A medical and experimental inquiry, into the origin, symptoms, and cure of constitutional diseases. Particularly scrophula, consumption, cancer, and gout / by William Lambe.

A

MEDICAL AND EXPERIMENTAL

INQUIRY,

INTO THE

ORIGIN, SYMPTOMS, AND CURE

OF

CONSTITUTIONAL DISEASES.

PARTICULARLY

SCROPHULA, CONSUMPTION, CANCER, AND GOUT.

(ILLUSTRATED BY CASES.)

BY WILLIAM LAMBE, M.D.

FELLOW OF THE COLLEGE OF PHYSICIANS.

Quid nobis certius ipſis
Senſibus eſſe poteſt, quo vera ac falſa notemus? LUCRET.

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ADVERTISEMENT.

THE practice, which it is the object of the following Inquiry to recommend, has become diffuſed conſiderably beyond the ſphere of the author's own obſervation. He will, therefore, conſider it as an obligation conferred upon him by thoſe who have adopted it, if they will have the goodneſs to communicate to him any obſervations, which they may think deſerving his attention, particularly through the medium of their profeſsional friends, who are, of courſe, the moſt competent to eſtimate its powers.

W. L.

London,
King's Road, Bedford Row,
April 14th, 1805.

A

MEDICAL AND EXPERIMENTAL INQUIRY, &c.

PRELIMINARY OBSERVATIONS.

BY CONSTITUTIONAL DISEASES I underſtand thoſe which ariſe ſlowly and ſpontaneouſly, and concerning which we are hitherto ignorant, whether they are to be attributed to the operation of foreign and external cauſes, or to an original imperfection in the ſtructure or functions of any of the different organs of the body. I intend not this as a logical definition. It will ſerve well enough to exclude from this Inquiry contagious fevers of all ſorts. The comprehenſive order of inflammatory fevers, ought, perhaps, to be included,

ſince, notwithſtanding that they are frequently excited by obvious external circumſtances, the prediſpoſition is formed before the attack, and may, therefore, be deemed ſtrictly *conſtitutional*. But I wiſh principally to direct the attention of mankind to the extenſive and melancholy catalogue of chronic diſeaſes, towards the cure of which ſo little progreſs has been made by the labours of twenty centuries. I hope to ſhow, that however diverſified may be the forms and ſymptoms of theſe diſeaſes, they may all be traced to the operation of a common matter, introduced into the ſyſtem from without. This matter has its origin from the decompoſition of animal, and, perhaps, of vegetable bodies. It is probably to be found in a great variety of forms and modifications, with which I do not pretend to be intimately acquainted. As it is of a deleterious nature, and has hitherto eſcaped obſervation, I take the liberty to deſignate it generally, by the name of SEPTIC POISON. To lay the foundations on which theſe

opinions are built, is the principal object of this Inquiry. If it be true, it leads to a practice, which may be expected to render theſe diſeaſes frequently curable, and which may, perhaps, ultimately eradicate them. The practice itſelf is extremely ſimple, and has often been propoſed as a ſubject of experiment, but has never, as far as I know, been fairly and fully tried. It is principally dietetic, but does not exclude any aid, which can be given to it by medicine. I ſhall detail, therefore, in the courſe of the Inquiry, the effects I have experienced from the propoſed method, effects, which have correſponded with the moſt ſanguine hopes I have been induced to form of its efficacy.

The fluids, which are ſo abundantly introduced into, and diffuſed through the whole ſyſtem, are the chief vehicles of the ſuſpected matter. If theſe fluids are eſſentially inert, and are to be looked upon merely as dilvents, we are juſtified in paying little or no regard to them in

medical practice. If, on the other hand, as they are commonly preſented to us, they are eſſentially and perpetually active, it ſurely behoves us duly to appreciate the effects of this activity, and to determine whether it be ſalutary or noxious. In a recent publication*, I ventured to oppoſe the authority of CULLEN, who has alleged, as I think, upon very feeble grounds, that little nicety is neceſſary in the choice of common waters, and that the apprehenſion that any of them could produce any peculiar diſeaſes, is abſolutely deſtitute of foundation. I was, at that time, unfurniſhed with any direct experiments to eſtabliſh the oppoſite opinion, but I ranged myſelf on the ſide of the prevalent notions of the bulk of mankind. This opinion receives ſo ſtrong a colouring of probability from this very circumſtance, as to make it a matter of ſome aſtoniſhment, that, in an age

