Fessenden, her mother, living in the same house, was taken August 1st, and died on the 6th.

B. C. sister to Mrs. F., living also in the same house, was taken a few days after and died on the 10th.

Mr. Howard was seized much about the same time; was removed from his house to the hospital at Rainsford's Island, and died there.

All the other persons who were seized with this disease, lived within two hundred yards; most of them within one hundred yards of the house, in which the disease first appeared. Eleven persons are said to have died out of Mrs. Fessenden's house.

I know of no instance where it extended to the northwesterly side of High street. Of the eleven persons who were first seized, I do not know that one recovered. The whole number to whom it proved fatal, was about fifty. Many persons who visited the sick from motives of humanity, were said to have taken the disease.

I had no opportunity of seeing the earliest victims of this disorder. The following cases exhibit the

general form of the symptoms in such of the sick, as fell under my particular care. The subject of it lived in a small, double, one story wooden house, in High street, about fifty yards from Fessenden's house. In the adjoining part of it, one or more persons had died with the black vomit; one of these I had seen whilst expiring with this symptom, about the 3d or 4th day of the disease.

On the 26th of September, F. G. was seized with violent pains in his loins, legs, and after a few hours, in his head, particularly his forehead. His eyes, from the beginning, were remarkably red, his skin hot and dry, with a burning pain at the scrobiculus cordis; his pulse hard and full, but not remarkably frequent; stomach extremely irritable and incapable of retaining any thing, unless given in the smallest compass. His respiration was laborious, with every mark of violent excitement.

Fifteen grains of calomel, and twenty-five of jalap were given him, which operated favourably. On the 27th, all the symptoms were aggravated with indescribable agony, he had slept none through the night, and became delirious. Eighteen ounces of blood were then taken from his arm, and some relief was procured. The pulse was, in some degree, softened. The blood, on standing, exhibited a buff. A pill, consisting of one grain of calomel, conjoined with opium, was given every hour, night and day, whilst the stomach continued irritable.

28th. Distress somewhat mitigated. As the calomel was retained by the stomach, and discovered no

tendency to pass off by the bowels, it was continued without the opium.

29th. Pain less violent; a considerable degree of diaphoresis in the course of the night; pulse still somewhat hard, but less frequent. Pills continued.

30th. As yesterday. His skin at night assumed a dingy cast. The pills were given, not exactly every hour, but so as to get down the twenty-four grains in the day and night. Very little or no soreness of the mouth appeared.

October 1st. Pulse much sunk, now exhibiting, but not before, the character described by Dr. Rush and others, as particularly connected with this disorder. On slight pressure with the finger upon the artery, the pulsation ceased. At night, a small degree of intermission and coldness in the extremities, with clammy moisture, ensued.

2d. Delirium, black vomit, with no further appearance of the action of the mercury on the mouth, and a total loss of circulation in the radial artery. Disorder terminated in death, on the latter part of the day.

Second. On the 2d of October, I was called to visit a lad, aged seventeen, in the family of Mr. Arthur Fessenden, in High-street. He had been in daily employment in a store near the house of Mr. Fessenden, first mentioned. He had the usual symptoms, with a pulse hard, more frequent, and less full, than F. G. He was ordered a brisk cathartic of jalap and calomel, which operated moderately, but gave

him much relief; in consequence of which he slept well at night. The skin was of a yellowish hue.

3d. The evacuations from the bowels not having been so complete as had been wished, the jalap and calomel were repeated with better success than yesterday. The pulse continuing frequent, hard, and small, he was ordered three grains of calomel every three hours.

4th. Symptoms somewhat abated; pulse slower; soreness of the mouth appeared at night.

5th. A copious ptyalism; all the symptoms much abated; pains almost left him.

6th. Pulse smaller, but less hard; extreme debility. A hemorrhage from the gums took place, and he lost about half pound of blood in twenty-four hours.

7th. Hemorrhage continued to give much trouble to himself and physician. Cold water, the bark, and elix. vitriol, internally; and topically, allum, vitriol, cerul. and a variety of other styptic powders were prescribed with little effect. The bleeding continued for several days, and greatly reduced him; but, by large use of the above remedies, with port wine and suitable support, he was enabled to surmount it, and became gradually convalescent; but did not recover his strength under many weeks.

Third. Mrs. W. was visited on the 7th of October; was in the second stage of the disease; had a quick, irregular, sinking pulse, with coldness of the extremities, a clammy sweat upon the whole surface, with vomiting of dark matter, and every signal of approaching dissolution. Calomel was used imme-

diately, in doses of three grains, every three hours. At first it passed the bowels; but, being conjoined with opium, was afterwards retained. A slight degree of soreness took place in the mouth within thirty-four hours. As the soreness advanced, her pulse became fuller, more distinct, and connected; a genial warmth returned upon the surface, with a natural humidity of the body and limbs; and the pills were omitted. No ptyalism took place; bark and wine were freely administered; and by the 20th she had entirely recovered.

Fourth. Mrs. M. was seized on the 6th of September, with violent pains, accompanied with incessant vomiting, which prevented her retaining the calomel or any other medicine. A blister was applied to the stomach without the least effect. Her pulse sunk on the second day; her extremities became cold, and on the 10th she died.

Fifth. M. R's. wife was seized on the 6th; was, when visited, in the second stage of the disease, with symptoms very similar to Mrs. W's.; but by no means in so alarming a degree. She pursued the same course, and recovered slowly.

The source of this disease was not satisfactorily accounted for. Discordant testimonies and contradictory opinions were, as usual, advanced upon this occasion.—Some alleged that it was from contagion, imported in the schooner Fair Attempt from the West Indies; others contended that it arose from filth, consisting of putrid animal and vegetable substances, collected near the wharves or in a cellar in the neighbourhood of the place where it commenced.

WHILST mercurials have been considered as particularly applicable to diseases of *contagion*, in fevers of *local origin* their efficacy has been denied.

As this is the second time the yellow fever has been known in this town, I shall on this occasion make some inquiries into the causes from which it originated, and endeavour, as great doubts have been entertained on the subject, to ascertain whether importation or local impurities are mostly to be guarded against in our police regulations.

THE schooner Fair Attempt arrived at the quarantine ground on the 16th of June, in twenty days from Port au Prince.

BEFORE her departure, Mr. S. B. had been taken sick on shore; came on board and lodged one night, and then went on shore again.

P. B. WAS seized seven or eight days before the vessel arrived, and recovered.

NO other person had been sick, till she had been out about fifteen days, excepting Capt. Crawford, who had been confined with the rheumatism.

J. N. BECAME sick after the schooner came on soundings. He died on board with black vomit.

P. S. WAS taken sick the day before her arrival; and died on the third day from his seizure.

DURING quarantine, according to the report of Dr. Welsh, the port physician, the utmost care was taken to have every part of the vessel thoroughly cleansed; every source of infection was supposed by him to have been searched out and expelled.

ON the 4th of July she was released from her quarantine, and came up to town, to the head of Tileston's wharf.

A NUMBER of articles, such as curious shells, corals and sea-fans were brought in the schooner. Mr. H. K. Hall went into the hold of the vessel for some of these articles. It has been stated, that some of the clothing on board had been delivered to Hannah Fessenden and Nancy Smith to wash, which they accordingly did; and, that two persons, Mr. C. and Mr. D. (to whom some other articles had been committed, and by whom they were buried on the 10th of August,) complained of a very offensive smell from them. And a very intelligent gentleman, to whom I am indebted for much of my information on the subject, heard one of them say, two days before the seizure of Hannah Fessenden, that he had taken those clothes which were left with her, and buried them. But Mr. Anderson, the mate, informed me, that he had been a boarder at Fessenden's house before the voyage, and a lodger there after the arrival of the shooner; that, to his certain knowledge, Hannah did not wash any clothes that had been on board; that all those which were on board, were washed before, excepting what were contained in a chest, which was placed in a store in another place, and which was not opened till after the fever was over; and, that the clothes of those who died, were all thrown overboard. The clothes found at Fessenden's, and buried by Mr. Davenport, were Mr. Anderson's own clothes, some of them new, which had been left by him before he went the voyage, and had never been used out of Boston.

It appears, that Mr. Hall, the first person seized in the town, was taken sick not till twenty-one days after the schooner's arrival at the wharf. Mr. D. was seized about twenty days after he buried the clothes. Kendall was taken immediately after conveying down Hall's bed from the top of the house. H. Fessenden was seized in the act of washing some clothes.

Difficulties on the hypothesis of importation readily present themselves.

1. Contagious disease, it is believed, has not been known to exert its influence so slowly on the habit, as to produce no tokens of indisposition within twenty days from infection, as must have been the case if D. took it when he buried the clothes.

2. But supposing this to be possible, under certain circumstances, yet, nature is too uniform in her operations to admit of so great a disparity in this respect, as the statement presumes. The infection in R. and Mrs. F. being supposed to have produced an almost instantaneous operation.

The flats in the vicinity, on which a very hot sun had been for some time exerting a very powerful influence, and promoting putrefaction in the large quantity of dead vegetable and animal matter which they retained, will by some also be believed to have originated the disease.

The circumstance of its prevalence in the same neighbourhood in 1798, when the disease, I think, was proved satisfactorily to have been indigenous, is favourable to the hypothesis of local generation. A solution of the question, whether the disease was

contagious or not, would go far towards deciding this important inquiry.

Mr. J. Tilestone, jun. who had been seized with the fever in Boston, was removed to Dorchester neck, where he died on the 25th of September.

I am informed, that a Mr. Loring, belonging to Hingham, visited him while there, and though he had never been in Boston since the commencement of the fever, he was shortly after taken sick with it; but recovered.

In opposition to the inference naturally to be drawn from this fact, it is to be observed, that no case of the kind appears to have taken place in Boston. There were many instances, wherein persons were removed to other quarters of the town; and, as was remarked in 1798, the attendants on the sick, if not exposed to the same original sources of atmospheric influence, were never infected.

I visited Mrs. B., who, as noted above, was removed to a house at the foot of Broomfield's lane; found her labouring under all the symptoms of the most concentrated form of yellow fever; and saw her expiring under every mark of its most aggravated malignity. The house was filled with numbers of people, who had no suspicion of the nature of her complaint, till within a few hours of her death; and yet, not a person was infected by her.

Upon the whole, it would be but candid to observe, that the circumstances of the disease at this period, afford more plausible support to the belief of importation, than any other that has occurred within my observation. But importation of a disease, which

is incapable of propagation, is so unsupported by any reasons founded on study, that the strongest evidence only would justify us in subscribing to it.

No physicians were attacked with the disease, and very few of the nurses.—I knew several that attended through every stage of the disease, performing all the offices of humanity and affection, without the smallest degree of complaint.

That a disease of this kind may sometimes be taken by visitors to a newly arrived vessel, especially from the hold, cannot be doubted. Epidemic disease must originate somewhere. Extreme heat, confinement of air, impurities, and a variety of other causes, may generate it any where. What place is more likely to be the seat of these causes, than the hold of a ship long closed, exposed to extreme heat through a long voyage, with, perhaps, much impure matter for the heat to operate upon? The visitor on board will be more likely to be infected than one of the crew; for it is an established fact, that persons who are exposed to the gradually increasing action of any noxious cause, by a certain accommodating principle of the animal œconomy, attain a habit of submission to a new mode of action from the morbid stimulus, and escape without injury, whilst others are speedily destroyed by its influence. Strangers in the tropical climates are, commonly, almost the only victims to their most malignant fevers.

Yellow fever, I have no doubt, has often originated in this way; but in the same way it may, and I believe often does, originate also on shore; wherever certain combined causes, such as heat, an extremely dry

air, and many other means, which are perhaps too abstruse and occult for human investigation, are brought into action.

Dr. Cullen admits that in some circumstances, contagion of a different nature from that which is permanent and constant, is occasionally generated.

But this source of fever is a very different thing, from what is usually implied in the term importation, which is commonly used to signify the introduction of a specific matter of contagion from a foreign place, where it had existed in the form of an altered secretion from the human body.

The confounding of these two ideas, it is apprehended, has been the source of much disputation and obscurity, in disquisitions on the subject. It is perhaps even possible, that an infection derived from the first source may be in a degree contagious; and that others, than those who have had direct access to it, may become diseased.*

* Not aware of the limited extent of contagion in general, and especially of that of yellow fever, if it possessed it, in the year 1798, whilst exposed to extreme fatigue and breathing almost incessantly an atmosphere highly charged with noxious effluvia from the bodies of the sick and dying, I had for several weeks whilst the fever was at its height taken a grain of calomel every day. This quantity was sufficient to keep up a constant soreness of the gums. I never felt better in my life than whilst under the action of this gentle stimulus, and never had the slightest complaint during the epidemic.

The prophylactic power of the mercury is, I think, indisputable.

PART IV.

SECT. I. SMALL POX.

The custom of giving mercury in the small pox probably originated from certain circumstances of analogy between the known effects of this medicine on the salivary glands, and the mode in which nature has been observed to promote recovery in this disease: it has been generally found, in fortunate cases, to terminate by spitting. Dr. Cleghorn has exhibited a detail of cases, in which the cure was attended by spontaneous salivation.*

This fact, which had been early noticed by writers on the subject, naturally suggested the experiment of mercurial medicines, by way of co-operation with the efforts of nature to produce a crisis in this form.†

Among the early advocates of this practice was the illustrious Boerhaave, who with a kind of prophetic sagacity, conjectured, that mercury and antimony would be adopted as antidotes to the virus of small-pox. Van Swieten, his commentator, observes, that

* Epidemic diseases of Minorca, p. 295.

† Huxham, Mead, Cullen, and Tissot, encouraged salivation in small-pox. Hoffman observes, that such medicines as attenuate saliva and promote expectoration, are of advantage in malignant fevers, for scarcely any die who spit freely.

several persons had availed themselves of this hint, and given calomel with success; and Dr. Huxham, in 1724, suggested the expediency of a similar method.

From having been supposed serviceable in natural small-pox, it readily passed into use as a preparative for inoculation. Soon after, the American and European physicians thought proper to adopt it; and to no one was Europe more indebted for information on the subject, than Baron Dimsdale, who has laid down the course which he pursued himself, and which he strenuously recommended to others. The form, in which he used the medicine, was that of calomel; and he combined it with tartarized antimony, in the proportion of eight grains of the former to one-eighth of a grain of the latter, together with some testaceous powder equal in weight to that of the calomel.* A cathartic of jalap and calomel was given several times during the preparation.

In case of inoculating a woman with a child at the breast, the mother was ordered to take three doses of the above powder, consisting of two portions equally divided into that number; and in the intervals between them, the child had from one and an half to three grains of the same, followed by a gentle purgative the next morning.

In 1721, at the instance of Dr. C. Mather, one of the principal ministers of Boston, the inoculation

* This was given in different doses, at intervals of one or two days, and was continued eight or ten days previous to inoculation.

for the small pox was introduced into New England by Dr. Boylston,* and was at about the same time adopted by the physicians of Great Britain.

It does not, however, appear, that the use of mercury was in either country much resorted to in the early periods of this practice; but was afterwards adopted from its supposed efficacy first experienced in natural small-pox.

The earliest traces of it may, perhaps, be found in the forementioned dissertation on inoculation, published by Dr. Benjamin Gale, of Connecticut, in New England, wherein he says, it was first used in the American colonies in 1745; and observes, in support of its utility, that, whereas before this period one of a *hundred* died; by inoculation, only one of *eight hundred* died afterwards.

Dr. A. Thompson, June 26th, 1760, published, in Pennsylvania, his treatment of small-pox by inoculation, by which it appears to have consisted principally of calomel, from four to ten grains for an adult, and from one to three for a child, made into a pill, and given three times after inoculation, each dose followed by a purge.

At whatever period this practice was first introduced into New England, it is certain, that great confidence was placed in it; but it does not appear to have been generally given with any intention of producing

* Of five thousand eight hundred and eighty-nine who took it in the natural way in Boston at this period, eight hundred and forty-four died. Hutchinson's Hist. Massachusetts, p. 249.

salivation; and was rarely used in quantities sufficient, unless by accident, in any degree to affect the mouth. Four or five pills only of a grain of calomel were given in the course of the preparation; and, though this method was generally attended with two or three purges, and a spare diet, yet the principal reliance was upon the calomel, which was considered as the indispensable requisite for procuring a favourable species of the disorder under inoculation, and of mitigating the violence of the disease when taken in the natural way.

It would have been considered as presumptuous, and next to the crime of suicide, in any one to have exposed himself to the infection without this, as it was supposed to be an all powerful antidote to the variolous poison.

In 1752, the small-pox spread through the town of Boston, when the number of inhabitants amounted to 15,734. Of this number 5,544 had the disease in the natural way, and 514 died. The whole number inoculated was 2,113, of whom thirty died; and, as I do not find that mercury was at this time used in the disease, it may form a subject of comparison with the success which attended the subsequent practice.

In 1761, when it became epidemic in this town, it appears that mercury was considered as a proper preparative for inoculation.

In 1764, when it was again prevalent, it constituted, as was supposed, a necessary part of the process; and the success was said to have been un-

commonly great, in consequence of the treatment in the new method.

When it prevailed in the army and elsewhere in 1776, 1778, and 1780, moderate quantities were given to the citizen, whilst much larger were thought necessary for the soldier.

The efficacy of a medicine, on which so much stress has been laid by the majority of practitioners, in inoculation for small-pox, ought not to be admitted without some examination into its merits.

If it had appeared, that the success of the modern treatment was dependent, rather on what had heretofore been considered as the auxiliary means, than on the supposed specific, it would have greatly contributed towards reducing the preparation to a more simple form, and rendering it more safe and easy to the patient; and, till the prejudices still subsisting against the preventive power of the vaccine disease shall be extinct, it may yet be of some consequence to ascertain the point.

Many circumstances might be adduced to disprove the specific action of mercury in this disease.

The Suttonian inoculation was first practised in England in 1757. It consisted in the cooling regimen, probably founded on the principles of the immortal Sydenham, who had considered the small-pox as an inflammatory disease, and had recommended cool air and antiphlogistic diet.

Though mercury was certainly used in this method; yet there is no evidence, that it was prescribed with an intention of producing what is called

an alterative effect, but only as a cathartic, in combination with other medicines of that class.

The success therefore undoubtedly depended in a great measure on the antiphlogistic process with which it was accompanied.

In Jamaica, according to the testimony of their physicians, mercury is much more active than in colder climates, 6 grains of calomel often producing salivation. But it is a fact, that in 1768 the blacks in that island were sometimes inoculated without any mercurial preparation, and for the most part did well.

In 1783, an inoculating hospital was established at Point Shirley, in the neighbourhood of this town. A considerable number passed through the disease at that place, and with the usual success, although this medicine was used in much smaller quantities than had before been in fashion, the children, especially, having taken scarcely any.

The last time it became epidemic in Boston, in 1792, it was prescribed rather for form's sake, than from any reliance on its specific action; it was often entirely dispensed with in young subjects; or when given, intended rather as an anthelmintic, than alterative. In this view only it was serviceable, as by destroying worms it sometimes prevented those alarming symptoms, which often occur in the course of the small pox from those animals.

Nine thousand one hundred and fifty-two persons passed through it at this period. Subjects of all ages and conditions were submitted to the operation,

and one hundred and sixty-five died, chiefly children.*

The mortality, if greater than usual, is justly assignable to a variety of causes which had not before existed in so formidable a degree.

1. The number of subjects was much greater than usual.

2. These were chiefly children of the poor.—Those, whose circumstances admitted, had generally sent their children to the neighbouring hospitals for inoculation. Those which remained were, therefore, generally in low circumstances. Whole families were often crowded together in single rooms, where fires were constantly kept up for the purposes of cooking, and the patients were destitute of most of the comforts of life, with very little personal attendance, from the disproportion of nurses to the numbers of the sick.

3. The whole town was inoculated in the course of three days, owing to the infatuation of the inhabitants with respect to the danger of infection, founded on a preposterous notion, that so soon as any person had been inoculated, the whole neighbourhood were endangered.

The consequences which ensued constituted a scene of confusion and wretchedness, which no one, who was a witness to it, could have viewed without horror and commiseration.