* RESEARCHES into the PROPERTIES of SPRING WATER, &c.—JOHNSON.

diſtinguiſhed for ſcience, ſo little pains have been hitherto taken to refute or to confirm it, by full and unexceptionable evidence. The popular ſentiment is ſupported by the authority of the father of medicine; it has been current from his time, through a long ſucceſsion of wiſe phyſicians, and it is not without the ſanction of very grave and reſpectable names of our own days. When we conſider the different ſalubrity of different places, the phenomena of endemic diſeaſes, the remarkable unhealthineſs of particular families, the unexpected and aſtoniſhing cures ſometimes effected by change of reſidence—when we conſider theſe and ſimilar facts, which are perpetually occurring, we cannot but acknowledge our profound ignorance of the ſecret ſprings, which operate ſuch extraordinary effects, and lament the little progreſs that has been made in thoſe parts of knowledge, which are the moſt intimately connected with the well-being of our ſpecies. A part of this ignorance is to be attributed, not

merely to the difficulty of the inveſtigation, but alſo to the ſupineneſs and inattion of the perſons beſt qualified to undertake it. What a ſtrange infatuation has poſſeſſed the minds of ſcientific inquirers! There can hardly be found a pebble, which has not been tortured in furnaces of the chemiſts, and the compoſition of which has not been unfolded by a thouſand experiments; whilſt the matter, which is applied to human uſes, more abundantly than any other, has been hardly noticed, or, at beſt, has received the moſt careleſs and ſuperficial examination. As the relations of things known, with thoſe which remain unknown, are infinite, all ſcience is, undoubtedly, connected by ſome links, with the increaſe of human happineſs, and merits the moſt careful cultivation; but thoſe branches demand, ſurely, the firſt attention, whoſe relation to this great end is broad and obvious and acknowledged, and from the improvement of which we may have a chance to aſcertain the ſources of life and

death, of the pleaſures which enliven, and the evils which embitter our exiſtence.

If the origin of the ſufferings of mankind cannot be diſcovered in the operation of the matters, which are applied to the human frame, and particularly of thoſe, over the compoſition of which we poſſeſs a conſiderable extent of power, it is to be feared, that the condition of the race muſt be conſidered as utterly hopeleſs. There is a large tribe of diſeaſes, which have, in all ages, proved entirely unconquerable by medicine. Though individual inſtances of theſe diſeaſes have occaſionally ſeemed to yield to the powers of art, the remedies which have been thought ſucceſsful, have been found almoſt always unavailing, when repeated in circumſtances, which have appeared perfectly ſimilar. Thus have theſe rare and fortunate events ſerved to evince the force of nature and the feebleneſs of art; and rather to excite a well-founded hope of a

more happy futurity, than to afford a ſteady light for the guidance of the rational phyſician. He has been doomed, in theſe painful circumſtances, to trace the tireſome circuit of an empyrical practice, unleſs his diſguſt or his integrity ſhould prompt him to renounce all attempts at relief, and to leave the ſufferer to his fate, and the confiſcations of impoſtors.

In the ſearch after remedies, the treaſures of nature have been exhauſted by the experiments of benevolence, or the audacity of empyriciſm. The quantities of the matters exhibited, the forms and the combinations have been infinitely varied, but ſtill to no purpoſe. The Herculean diſeaſes, thoſe that baffled the art of HIPPOCRATES, have almoſt all of them preſerved, even to our own days, their characteriſtic obſtinacy, and continue the opprobrium of medicine. Such are Pulmonary Conſumption, Gout, Cancer, Mania, Epilepſy, and even many Cutaneous Eruptions.

But it is well known, that the greater part of theſe diſeaſes are the offspring of civilization, and, in ſome unknown manner, connected with the arts, which are eſſential to this condition. Savage man is almoſt entirely exempt from their dominion, and he ſeems to poſſeſs a frame, in many points, phyſically different from that of man in that degree of cultivation, to which he has hitherto arrived. In proportion as he emerges from his primæval ſtate, do theſe furies advance upon him, and would ſeem to ſcourge him back into the paths of nature and ſimplicity.