* At the same period two hundred and thirty-two had it in the natural way, thirty-three of whom died.

The population of the town at this time amounted to about 20,000.

It is to be hoped, for the cause of humanity, that the inhabitants of Boston will never again experience this calamity; as they have it now in their power, by embracing the means which heaven as put into their hands in the vaccine inoculation, to secure themselves forever from its desolating ravages.

SECT. II. MEASLES.

The measles about once in eight or nine years have usually visited Boston, and almost invariably, when they have once appeared, have prevailed till they passed through the town.

Some analogies in the disease would lead us to suspect, that mercury might be advantageous in the treatment of them. On inquiry, I have ascertained, that this practice has been adopted by one of the most experienced and respectable physicians in this commonwealth for many years past.

In answer to some queries, which I had taken the liberty to make to Dr. Holyoke of Salem, he informs me, that in the early stages of measles he has often made use of calomel, and has been convinced of its efficacy in correcting the secretions from the glands of the nares and fauces, which are so apt to keep up a troublesome cough and sneezing.

In the pneumonic and anginous symptoms, which so frequently accompany them, and which are perhaps the most troublesome and dangerous attendants of

the disease, he has great confidence in the exhibition of mercury, particularly in emetics of turpeth mineral, (yellow sub-sulphate of mercury). In young subjects he gave from 1 to 3 grains, after bleeding, if the case called for it, and would admit of it; and he found it to be one of the most efficacious medicines that could be employed for the purpose of dislodging the viscid matter with which the glands are apt to be surcharged, and of promoting expectoration. In the measles of 1783 he adopted this method, and the result was answerable to his expectations.

In elucidation of Mr. Hunter's theory respecting the prevalence of two constitutional diseases at one and the same time, the following case may be worthy of record.

I vaccinated a child about five years old. On the third day the arm exhibited the usual appearances of infection in the most favourable form. From this period to the fifth the incision became brighter. On the same day, the child who had for a day or two had a slight cough, complained of soreness of the throat and inflamed eyes; the redness of the incision began to subside in the same proportion as these symptoms increased, till at length it faded, as in cases where the system had proved insusceptible of the infection.

The measles then assumed the command of the system, and ran on through all their stages, without appearing to be influenced by any other operation, till they turned at the usual period, when the pustule began to resume its former redness, and thence regularly

advanced and terminated, having been protracted to a period several days beyond its common course.

This is a distinct instance of one disease taking full possession of the habit, and suspending the powers of another, without entirely subduing them.

This fact may furnish some limitations and modifications to the doctrine respecting simultaneous morbid actions, depending on the circumstance of specific contagion.

The diagnostics of measles in the access of the disorder, are often important in regard to the treatment to be adopted.

The common symptoms are so well known as to require no particular detail; but it may be of use to observe, that the eruption is almost invariably discoverable upon the velum palati, or roof of the mouth, sometime earlier than on the external surface of the body.

SECT. III. THROAT DISTEMPER.

The cynanche maligna, putrid sore throat, or throat distemper, as it has been called, made its appearance at Boston in the month of September, 1735, after a very cold and wet summer. It commenced in the May preceding at Kingston, in New Hampshire, an inland town, situated on a low plain.

The first person seized with it was a child, who died in three days. About a week after, three children in one family, at the distance of four miles from the first, were successively attacked, and died on the

third day. It continued spreading in that town, and gradually made its way, in the course of the summer and following winter, to Boston and many of the neighbouring towns, and did not cease till the end of the next summer. The whole of its extent was from Maine to Carolina. The subjects were usually children.

The symptoms, with which it was attended, were a pain in the head and back, soreness of the throat, and swelling in the glands of the neck; pulse frequent, but small and soft; the tonsils somewhat inflamed at first; the velum pendulum palati and uvula in the same condition, with whitish or ash coloured spots on their surfaces. Dr. Holyoke informs me, that, when it did *not* prove fatal on the second or third day, which it frequently *did*, it was almost universally attended with great erosion and excoriation about the fauces, inside of the mouth, lips and chin, and wherever the saliva was lodged; and these parts became covered with a white aphthous slough, painful and corrosive; even the extremities of the fingers, when they were besmeared with the saliva, were corroded. A sister of the doctor, about twelve months old, as he well remembers, lost the nails of the fingers from the acrid quality of the matter.

In these cases, calomel, given frequently and liberally (and young children, he observes, for the most part bear it remarkably well), was the only medicine which could be depended upon to stop the progress of the erosion.

A REMARK, offered by the doctor, that the cynanche has of late years appeared in a form somewhat different, in which the debility is too great to admit of a free use of mercury, is exactly correspondent with my own observation on the disease, as it appeared here within a few years past.

BUT it is further observed, when the angina is extreme, unless the prostration of strength is very great, an emetic of turpeth mineral given at, or soon after the attack, is frequently attended with the happiest effect, the stomach, fauces, and breast, being greatly relieved by the dislodgment of vast quantities of viscid phlegm. All copious evacuations were generally hurtful, especially bleeding.

THAT the disease in 1735 was not contagious, was the opinion of the physicians of that day. It had been supposed on its first appearance in Boston, to be nothing more than a cold; but when its mortality in New Hampshire was known, it spread the utmost degree of terror through the town and neighbourhood.

THE house, in which the first person was seized, was shut up; but it was soon discovered, that the persons, particularly exposed, escaped infection, whilst others, at a distance, in every quarter, who had no communication with the sick, were attacked by it; the attendants on the sick did not take it, and in no instance was it conveyed by the clothes to the families of those who had visited them, but was supposed to proceed from an impure atmosphere.

THE number of those, who had the distemper in Boston, was four thousand, of whom, one hundred

and fourteen died, which is one in thirty-five. The whole number of inhabitants was, at that time, estimated at sixteen thousand. In the whole state, about one thousand persons fell victims to this disease.

In 1754 and 1755, it again made its appearance in some parts of Massachusetts and New Hampshire.

In 1784, it also spread through most of the towns in New England, since which time, it has never been generally prevalent in any considerable part of this commonwealth.

Sporadic cases have indeed frequently been seen in Boston; but, though sometimes extremely malignant, they have never become general.

In the month of January, 1802, some instances of extreme virulence occurred, and began to produce an alarm in the town; but a more specific epidemic, the measles, having made their appearance the latter end of January, the inhabitants were happily relieved from their anxiety, and the throat distemper was completely overpowered and subdued by this welcome substitute.

The first appearance of this disorder was about the latter end of December, 1801. The symptoms, in the beginning, were remarkable paleness of countenance, extreme weakness, pain in the limbs, slight soreness of the throat, a white tongue. On examining the fauces in this stage, the tonsils were not observed to be remarkably inflamed or tumefied, not nearly so much as in common sore throat from cold. On the second day an efflorescence usually commenced on the arms, neck, and breast, which gradually extended over the whole surface without any relief to

the patient. In some cases, the respiration was laborious. One instance assumed the form of a common cynanche tonsillaris, the breathing having been, from the beginning, of that hoarse stridulous kind, which often attends the most threatening species of this disease. The glands of the neck were much swollen. On the third or fourth day the efflorescence, in the more violent cases, assumed a deeper shade of red, bordering on purple; and in proportion to the cutaneous eruption was the danger of the disease.

At this period an aphthous coating was discovered on the velum of the palate, and on the tonsils. Gangrenous sloughs were cast off from these parts, so that the action of swallowing was much interrupted; a regurgitation through the nose ensued, whenever the attempt to get any thing into the œsophagus was made. On the fifth day the patient usually either died, or exhibited marks of amendment. In one case, however, the disease was protracted to the third week, and proved fatal at last.

In one instance the first stage had passed over, before any apprehensions of danger had been excited; and within twenty-four hours from the seizure, the extremities became cold, the pulse sunk, and was either extremely irregular or intermittent; petechial spots made their appearance over the whole body; and without much complaint in the throat, the patient died within sixty hours of the attack. Another case assumed nearly the same form, but in a less violent degree, and terminated in the same manner on the fifth day.

The prostration of strength was so remarkable from the beginning, the pulse so extremely frequent and small, and the tendency to putrefaction so obvious, that it was judged necessary to commence immediately with tonic and antiseptic medicines, sometimes however cleansing the stomach and fauces with an emetic of ipecac. Bark and wine were then prescribed in as large quantities as could be conveyed into the stomach, with elixir of vitriol (sulphuric acid) diluted with water; and in case of aphthæ or erosions of the tonsils and uvula, great advantage was derived from diluted muriatic acid applied with a small mop or sponge to the parts affected.

For the swellings of the parotid glands, nothing was so efficacious as the application of cold water, or vinegar and water, by cloths kept constantly wet with these fluids. The drinking of cold water was in some instances attended with the happiest effect. One patient, a child of one of my most intimate friends, recovered from the most desperate state of the disease by drinking, in the course of two or three days, several pails full, discharging most of it immediately from the stomach.

Blisters were sometimes used to the neck, and behind the ears, but never, so far as I could discover, with any advantage; on the contrary, by preventing or rendering inconvenient the application of cold water, they were decidedly injurious. The subjects were chiefly children, and adult females of weak and slender constitutions; and it was remarkable,

that the most malignant instances, were those of two young ladies, who died at an early period of the complaint.

MERCURY was not used in this disease for the purpose of affecting the glands, or of acting upon the system at large, but only in doses of three or four grains, combined with some auxiliary article, as a mild cathartic.

THE prevalence of what was called a putrid diathesis, and the marks of debility so predominant in the progress of the disorder, prevented practitioners from using this medicine, notwithstanding the advantages that had attended it in most of the former periods of its prevalence in the New England States.

IN the year 1773 it had been generally supposed serviceable; but the character of the disease appeared at that time to be different. The use of mercury in putrid diathesis was at least hypothetical; and indeed, strong prepossessions were entertained against it.* At that time an emetic, or a cathartic, if it operated briskly, was sure to be followed by prostration of strength and aggravation of symptoms.

THIS disorder had some appearance of being contagious. Whenever it attacked an individual of a

* Dr. W. Baylies observes that in throat distemper, (ulcerated sore throat) which prevailed at Dighton in 1785 and 6, mercurials were not found to be attended with the same advantage as when it appeared there fourteen years before. Communication to Mass. Med. Society, Number 1, page 45.

Dr. Rush used calomel in small doses, in all stages of scarlatina, anginosa, which appeared at Philadelphia, in 1783 and and 4, sometimes added a few grains of calomel to his gargles.

family, most of the children, and some of the adults were, within about six or seven days, seized with the complaint, unless immediately removed from the atmosphere of the sick.

It is not certain that any were infected by inhabiting different parts of the same house, provided they did not enter into the chambers of the sick; but the difficulty of constantly guarding against the communication in large families induced the physicians to recommend a timely removal; and in every instance where this was complied with, the infection was evaded. In my own family the distemper was discovered in the person of one of my children; and, having been a witness to the horrors attendant on its footsteps in the family of a friend, and apprized of the apparent activity of the contagion, I immediately separated the rest of the family by a removal into the country, and they avoided the disease.

The marks of this distemper, by which it was distinguishable from inflammatory sore throat, were the following:

The subjects of the first were generally infirm persons, especially females; of the latter the healthy and athletic.

The former disease, I believe, originated from contagion; the latter is known to arise from cold, and is sporadic.

The former was a constitutional disorder, was attended with vomiting or purging, acute pain in the back of the head, erysipelatous redness of the fauces and a scarlet eruption on the skin with quick and weak pulse; the latter was chiefly local or con-

fined to the throat with full and hard pulse and symptomatic fever.

The former became ulcerous with sloughs of a cineritious colour; the latter frequently terminated in suppuration.

SECT IV. CYNANCHE TRACHEALIS.

The croup, or cynanche trachealis has, I believe, been generally acknowledged to be an inflammatory disease. The antiphlogistic method of cure was, therefore, the usual mode of treatment; and since the admission of mercury into that class of medicine it has constituted a part of it.

Mr. James Anderson, of Edinburgh, some years since communicated to Dr. Duncan a number of cases, in which calomel (submurias hydrargyri) had been useful; and he expected it would prove as beneficial in England, as it had long since been represented to be in America; and by subsequent trials was confirmed in his opinion, that it ought to be considered as an efficacious medicine in cynanche trachealis.

In his later practice he has given eighteen grains in twenty-four hours to children three years old, in doses of two or three grains every hour, and in one more urgent case of a child four years old, forty-five grains within fifty hours. In no instance had it produced griping or hypercatharsis; and of seven children, to whom he had ordered it within two months, not one died.

He observed, that the mouth was never rendered sore, though moistened with viscid mucus.

Dr. John Archer, of Maryland, used mercury in the advanced stage of the disease freely and frequently; and thought that it assisted the stimulant quality of seneka in separating the membrane.

Dr. Rush, supposing the croup to be divisible into two species, denominates one spasmodic, the other humid; the latter only being attended with the lymphatic concretion which generates the membrane lining the trachea and suffocating the patient. In this he used calomel, and placed his dependence principally upon this remedy, prescribing it in a large dose as soon as the disease discovered itself, and smaller doses every day afterwards, till the symptoms disappeared.*

Mercurial medicines have been given in Boston, in this disease, in doses of six or eight grains at intervals of eighteen or twenty-four hours, and with great advantage; but the violence of its symptoms, and the rapidity of its progress is usually too great to admit of any constitutional change by the operation of this medicine.—That small doses, given with a view to change the habit, have comparatively very little effect upon children much under the age of puberty, is a fact, of which, from particular observation, I am fully convinced.—I have never known an infant to be salivated, notwithstanding I have given, in some instances, large quantities with this view.

* He observes, that the bark is scarcely a more certain remedy for intermittents than calomel, when thus administered in this species of cynanche.

Perhaps the mucus, with which the primæ viæ are so apt to be lined at this age, may prevent the medicine from entering the lacteals. And I have reason to believe that its action on the intestines is also proportionably weakened by this, or some other cause productive of the same effect, as I have generally found it adviseable to combine with it some more active cathartic to insure its operation.

SECT. V. HYDROCEPHALUS INTERNUS.

This disease has lately been concluded to belong to the class of pyrexiæ; and there is, perhaps, no disorder whatever, in which practitioners are so much agreed with respect to its treatment.

Calomel has for a long time been thought to be almost the only medicine affording any prospect of success. Whether it has ever effected a cure in real hydrocephalus internus, may, perhaps, without imputation of scepticism, be doubted. It is believed by some that the brain has no absorbent vessels. If this could be proved to be the case, it would readily account for the incurable nature of the disease.

Either physicians were formerly less acquainted with its diagnosis, or it has become more common of late years, and has accordingly afforded opportunities for more frequent dissection. Of children who were supposed to have died with it, I have opened a considerable number, and never met with any fairly marked instance in which the ventricles did not con-

tain a quantity of water, sufficient, as I should suppose, by its pressure to impair the functions of the brain. These cases had been attended with a full and somewhat hard pulse in the beginning; a pain in the head, with a constant effort to keep the hand upon the affected part: and, as the disease advanced, a dilated pupil, rolling of the eyes, slower pulse and respiration, obstinate constipation of the bowels, and swelling of the extremities.

In a case of a child aged six, one grain and an half of calomel was given three times a day for about twenty days without any affection of the mouth; the symptoms, excepting the slow pulse, continuing through all the stages of the complaint to proceed as above described. The coma and insensibility became such, that scarcely any signs of vitality were discoverable for eight or ten days preceding his death, which took place at the end of three weeks.

The head was opened, and from the ventricles of the brain was extracted a quantity of water amounting to about ten ounces. This volume of fluid occupied so much space in the cranium, as to have borne a considerable proportion to the whole cavity. It had not the effect of distending the cranium at the sutures, which were not yet closed.

In one instance, where the symptoms were such as to correspond very exactly with the characteristics of the disease, the patient recovered, after having taken a large quantity of calomel; but whether in consequence of the medicine, or whether the disease was of a different character, is doubtful; but it may be remarked that no worms were discharged.

As so large a portion of the cavity of the cranium was found destitute of brain, the fact strongly militates against the opinion that the brain is destitute of absorbents; for a portion of its substance must have been absorbed. If mercury therefore promotes absorption, it must be well adapted to the cure of this disease.

SECT. VI. PNEUMONIA AND PLEURISY.

In pleurisy and peripneumony, mercury has been freely used; and its efficacy in promoting expectoration, one of the principal indications of cure, is supported by the testimony of the generality of its advocates.

Whether there is any natural connection between the process of salivation and expectoration, it may be difficult to determine. The nature of the parts concerned in those actions does not seem to favour the hypothesis, as there is no very great similarity between the structure of the lungs, whence expectoration proceeds, and that of the glands, which are the source of the saliva.

Hippocrates had noticed, that the natural termination of this disease was, principally, by the expectoration of mucus; and from him to Huxham the encouragement of this discharge was made a primary indication in the cure of it.

The more modern physicians have adopted the practice; and the means, which they have made use

of, had this in view, as the ultimate object, through every stage of the disease.*

Pleurisies and peripneumonies are said to be most common in middle latitudes. In Minorca they are so frequent, as to constitute the greater proportion of their winter complaints. As the latitude of this island differs but a few degrees from our own, it might be expected, that there would be some resemblance in the diseases; and it is accordingly observved, that peripneumonies and pleurisies are the common fevers that prevailed during the latter part of winter and the beginning of spring in both.

The symptoms attending are, usually, in the commencement, chills followed by stitches in the side, commonly in the right; the pulse full,† hard and

* Dr. Fordyce observed, that an effort is generally made by nature to effect this discharge on the third day, and that in general, it gave the greatest relief when it began *early*, was not hard and difficult, and when it was of a good colour, with streaks of blood in the matter, as it eased the pains and generally terminated the disorder.

† It is sometimes extremely difficult to determine to what degree the pleura costalis, and that extension of it which invests the lungs, are affected in these two complaints. It is true the pulse is generally hard when the former is most inflamed, but not invariably so. Dr. Cullen doubts whether they can easily be distinguished during life, but nearly the same method of treatment applies to both.

Recentiores autem ex sectione cadaverum didicerunt, veteres de sede, ideoque de differentia horum morborum saepe falso statuisse, et quem in pleura costali sedem habere veteres putabant, saepius in pleura pulmonem investiente situm fuisse invenerunt anatomici recentiores——inter illos morbos, utcunque aliquando distinctos, limites accuratos plurumque non ponendos esse.

Cullen's Nosology.

quick, beating from eighty to one hundred in a minute; extreme heat of the body, from one hundred to one hundred and four degrees of Fahrenheit's thermometer. The blood drawn from the arm generally exhibits a buffy appearance, but this depends on such trifling circumstances, that it ought not to be taken as an indication in the disease. It is well known that blood which coagulates speedily never exhibits this appearance; and therefore, when, instead of being drawn off in a full stream, it is suffered to run down the arm, it will usually coagulate without a buff; whereas it might otherwise have assumed a very firm, crusty appearance; for a quantity of the same mass might, if retained longer in a state of fluidity, have admitted of the subsiding of the red globules, from their specific gravity, towards the bottom of the vessel, and the upper part of the coagulum might have been formed of the lymph alone.*

Dissections of persons who had been supposed to have died of pleurisy almost always demonstrated the proximate cause to have been seated in the lungs. In general I have found this organ to be in a state denoting a very high degree of inflammation; the surface being livid, and the substance exceedingly dense, nearly resembling that of the liver.—The vesicles were filled with a semipurulent matter. The pleura was but little affected. The surfaces both of the lungs and of the pleura were covered with a

* The blood of a salivated person usually coagulates with a buff.

lymphatic membrane, especially near the sternum. In one instance the pericardium was apparently wanting, the heart appearing as if suspended loose in the cavity of the thorax, excepting its adhesion on the right side to the mediastinum.

On farther examination it was discovered, that the sac had completely adhered to the surface of the heart; and the cavity, in which that organ had been contained, was accordingly obliterated, the pericardium forming its exterior coat. An effusion of serous fluids had taken place in the interlobular spaces of the lungs, and a general extravasation was evidently discoverable throughout the substance.* The right side is found more frequently diseased than the left.