Much is attributed to the refinements of our manners, and the delicacy of our habits; to intemperance, to repletion, to heat and cold, and to the influence of the paſsions. Doubtleſs, each of theſe cauſes has a powerful operation on the human frame, whether in its ſound or in its morbid condition. But it may fairly be queſtioned, whether any of them be ſufficient of itſelf to produce the effects

attributed to it, unaided by ſome other more powerful cauſe, hitherto undiſcovered and hardly ſuſpected. For individual inſtances of theſe incurable diſeaſes happen daily, in which none of theſe circumſtances are known to have acted with peculiar energy; and, on the other hand, numbers eſcape them, from whoſe habits we ſhould be led to expect their occurrence, were theſe cauſes alone adequate to their ſuppoſed effects. No axiom is more evident, than that effects are proportionate to their cauſes; including, in the latter term, the time during which they operate. In the caſes under conſideration, ſuch proportion cannot be perceived. Can then the circumſtances aſſigned be eſteemed any other, than exciting cauſes, acting on bodies prediſpoſed to diſeaſed motions or actions?

A little attention may convince us, that it is not man only whoſe frame has been injured by civilization. All the animals which have approached his habita-

tion, or have been reduced under his dominion, have alſo partaken of his misfortune. The domeſtic fowl acquire a morbid delicacy, ſo that the greater part of the young frequently periſh. The horſe, as he ſeems to partake much of the diſpoſition, and to poſſeſs many of the paſsions of his rider, has likewiſe the greater part of his diſeaſes. Like him, he is ſubject to inflammations, fevers, conſumption, tetanus, and other maladies, very nearly reſembling thoſe of the human ſubject. Here mental cauſes, to which we are apt to attribute ſo much in the generation of human infirmities, are neceſſarily excluded. Nor can even luxury be juſtly charged with theſe dreadful conſequences, if taken in the ſenſe, in which we apply this term, to the diet and habits of mankind.

Still we cannot but apprehend, that the motions of material ſyſtems are principally dependent upon material forces, and, therefore, that the principal agents

in theſe wonderful phenomena, may be rendered the objects of our ſenſes. If ſo, is it not poſsible to avoid them? Can the evils of ſocial life be eſcaped only by renouncing its advantages and by returning to barbariſm? This queſtion is certainly the moſt important that can be propoſed to human wiſdom. I will not venture to aſſert, that it may be anſwered in the affirmative. But my ſenſes and my underſtanding have utterly deceived me, if a very great improvement may not be made in the condition of man, and particularly in the treatment of ſome of the diſeaſes, which have been hitherto the moſt intractable, by a greater attention to the compoſition of his diet, and eſpecially by avoiding the application of deleterious and poiſonous matter, daily introduced into the ſyſtem, perhaps in many ways, but, principally, and moſt abundantly, under the attractive and unſuſpected form of WATER.

WATERS are divided, by chemical

writers, into two great claſſes, the *economical* and the *medicinal*. The former (it is with theſe only that we have any concern in this place) being ſuch as are commonly applied to domeſtic purpoſes, have been ſuppoſed to contain nothing more, than very minute quantities of well known ſalts. As theſe ſalts, when taken internally in moderate quantities, produce no bad effects on the body, they are deemed, and it would ſeem very properly, to be nearly inert and wholly inoffenſive in the very diluted condition in which they are thus received*. Such being the doctrine of chemiſts, the moſt eminent in their art, it is not at all ſurprizing, that phyſi-

* "1. *Snow water* contains a little muriate of lime, "and ſlight traces of nitrate of lime.—2. *Rain water* has "the ſame ſalts in a larger quantity, alſo air and carbonic "acid.—3. *Spring water* has moſt frequently carbonate "of lime, muriate of lime, muriate of ſoda, or carbo-"nate of ſoda.—4. *River water* has the ſame principles, "but in leſs abundance.—5. *Well water* contains, beſides "the above named ſalts, ſulphate of lime or nitrate of "potaſh."—Such is the doctrine of BERGMAN, quoted and ſanctioned by FOURCROY. See his "Syſteme des "Connoiſſances Chimiques, tom. iv. p. 302."

cians have, in general, entertained little or no apprehenſions from the indiſcriminate uſe of the *economical* waters; and that, whatever may be the ſuſpicions of a few of the moſt judicious, their apprehenſions have been too vague and too little ſupported by experiment, to have had any influence whatever upon the practice of the profeſsion or the habits of the public.