Upon the whole, it appears that the disease called pleurisy is often an inflammation of the membrane of the lungs; and that though the pain of the side is sometimes very considerable, whence it may be concluded, that the pleura is in a degree inflamed; yet it is probable, as well from the circumstance of the abatement of the pain which often takes place before any considerable mitigation of the most threatening symptoms (such as difficult respiration and

* Morgagni de Sedibus Morborum gives 50 cases of pneumonia, 10 of which exhibited inflammation and induration of the lungs, 12 or 14 of the various gradations of effusion from bloody serum to perfect pus. The residue were chiefly cases wherein empyema had taken place; two or three bloody extravasations within the thorax; and four progressive stages of gangrene.

collection of mucus in the lungs) as from dissections, that the pleura is secondarily affected in the disorder, and that the danger attendant upon it is in proportion to the pulmonary affection.

The use of mercurials in this disease does not seem to have been founded on any reasoning that respects the principle of excitability, but on its supposed tendency to promote spitting or expectoration, by attenuating the blood and effused fluids to which might be added its power of promoting absorption.

The following seems to have been a case of pneumonia complicated with hepatitis; and as an example of what not unfrequently appears here in the spring after a few days of warm weather followed by cold, I shall take the liberty of recording it.

M. O. aged 17, on Thursday, 5th of April, complained of a dull pain in the scrobiculus cordis, extending on each side through the hypochondriac regions, with laborious respiration and tenderness about the complaining parts—pulse quick, tongue slightly furred, dry and hot skin, countenance at times remarkably pallid, and at other times as singularly livid.

She had for several days been slightly affected with these complaints, and had taken a dose of pill cochiæ, (aloes et colocynthidis) which produced the expected effect. In the evening of this day she took a pill of two grains of calomel and half a grain of opium, to be repeated at short intervals.

Friday, at eight o'clock in the evening, immediately after having used the pediluvium, and got into bed, she was seized with a great degree of stricture

over the chest, extending along the anterior attachment of the diaphragm, and from the right to the left hypochondrium, so as to impede respiration in an alarming degree. Extreme tenderness was now discoverable directly over the left lobe of the liver and the neighbouring parts, the centre of it being under the inferior extremity of the sternum. The pulse at nine o'clock this evening was 124 in a minute, very small and somewhat hard. The above medicines having had little effect, on Saturday morning the symptoms were all highly aggravated, the pulse now beating 130 in a minute. At nine o'clock A. M. about two ounces of blood were taken from her. It ran down the arm into the cup; on standing, exhibited no appearance of buff, and was followed in a short time with some remission of symptoms, the breathing becoming freer; one grain of calomel was given every two hours, and a blister applied to the region affected. In about three hours the bleeding was repeated to about the same quantity, the blood flowed in a full stream, and, on standing, exhibited the buff on the surface. No relief, however, followed the operation. The pulse became smaller and quicker, beating at the rate of between 135 and 140 in a minute, with much irregularity. The tongue was now white and moist. An enema given this day operated partially, discharging a quantity of clayey fæces, together with a fluid of a bilious tinge.

SUNDAY. Continued the calomel, and took an opiate at night. Pulse 128; skin soft and moist.

Monday. Much better. Pulse in the morning 120, in the afternoon 102. Still continued the calomel. At noon the mouth became sore. The pills were discontinued. Respiration better. At night took an opiate, but rested badly.

Tuesday. Pulse from 118 to 120; respiration quicker, with pain in the right side, when laying upon it. The soreness of the mouth much diminished. She took the mineral febrifuge of Clutton, and began the calomel again.

Wednesday. Pulse 120; mouth very sore. The symptoms abated as the soreness of the mouth advanced. Discontinued the pills. At night slept well, with a gentle perspiration throughout the body.

Thursday. Had a good night. Mouth very sore. She could move in all directions without pain, lay on either side with perfect ease, and make a full inspiration without the least difficulty. She had a steady moisture on the body, without any remaining symptoms excepting those of debility.

The mercury here appeared to produce, at first, an increased frequency of the pulse; but, after the soreness of the mouth had appeared, it became less frequent. From this time till about the 25th day from the attack, the pulse continued much quicker than what might have been expected from the general appearance of the patient, keeping up from 108 to 118 for a long time after every complaint had subsided, and indeed it did not till about the 30th day return to its natural state, when it was reduced to about 75 or 80 in a minute. It was evident, therefore, that

though the operation of the mercury had rendered the pulse slower, when the disease first subsided; yet it afterwards kept up a stimulus of its own, till it was at length in its turn subdued by the powers of the system.

March 19th, Bradish Woods,* labourer, aged twenty-four years, of an athletic constitution, was seized with a pain, between the scapulæ, so severe as to impede respiration. He complained of excessive thirst and great heat on the surface of the body. The pulse contracted, very hard, and beating about ninety-eight strokes in a minute; the tongue and fauces dry, and covered with a brown fur. Twelve ounces of blood were taken from him, and the operation was followed by some alleviation of the pain. A blister was now applied over the whole affected part, which was about five inches in diameter. This relieved the pain, and he rested tolerably well.

Wednesday morning. The pulse was softer, and less frequent, being 98 in a minute. The tongue and fauces still coated. Directed one grain of calomel, with half a grain of opium to be given every two hours. In the evening the skin dry, though not very hot. He complained of pain about the scrobiculus cordis. The vesicating plaster was removed from the back, and the part dressed with unguent.

* The minutes of this case were furnished me by Dr. Chaplin, of Cambridgeport, whose accuracy is of much consequence on account of the experiments mentioned in p. 366 On which account also, this case has been more particularly recorded than any other.

hydrarg. The calomel and opium repeated every hour.

Thursday, 9 o'clock, A. M. He had rested well through the preceding night. His skin was moist, and the pain somewhat relieved. His respiration tolerably free; pulse more open, and about ninety in a minute. The pills were continued, as before. He expectorated mucus, with blood of a dark grumous appearance. At night the pulse 100 in a minute, rather hard; tongue much coated, with great thirst; pain increased, with oppression of the stomach; a slight delirium. Directed three grains of calomel every hour, and a blister over the præcordia.

Friday. The pulse 110 in a minute. Directed a cathartic, which gave great relief. Pulse reduced to 98. He expectorated mucus with blood of a more florid colour. Directed one grain of calomel and half a grain of opium every half hour. Removed the plaster and cuticle, and dressed with unguent. hydrarg.

Saturday. Had rested very well the preceding night in consequence of one grain of opium. Had a free perspiration. Thirst abated; pulse 80 in a minute; had two discharges in the night. Continued the calomel and opium as before.

Sunday. Rested well through the night; pulse soft, about 80 in a minute; skin moist and cool; respiration easy. Directed one grain of calomel every half hour. In the evening his skin continued moist; pulse 74; applied two ounces of unguent. hydrarg. as a dressing for the blister.

Monday. Rested tolerably well through the last night. Pulse about 72, rather full; tongue considerably cleared; cough less troublesome; the gums a little more sore than yesterday. Continued the calomel one grain every half hour.

Tuesday. Had a bad night in consequence of a pain in the left side of the thorax. Directed three grains of calomel to be given every hour. The soreness of the gums increased. Pulse 70 in a minute, rather full. In the evening, gums and throat very sore. Calomel continued.

Wednesday. Tongue quite clear. The calomel pills discontinued for the present. The blister which had been drawn on the side, was dressed with unguentum. hydrarg. ʒij.

Thursday. Pain in the side abated; respiration more free and easy; appetite beginning to return. In the evening had a return of the pain. The pulse became full and hard, about 70 in a minute. Had six ounces of blood taken from him. An opiate was administered and two grains of calomel every hour.

Friday. Pain and all the other symptoms much relieved.

Saturday. Had rested very well. Pain has subsided. Respiration free; pulse 66. The appetite returning. Throat and gums very sore, with small ulcerations. Gradually recovering. The mouth was still sore, and continued so for several weeks, with a strong mercurial fœtor in the breath.

The quantity of calomel, used in this case, was 237 grains within eight days, and 8 ounces of

strong mercurial ointment were applied in the same time.

It was this patient upon whose blood and saliva the experiments mentioned in page 366 were made.

SECT. VII. PHTHISIS.

Phthisis is sometimes a consequence of pneumonia; and, if the utility of mercury is established in that disease, one variety at least of consumption is indirectly included within the empire of this medicine. Its use in the pulmonary consumption is the particular object of our present inquiry.

It is a melancholy truth, that a great number of young persons of both sexes, between the age of seventeen and twenty-seven, die of this disease. And, that it is much more prevalent of late years, than formerly, is a general observation, and I believe not altogether unfounded. From the best information that could be collected, it appears that about one seventh part of the deaths in this state are from consumption.

In the town of Boston, according to the bills of mortality for the last nine months from 1st July, 1804, 323 persons have died, of whom 140 were males, and 165 females. Of the 18 remaining, the sexes had not been noted. Of the whole number, 56 died of consumption, 17 males and 39 females, amounting to more than one sixth part of all the deaths.

The consumptive period is, according to these bills, different from what has been remarked in most other places, a smaller proportion having died between 17 and 27.

In the populous seaport towns, the mortality from this disease is considerably greater than in the country.—I impute this chiefly to these causes; dissipation and intemperance, too little exercise, and improper clothing; this not being adapted to the nature of the climate, the season, and mutability of the weather.

The first of these causes principally applies to males, and is voluntary; the two latter to females, and are the effect of pride, vanity, or carelessness.

That whatever cause produces indigestion, must weaken the constitution exposed to the influence of noxious causes, such as cold and moisture; and thus frequently lay the foundation for incurable disease, is too obvious to require explanation.

To dissipation and intemperance young people of the male sex not uncommonly owe their loss of health, especially their pulmonary complaints, to which, at their period of life, they are so peculiarly incident.

Spirituous liquors are never necessary for the young and healthy. Those of the ardent kind are especially injurious.*

* It is a common opinion, that ardent spirits are necessary for hard labouring people. The truth is, that those are the very persons who ought not to use it. The labour itself has exhausted excitability, and ardent spirits will generally exhaust it further.

Even wines in the quantities too often used, and under the circumstance of a full stomach, are far from being salutary: They not only impair, but they destroy digestion.*

A common source of consumption in our females is want of exercise; there is perhaps no place in which the common habits of improved social life are adopted, in which this sex are less attentive to that most essential requisite for the preservation of health than in this.

No exercise is equally salutary with that of walking. This gives action to the muscles of the limbs, where the circulation, from the distance of the vessels from the heart, is apt to be languid. It throws the blood forcibly forward towards the lungs, and thereby affords an opportunity for the mass to be exposed in larger quantities to the action of the air, by which alone it is rendered fit for circulation. This oxygenation of the blood by air endues it with the property, by which it is enabled to excite its

* The following experiment will prove this. An equal quantity of the same food was given to two young dogs. Immediately after, three drachms of ardent spirit, mixed with one of water, were poured down the throat of one of them. In five hours both were opened, as nearly as possible at the same time. The dog, which had taken the spirit, had his stomach twice as full as the other: the bits of flesh were as angular as when just cut with the knife, and as firm as when first taken down. In the other, the angles were rounded off, and the pieces much softer. In short, digestion had considerably advanced in the one, that without the spirit, while it had been suspended in the other. Vide Beddoes Hygeia, Essay 8. vol. 2. p. 25.

vessels into stronger action, and by that means to give strength and vigour to the whole system.

Who does not notice, that our sedentary females are put out of breath by the smallest degree of exertion, beyond what they have been accustomed to? That the lungs have become so irritable for want of the stimulus, which exercise exerts upon them, as to be thrown into a kind of convulsive cough from the most trifling acceleration of the blood in its passage through them. Whereas in the females of our country towns, who have constantly habituated themselves to walking, riding, and the great variety of domestic labours, may be noticed the large play of lungs in quick walking; a deep and full respiration, with all the attendant advantages of a sufficiently complete oxygenation of the blood.

Nor are these observations inapplicable to the other sex. There is not one man in a hundred, that exercises sufficiently in mercantile cities; because not one in a hundred, from the nature of his occupation is obliged to do it; and not one in two hundred will do it from principle.

The fashionable modes of clothing constitute a no less fruitful source of infirmities, than those before enumerated.

The coldness of our easterly winds in the spring is such as to occasion very uncomfortable sensations in the generality of persons exposed to their influence. It has been remarked, that the solvent power of an easterly wind upon water is astonishingly

great. After blowing over a large tract of ocean it contains much water, but it is chemically combined with it, and consequently transparent; it is also observed to take up more vapour from the ponds and meadows over which it passes, than that which blows from any other quarter. The thermometer, of course, discovers the increase of cold consequent upon this evaporation.

The warm rooms, which are usually an appendage to the luxury of the capitals, and thin clothing abroad, lay the foundation for many of those complaints, which are the precursors of consumption. It is thus, that catarrh usually originates in this country; and this always debilitates the lungs, and often terminates in consumption. Even the cough itself, sometimes, separately from the cause of the catarrh, either ruptures the vessels, and produces spitting of blood, or, by straining and weakening the vascular ramifications, disposes to tubercles; and, therefore, in that dry, teazing cough, which so often follows a cold, the inclination should be resisted as far as can be conveniently done.

Tubercles and hœmoptysis, or spitting of blood, are the two most common origins of pulmonary consumption prevalent among us. The former are by far the most numerous; bearing the proportion to the other of about three to one.

In nearly all the consumptive bodies, which I have opened, these tubercles were more or less numerous. They were generally of a nature somewhat similar

to the indurations found in the mesentery, and sometimes as hard as portions of urinary calculus, often with an appearance of beginning suppuration, the centres of the bodies generally containing a semipurulent fluid. In almost every case of dissection the lungs were found adhering to the pleura.

Some light has been thrown upon the manner in which these tumours originate, by the experiment of Dr. Haighton, in which the veins of a dog were injected with quicksilver, which being carried into the lungs by the pulmonary artery, first produced fever, and in a short space of time tubercles. These proving fatal, the dog was dissected, and globules of mercury were found to form the nuclei of a great number of tubercles contained in the lungs.

The Dutch are said to be free from consumptions, in consequence of the largeness and coolness of their rooms, whilst they wear a great quantity of clothing,* and upon the latter they altogether depend for security against cold. The reverse of both these circumstances prevails with us. The clothing of the women is very little proportioned to the weather. Sitting for the greater part of the time in warm rooms,

* The men two shirts, a flannel waistcoat with sleeves, woolen drawers and stockings, night and day; over these a waistcoat without sleeves. To these are sometimes added a wrapper of thin woolen cloth, several yards long, then the outer waistcoat with sleeves, and coat; and when they go into the cold air, a cloak of thick cloth lined with woolen. The females in the same proportion. Vide Beddoes on consumption.

exposing themselves, when they go out to cold air and wet streets, and returning again to heated rooms, are the direct means of bringing on catarrh, the common harbinger of consumption.

The production of tubercles is easily accounted for by the operation of cold, destroying the balance between the exhalants and absorbents, to which there seems to be a predisposition at the consumptive period. In the early periods of life the action of the exhalants, especially of the interior exhalants, which belong to the organs, exceeds that of the absorbents; and this excess is undoubtedly increased when the function of the superficial or cutaneous exhalants is interrupted by the effects of cold.

The universal sympathy of parts with the skin will readily account for the effects of cold upon the surface of the body; for though the internal parts preserve nearly the same temperature, the skin is exposed to great changes.*

The use of mercury in consumption was probably suggested by several considerations, and on several hypotheses of different construction.

The mechanical theory gave origin to the exhibition of mercury as a deobstruent, obstruction (in tubercles) having been assigned as the proximate cause of the disease.

The doctrine of absorption also supported it, as this medicine was supposed greatly to promote that action in the lymphatic system; and the theory of

* Vide Experiments of B. Robinson.

excitability has adopted this medicine as possessing a power of removing diseases which were supposed to arise from asthenic diathesis.

Though there are other medicines in which physicians in general have much more confidence than in this, yet there are some very respectable authorities which give countenance to the practice.

The pneumatic system of medicine at one period, seemed to promise some important advantage in the treatment of consumption; and it was confidently expected that the modern discoveries in chemistry, from which such immense acquisitions to the cause of science in general have been derived, would furnish some new and more efficacious article for the cure of this disease.

The different gases have accordingly been assumed as the proper instruments for experiments on this most important subject. One or two of them have been found, in part, to answer some of the indications of cure in this disorder; but none of them seem finally to have answered the expectations of their advocates.

Hydrocarbonate has been employed in one of the intentions, founded on the existence of tubercles in the lungs, and has been proved to promote absorption.* This having been inspired in a number of cases of lymphatic effusions on the surface, the fluid was in every experiment absorbed with wonderful celerity.—Oxygen had been used alone for this

* Beddoes and Watt, on factitious airs. Vol. 2, part 4, page 156.

purpose, but without effect. In some experiments it was mixed with hydrocarbonate.

Oxygen inspired for any considerable time, injures the lungs and aggravates the symptoms in pulmonary consumption. In some experiments made on persons in health, it appeared to promote a predisposition to phthisis, and did not, of course, give any relief in actual consumption.

Upon the whole, it was concluded that the disease originated from super-oxygenation of the blood. Azotic gas was therefore next resorted to by the pneumatic physicians, and the inspiration of this gas was thought to palliate the complaint. From recent information, however, it appears that nothing of importance is to be expected from these remedies.

Tonics have also been strongly recommended, but their success is doubtful.

Digitalis has of late obtained a high degree of reputation in consumption; and is thought, by its power in commanding and regulating the circulation, to be a very important acquisition to the medical art. That it does often render the pulse slower, is indisputable; but whether its efficacy in curing this disease, is in the same proportion, is questionable. This subject has been ably discussed by the late president of this society,* and requires no further notice on the present occasion. It is, however, an undeniable truth, that no medicine will apply to all the varieties of any particular disease.—Hence the advantage of

* See Dr. Rand's Dissertation, read before the Medical Society.

investigating the efficacy of new medicines, even in those diseases which are most under medical control.

Dr. Rush has published a number of cases of pulmonary consumption, treated by mercury.* In three cases salivation proved a complete cure. Dr. Pfeifer relates also a case of a person in a very davanced stage, cured by the same means. This method has been tried in many instances in this place. In one case which originated from hæmoptysis, it was not successful. In several, where there was evidence of tubercles, and at length suppuration, it was used through all the stages of the disease, but without advantage.

The following is the only instance in which I found it useful.

1805, I visited a lady, who for several weeks had laboured under a severe cough, with slight pain in her side. On examination, her pulse was found small and irregular, about 100 in a minute, with short and difficult respiration, stricture over the chest, night sweats, extreme debility, and most of the common symptoms of deep pulmonary affection. Expectoration of matter of a purulent appearance, constant diarrhœa and extreme emaciation, designated the extreme hazard of the case. She was from home when these complaints first came on, and had taken no medicine till I visited her.

As her countenance was of a yellowish cast, I gave, the first day, an emetic of ipecac. and an opiate at night. I then gave her the usual expectorant me-

* Medical Repository.

dicines; but for several days the symptoms increased rapidly, and I considered her case as almost desperate.

Her diarrhœa and cough continuing, I ordered a pill of one grain of ipecac. and two of calomel to be given every twelve hours. On the third day, after having taken six pills, the mouth became to my astonishment suddenly sore, and on examination I found her breath strongly affected with a mercurial fœtor.*

The pills were immediately discontinued. For several days the salivation continued to increase. the ulcerations in the mouth became extremely troublesome, the breath intolerably offensive, and the gums, tongue, and fauces so much swelled, as to occasion great distress, and almost to threaten suffocation. The most powerful doses of opium procured little rest at night.

From this time her cough abated, the night sweats were less profuse, her pulse daily became slower, and, by the time the salivation had subsided, which was not till the end of the fourth week, all her symptoms had completely disappeared. She has had no complaint of any kind since, has recovered her strength and flesh, and at this time is in perfect health.

In this case, from the colour of the skin, there was much reason to suspect some hepatic affection; and the efficacy of the salivation, which was indeed

* This is one of those cases in which the necessity of great caution in the use of mercury, from the small quantity which will in some habits produce salivation, is exemplified.

entirely accidental, seems to afford some grounds for a conjecture, that the consumptive complaints were merely symptomatic.