In the numerous experiments which I made on a great variety of common waters, with the view of determining whether, having been in contact with lead, they contained any of the metal in ſolution, I could not but perceive this general account of their contents to be very imperfect, and felt no ſmall degree of aſtoniſhment at the negligence, with which the ſubject had been treated. But though convinced that many waters poſſeſs metallic impregnations, which elude detection by the ordinary methods of examination, I felt only a vague apprehenſion, that this might render them not entirely

ſalubrious: ſtill leſs had I the ſmalleſt ſuſpicion, that any matter might be extracted from them of a deleterious nature. The following circumſtance incited me to attempt a more full and laborious inveſtigation of the properties of common water, which has convinced me, that it is to be reckoned amongſt the ſubſtances, which have the moſt direct and powerful influence on the animal economy, both in health and in diſeaſe.

A lady was occaſionally afflicted with very ſevere pains of the ſtomach, when ſhe lived at a particular houſe, which had repeatedly left her upon changing her reſidence. Unable to account for this circumſtance, ſhe requeſted me to examine the water uſed by the family. It was well taſted, but it had been obſerved to make the teeth dark. I uſed the methods I have deſcribed in another place for the detection of metallic matter, but to no purpoſe. Not being able to diveſt myſelf of the ſuſpicion, that ſome noxious ſub-

ſtance muſt be contained in this water, I evaporated a ſmall portion of it to dryneſs and taſted the reſiduum. Now I obſerved that, though it hardly impreſſed the tongue with any other taſte than the bitterneſs of the deliqueſcent ſalts, there was a peculiarly diſagreeable ſenſe of conſtriction excited in the fauces, which remained there fixed for a long time. The impreſsion was clearly metallic. Though my mind revolted at the ſuſpicion, I thought I perceived a ſtrong reſemblance between this impreſsion and that excited by arſenical ſalts. I waſhed out the deliqueſcent matter, and put the remainder, mixed with a little charcoal powder, between plates of copper, which I expoſed to a red heat. The copper received a white ſtain by this proceſs. A little arſenic was expoſed to the ſame treatment between ſimilar plates. No difference could be obſerved between theſe ſtains in each experiment, unleſs that the impreſsion made by the reſiduum of the water, was the more diſtinct of the two.

Thus was a great degree of probability added to the ſuſpicions I had previouſly entertained.

Amazed at a reſult, ſo ſtrange and unexpected, a croud of reflections could not but ruſh upon my mind. What! is it poſsible that human beings can be daily ſwallowing the moſt virulent of poiſons, without ſuſpicion and almoſt without complaint? Thoſe who have reſided at this place have not been ſingularly unhealthy, and ſome have arrived at the ordinary period of old age. The fact then cannot be ſolitary. Is not this the very dæmon, which, for ſo many ages, has tortured mankind; and which, uſurping the ſenſorium, has corrupted, under a thouſand forms, both the mind and body? the evil ſpirit, which has augmented the wants of man, while it has diminiſhed his enjoyments? which has exaſperated the paſſions, inflamed the appetites, benumbed the ſenſes, and enfeebled the underſtanding? which has converted his fine form

into a ſtorehouſe of diſeaſes, has blaſted the flower of his offspring, and has brought even the ſtrongeſt of his name to an untimely grave?

Several obſervations occurred, ſufficiently rude and vague indeed, but which ſtrengthened, in a degree, my ſuſpicions of the activity of this unſuſpected fluid. I knew a poor family which was very unhealthy; the mother and one daughter had died conſumptive within a year; the father followed ſoon after, before he had completed his fiftieth year; his diſeaſe was dropſy, the conſequence of unſound viſcera. The reſiduum of the water uſed by this family, left the ſame conſtriction in the throat, and was very acerb.