It is possible, that some disease existing in the liver, might, from its connexion with the diaphragm, bring on the pain in the chest, and the difficulty of respiration; and from the increased irritability of the coats of the lungs, the quickness of the pulse may be accounted for.

Whether any affection of this nature might have combined with the diseases cured by Drs. Rush and Pfeifer, is mere matter of conjecture. I have however no difficulty in concluding that, in complicated cases of this kind, mercury would be preferable to any other medicine in common use.

In venereal consumption it may, if seasonably applied, with much certainty be relied upon for a cure.

In the common tubercular phthisis, the powers of this medicine in promoting absorption might, possibly, be sometimes beneficial; but in the ulcerated state I should much doubt its utility.

This stage of the disease is easily distinguishable from the other by the appearance of the expectorated matter, according to the established tests for identifying pus, and the uniformity of the symptoms after suppuration has taken place.*

* An opinion has been entertained that a species of consumption, denominated mucous, is of the same nature with gonorrhœa, owing to an irritation on the mucous glands of the lungs, which prevents their due preparation of the mucus—hence the

So far as the action of mercury may be considered as dependent on its oxygen, it might be suspected to be injurious in phthisis, by adding more of that article to the already super-oxyginated mass. If it is a fact, that the mass of blood in consumption is in this predicament, the objection must have weight.

It would seem however unaccountable, that this should be the case under a state of the lungs, in which a part of their vessels must be impervious. It would be natural to suppose, that less oxygen would be absorbed, and the whole system would rather suffer from a deficiency, just as in cases of pregnancy, wherein one pair of lungs is sometimes insufficient to oxygenate the whole mass for both mother and fœtus, and abortion is the consequence.

SECT. VIII. DYSENTERY.

This disorder is generally attended with an inflammatory affection of the intestines, chiefly of the rectum and colon. It may therefore, though arranged by Dr. Cullen under the order of profluvia, as properly be placed under that of phlegmasiæ. It is then consistent with the prevailing opinion respecting the effects of mercury to use it in this disease.

One part of the character by which it is defined, an increased secretion of mucus from the intestines,

form of this disease which is so easily cured by mercury, is inferred to be of this description. Richter's Medical Observations, 1794, p. 272.

seems to militate against this practice; for mercury is known to increase the secretions; but this matter has been explained above. As a cathartic, combined with other articles to increase its activity, it might be useful in removing the fæces, the retention of which constitutes the other part of the character of dysentery.

By inducing a new action in the system, particularly by its stimulus on the salivary glands, it may perhaps excite a greater irritation on those parts, and take off that subsisting in the intestines. The old doctrine of revulsion seems to have been founded on observation and experience, however crude might have been some of the opinions entertained respecting it. The above theory has much affinity to it; and seems to explain many phenomena in disease as satisfactorily as we can expect; the greater irritation destroying the less.

Messrs. Yeates and M'Lean have published an account of their practice in dysentery at Calcutta, which consisted in exciting salivation as speedily as possible.

Some of the cases which they have exhibited are worthy of attention, in order to form deductions with respect to the propriety of salivation in this disease.

In the first case immense quantities of tincture of opium were given in doses as high as three, four, and five hundred drops an hour, till salivation took place; the patient recovered.

The second was seized with dysentery 28th August, 1796, with a pulse at 132, and foul and dry

tongue. He took calomel gr. ij, every hour with opium; unguent. hydrarg. ʒ ij.; and calomel ʒ j. were rubbed into the skin. 3d of September the pills were given every hour, pulse gradually lessened in frequency. 4th, cal. ʒ ij. and ointment ʒ j. were rubbed in. On the 7th, after the warm bath, he had an eruption on the skin, as usually happens, when much mercury has been given without salivation. The mercury was increased both ways, and was taken latterly in doses of 20 grains of calomel and 6 of opium every two hours. 9th, he died without ptyalism.

The third began the 26th of August to take calomel. Had, before taking it, thirty stools a day. Pulse ninety. ℥ss. of unguent. hydrarg. ʒ j. of cal. rubbed in almost every day, and one hundred drops tinct. of opium taken into the stomach. Pulse became gradually slower. Stools less frequent, till the thirty-first, when the mouth became sore. At night began to spit. Third of September, laid aside the ointment. He recovered.

A remarkable case is related, wherein soreness of the mouth and diarrhœa several times alternated with each other. On the soreness of the mouth going off, the diarrhœa returned, and vice versa.

In 1785, Dr. Clark, in the dysentery, which at that time was epidemic about Newcastle, first used calomel as a purgative, but was soon convinced of its superior efficacy as a sialogogue. In the beginning he gave from five to six grains with opium, and continued it, till salivation was produced. He found, that

the majority of subjects in England would require from twenty to thirty grains to produce salivation, though in some it was effected by twelve. In all cases, where this took place, the distemper gave way, and it removed, as he declared, the inflammation and ulceration of the intestines. A number of cases are detailed, and the success they exhibit was astonishing. In chronic cases he advised small doses at longer intervals, and salivation to be carefully avoided.

Dr. Lind was equally successful with calomel, and imputed its efficacy to its preventing inflammation and consequent mortification.

Dr. Balfour, in Bengal, practised in the same manner, and with similar success.

Dr. Cleghorn, of Minorca, found that six or seven grains of calomel, with one of opium, produced fæcal discharges, when nothing else would.

At Boston, this disease usually appears in autumn; and the mercurial treatment has been adopted with some success. The manner in which I have used it, has been by combining it with ipecacuanha.

A. F. was seized with the disorder in the most violent form. Stools extremely slimy with blood; tenesmal efforts almost incessant; mucous discharges every ten minutes; skin hot and dry; abdomen, about the hypogastric region, too sore to admit of the slightest touch; tongue covered with a brown saburra. Ordered him twenty-five grains of ipecac. with fifteen grains of calomel. This produced a most copious evacuation of fœcal matter, which had been long retained; and he never had another dysenteric

discharge. The fever left him, and in a few days he recovered his strength.

1802. H. I. had the usual symptoms. Took three grains of calomel every three hours. The third day the discharges became fœcal, and he speedily recovered, without soreness of mouth.

MANY other medicines, however, have been used with equal success in dysenteries. I have seen none more useful, than the extract of juglans cinerea, when properly prepared, given in doses of 4 or 5 grains every hour, till it produces black and frothy discharges, which were the almost certain signs of speedy recovery. A great advantage attending the use of this medicine in children, is the facility with which it may be given to all subjects in a state of solution. Rhubarb has often been prescribed in this disease, but is probably injurious, in all cases which are highly inflammatory.*

SUPPOSING it to originate from obstructed perspiration, some have placed the whole curative intention in the use of diaphoretics. Small doses of ipecacuanha with opium and the warm bath, constitute an important part of medical treatment. Vesications on the abdomen are also highly useful, and dressing the blisters with unguent. hydrarg. affords a convenient method of introducing, at least a small part of the mercury into the system, and this observation will apply to all cases in which blistering is used and the mercurial treatment adopted.

* Richter, in Medical Observations, p. 92 says, rhubarb kills in dysentery.

SECT IX. RHEUMATISM.

Rheumatism is often prevalent through the greater part of the winter. It has, perhaps, never been more general at any one time in Boston, than in the last winter. It has been chiefly of the acute form, attended with extreme pain, and was with difficulty removed.

After bleeding, mercury has been employed, and in some instances with success.

Dr. Hamilton, of Linn Regis, recommended it in inflammatory gout; and his authority has been adduced in favour of its use in rheumatism.

Dr. Clark, in his account of the diseases of long voyages, observes, that he successfully treated rheumatic complaints after they had resisted the usual remedies, with mercurial pills and frictions, taking care to avoid salivation, which he observed to be injurious by protracting the disease.

In most instances in Boston, it commenced with general febrile complaints followed by pains of the erratic kind, which at length seated upon one or more of the limbs, with a redness designating the pained part. This appearance generally shifted from place to place; and, in several instances, passed successively through all the extremities.

Blisters were often useful in relieving the pains. Diaphoretics with facility produced sweating; but the freedom from pain was not in proportion to this evacuation; it was often very profuse,

with very little relief. The blood drawn had an inflammatory buff.

P. M. was seized in the usual form. About the second or third day his wrist and ankles became swollen and extremely painful, with superficial redness, and so great a degree of sensibility as to be incapable of the least motion. The tongue coated with a brown fur; pulse full and hard, with incessant nausea. Gave an emetic. The next day a dose of jalap and calomel was given. The day following, he was ordered a pill of two grains of calomel, and one quarter of a grain of opium, to be taken three times a day. This he continued for four days, till his mouth became sore, when a universal moisture took place, but without relief. Ordered blisters on the arms, the pills to be continued night and morning, with the addition of three grains of opium at night. Diaphoresis continued profuse; redness of the wrists much abated, that of the ankles increased. Applied blisters to the inside of the legs over the inflamed surfaces. His pain subsided, pulse became less frequent, and perfectly soft. The tongue assumed a dark appearance; the mouth became very sore, with much fœtor, but without ptyalism. After he had taken fifteen grains of calomel, the soreness of the mouth having become very troublesome, it was laid aside. He gradually recovered, and in four weeks was able to walk abroad, and had no return.

G. B. was attacked in a less violent manner. I did not visit him till he had been sick nearly two weeks. He had done nothing with good effect.

His wrists were very painful, he was afflicted with lumbago, and had no sleep in the night. Pulse hard. Bled him, and gave him a pill of two grains of calomel, and half a grain of opium every four hours. A copious sweating was attended with little relief. On the third week of this course his mouth became a little sore, and the pain slowly subsided, but he did not recover his strength under eight or nine weeks from the seizure.

In this case the relief seemed to be the effect of opium, but there is no doubt, that, by keeping up the perspiration, the mercury shortened the complaint.

CONCLUSION.

From a view of the whole subject, the following remarks have been suggested.

That the effect of oxygen administered as a medicine is that of a stimulus upon the vascular system, and a change, at least, in the colour of the blood, which it renders more florid.

Whatever articles of the Materia Medica contain this substance in such state of combination as will admit of their being employed in medicine, and introduced into the system, may excite into increased action the muscular fibre, and therefore change the state of the body.

Mercurial preparations appear to be well adapted to this purpose, and as the oxides of this class operate more powerfully as stimulants than

simple oxygen alone, we have reason to believe that the metallic part of this combination is an essential article in the medicine; and, whether admitted into the blood or not, must in some way or other increase the force of circulation, and that by this property, they may possess the means of curing many diseases with more certainty than any other.

It would be unphilosophical, however, to suppose them capable of acting as specifics in such diseases, even in lues venerea, or mechanically by their ponderosity, as their effects may be accounted for upon known laws of the animal economy, and also on the power which these medicines possess of increasing the action of the stomach and bowels, of accelerating the peristaltic motion, and promoting the secretions in general, and those of the salivary glands in particular; and on their influence over the heart and arteries, subverting in a great measure, the existing order of action in the body; and thus, in morbid states of it, affording an opportunity to the disturbed functions of returning to their natural healthy relations; and the more active such preparations are rendered, the more certainly will they break the diseased relations.

It is an acknowledged law of the animal system, that in a state of health, the functions of the body become so associated with each other from habit, as to acquire a relation which disposes them to act in concert with each other, and thus to repeat actions which they have been accustomed to exercise in the same order; as many phenomena of health clearly prove.

But this principle of action may be interrupted by disease, for certain healthy associations in the organs are necessary to enable them to perform their offices, and, when these associations are once broken, the diseased action will begin to acquire similar associations, and the longer they exist, the stronger will they be. But those medicines which produce such revolutionizing effect upon the system may, by altering the habits of action, or the order in which they have been exercised, give opportunity for the healthy associations, if they have not been too long and too completely interrupted, to resume their former exercise.

Violent means are sometimes necessary to remove violent diseases; and, as it is probable that the constitution cannot at the same time be under the influence of two general constitutional actions, at least to any great degree, this principle will co-operate in removing disease.

Though the degree of exhibition of mercurials and such other medicines as have the power of producing these effects must depend on the violence of disease, and consequently salivation may be sometimes necessary, yet it is possible that slighter changes of the system from smaller quantities might generally be sufficient; and salivation, the effects of which upon the habit are in some measure equivocal, might be avoided; and, that in all cases we ought to keep a watchful eye upon the mercurial process, as it sometimes runs suddenly on to salivation; for

which reason also we ought constantly to have at our command means to control it when it actually takes place.

Mercurial medicines in febrile diseases appear to be applicable, principally to those of the phlegmasial order, and the character of inflammation has by no means been considered of late as forbidding the use of them, as they have been largely adopted in many of the most inflammatory diseases, and particularly in one variety of what has been denominated yellow fever, which has frequently borne strong marks of this character.

The quality of contagion in this fever has been generally denied; by some, however, it has been strenuously supported,* and mercurial medicines have been supposed to possess the power of destroying it; but as from the testimony of many writers on the subject, and of most of the physicians of this country, this doctrine is generally exploded, no inferences are to be drawn from the hypothesis of contagion as to the efficacy of mercury. There is much reason, however, for believing that this class of medicines has been useful in the treatment of yellow fever as it has appeared in America; but in this disease, generally speaking, the simple effect of stimulating the system so far as to render the mouth sore without

* Contagious diseases are understood to be such as arise from the vitiated product of vascular action, capable of exciting in a healthy person a disease like that by which itself was produced. And infectious, such as, though they *may* propagate disease, do not necessarily do so, nor invariably produce the *like* disease.

salivation might be sufficient, though in violent cases the latter becomes necessary. The difficulty of effecting it is in proportion to the degree of local affection.

As the epidemics which usually prevail in hot climates are highly inflammatory, mercurial medicines were formerly supposed to be utterly improper in that description of fevers; yet it has of late been principally relied on for the cure of these fevers by the physicians of those countries, and as is alleged, with general efficacy.

Bleeding is often a useful preparatory to the use of mercurials in these fevers; and indeed in the general administration of them in febrile disorders, it should be practised.

The cold bath in some cases may be useful as an auxiliary to mercury by supporting the powers of the system when it is too weak; for which purpose the peruvian bark and other tonics may be employed to advantage.

The warm bath may not only aid the operation of mercury upon the habit, but may also moderate the violence of action in the system under salivation.

Of the different methods which have been adopted for the purpose of removing salivation, some of them are doubtless useful, amongst which is the sulphureted hydrogen, which is probably the most active.

The method of purging, upon which great reliance has at all periods been placed, for checking salivation, is utterly ineffectual in the common state of the system whilst under the influence of mercury, as it has

been found by experiment rather to prolong the mercurial action, than remove it.

Though we consider it a well established fact that the epidemics which have prevailed in Boston, New York, Philadelphia, and some of the southern states, are not contagious; this fact ought not by any means to produce relaxation in the police laws of the several cities of the United States; because it has been fully proved in many instances that the air of the holds of vessels from hot climates is so extremely impure and noxious, as often to operate as a most deadly poison upon the constitution of persons exposed to its influence; and besides, persons who may be sick on board ship in very long voyages, are frequently known to labour under diseases of malignant nature, which, though not contagious, may be highly infectious, (a quality of very different* character) as articles calculated to generate such fevers are often known to abound on board vessels, from putrefying animal and vegetable substances.

The most scrupulous attention too should invariably be paid to cleanliness in large cities, and every source of impurity should accordingly be prevented by constantly washing the streets, cleansing the cellars and docks, and covering with gravel, and raising

* Dr. Hosack, the distinguished professor of the theory and practice of physic in New York, is the only writer in this country, who has of late supported the doctrine, that yellow fever is contagious. Although we do not agree with him on this point, it must be admitted that his researches have thrown great light upon the nature of contagion and infection.

low lands, in which water has become stagnant, and which, being charged with filth, may become a fruitful source of the most fatal exhalations; and these regulations should be the more rigidly enforced in proportion to the heat of the season, especially if accompanied with fogs and humidity, till copious rains or frost, ensue, by the former of which the filth of the streets will be washed away or diluted, and by the latter rendered inactive.

The diseases, which prevail mostly in cold climates, being those which arise from altered excretions, rendered active by no other cause than the heat of the human body, and being of a putrid nature, the efficacy of mercurials must be considered as hypothetical; although, so far as they supply oxygen to the system they may be proper, as in those diseases oxygen is supposed to be deficient.

In natural small pox, the dependence, which from early periods has been placed upon this medicine from analogical reasoning on the natural termination of the disease, is well founded; but in the preparation for inoculation there was no reason for this confidence, as this medicine has no effect upon the disorder other than as a cathartic or anthelmintic.

In measles its stimulant powers appear to be well adapted to the indication of cure, by dislodging the viscid matter with which the glands are apt to be surcharged, and by promoting expectoration.

In cynanche trachealis or croup, the benefit to be derived from the exhibition of mercury is very much limited by the shortness of the complaint, and the dif-

ficulty of bringing the medicine into action before the disease must have terminated; though, if given in large doses, with this view, there is little danger, from the difficulty of salivating children, who are generally subjects, of this distemper.

In hydrocephalus internus, it is not certain, that any actual cures have been wrought by mercury; but as no other remedy has obtained confidence in this disorder, it will probably be the principal one which physicians will adopt, because it appears to possess the power of promoting absorption; but this would be a more weighty argument if we could consider the mere existence of water in the brain as the principal circumstance in the disease. But as the inflammation of the membrane within the ventricles of the organ is the cause of the effusion, the effects of the medicine must be very limited.

Cynanche maligna having appeared at different seasons, in forms somewhat various, some difference of treatment must obviously be required. In its common form in this state, mercury has been found highly beneficial; but in that variety of the disorder in which the vital powers are most remarkably depressed, it has not been found serviceable. Peruvian bark and other tonics, together with stimulants in general, have been mostly relied upon. The utility of blisters, especially to the glandular swellings on the neck which often accompany it, is in some degree limited by their interference with one of the most successful modes of treatment in the latter variety, cold ablusion to the parotid glands.

Pneumonia and pleurisy, are successfully treated by mercurials; which, combined with opium, have an admirable effect in promoting expectoration. This is an imitation of the mode in which nature has been usually observed to terminate this disease; at the same time they sensibly diminish the heat of the body by inducing perspiration.

The cure of pneumonia by mercury may often prevent phthisis; though, when suppuration has once taken place, no benefit is to be expected from it.

In other forms of consumption, it is suspected that mercurials are injurious; in that description which originates from tubercles, which constitutes a considerable proportion of the whole, it might sometimes be serviceable, provided it were administered only in the first stages of the disease.

In that which is connected with hepatic affection, if a primary disease, it has indisputably been beneficial.

Dysentery generally arises from inflammation in the colon, or rectum, or perhaps in both. Calomel has often been serviceable as a cathartic and alterative, but its successful operation is much promoted by a combination with other medicines, of which the most useful is ipecacuanha, and I believe the least so is rhubarb.

In rheumatism, especially of the acute kind, I have never seen it pursued with much advantage. In promoting perspiration, a great object in this disorder, it is aided by opium; and the relief from pain which commonly ensues, seems to be in proportion to the latter.

Upon the whole, there is no doubt but much mischief has been done by the indiscriminate use of mercurials in diseases of almost every description, and especially by salivation; and the variety of constitutions is such, that these effects do often suddenly and unexpectedly take place by a rapid introduction of them, which is justifiable only in diseases of great obstinacy. The change produced by salivation is sometimes so great, as to become itself a formidable, and even fatal disease.

Impartiality however requires, that this subject should not be dismissed without an observation of some consequence in the inquiry. No instance, I believe, has ever been afforded within the whole compass of medical experience, of a medicine of equal activity, having been so thoroughly tested in different countries, and in all forms and degrees, as mercury. If so destructive to the constitution as some have represented, it would long since have been condemned by the experience of physicians in those countries in which it has been most exhibited. That salivation increases the irritability of the system, and may sometimes have laid the foundation of chronic disease, may be admitted; though a suspicion of it ought not to prohibit the use of it as an excellent remedy in some of the above diseases in the hands of the skilful. But this circumstance should be improved to enforce caution in the practice.