The lady, whoſe caſe is related in another place*, furniſhed another obſervation. Though, as is there related, ſhe became perfectly free from the ſpaſms of the ſtomach and ſwelling of the abdomen,

* See RESEARCHES, &c. Caſe iii, p. 109.

generated, as I believe, by a ſaturnine impregnation of the water ſhe was daily uſing, her health continued obviouſly worſe at her own houſe than at other places. In London, during the ſpring 1802, ſhe was abſolutely without complaint, except the reigning influenza: but, on her return to her uſual reſidence, ſhe began to ſuffer heat of the ſtomach and heartburn, ſick head ach, and an apthous mouth. The water uſed by her had the ſame acerbity and aſtringency as that laſt mentioned*.

Another occurrence afforded a more ſtriking inſtance of the activity of common water on the ſyſtem. A young lady,

* Waters which have an evident ſtypticity, of which there are many, have been called *aluminous* waters; but they have never been proved to contain any aluminous ſalt, and as almoſt all hard waters hold in ſolution acrated lime, it ſeems impoſſible that they ſhould contain alum, which the lime would decompoſe. The aſtringency of theſe waters is from ſome other matter, and I ſuſpect that all our common waters would ſeem aſtringent to thoſe who confine themſelves to uſing diſtilled water. At leaſt, I know this to be true in one inſtance.

who had habitually uſed water, which had been kept in contact with lead, in conſequence of the alarm ſhe received from my late publication, changed it for that of a common pump. Much to her diſappointment, ſhe found that pains of her ſtomach, with which ſhe had been much afflicted, were very ſenſibly aggravated by this change. She had then recourſe to the water ſhe had formerly uſed (that of a running ſtream), taking it directly from a pool. In four days time the ſtomach was greatly relieved, and a hot pimply eruption on the face, which had alſo been much aggravated with the ſtomach pains, began to fade, even within a ſhorter time*.

Impreſſed with the intereſting conſe-

* I would not be underſtood, that this or any diſorder can be ſpeedily cured by a change of water, but, merely, that a ſenſible alteration may be quickly obſerved in the countenance, and, therefore, in the ſtate of the circulation. It will be found, that no change in the habits of life is more quickly and ſenſibly felt than the change of water; but, on the other hand, that nothing is more gradual, than the conſtitutional alterations introduced by the change.

quences of theſe obſervations, and eſpecially with the light they might be expected to throw on the generation and cure of many diſeaſes, I have attempted to gain, by experiment, a more intimate knowledge of the ſubſtances, which impart, to common water, its apparent activity. This attempt has led me into a field of inveſtigation, in which I have been long bewildered, and, at times, deſpaired of obtaining any ſatisfactory reſults; but, at length, by the aid of ſynthetic experiments, I feel myſelf juſtified in offering the following concluſions, which, doubtleſs, are very imperfect, but which, I am perſuaded, are eſſentially well founded.

1. Common water gives products much reſembling thoſe which are derived from animal matter. It is probable, therefore, that it has received a taint from this matter in a ſtate of decompoſition, or, in other words, from *putrefaction*.

2. The metallic baſis of the matter,

which contaminates common water, exactly reſembles *arſenicated manganeſe*.—Theſe metals unite in a great variety of proportions and different degrees of oxygenation. They form the baſis of the matter which I have denominated Septic Poiſon. With the other principles I am not correctly acquainted, but they muſt be thoſe which are common to animal matter. I have hitherto been foiled in every attempt ſo ſeparate this compound into its conſtituent principles, whether it be made artificially or be found already formed.

3. The ſame compound enters into the compoſition of animal matter. I have found it in the coal, which remains after the diſtillation of animal ſubſtances, and the aſhes to which this coal is reducible by incineration.

4. As all animal matter is derived from the vegetable kingdom, the ſame ſubſtance muſt enter likewiſe into the compoſition

compoſition of vegetable matter. It may be readily detected in the aſhes of pit-coal, and, I doubt not, in common vegetable aſhes.

In a word, then, the decompoſition of animal, and, perhaps, of vegetable matter, that is to ſay, *putrefaction*, I believe to be the great inſtrument of the deſtruction of the human ſpecies. By this proceſs a matter is developed, which becomes a true and proper poiſon to the human body. Different ſyſtems and different organs of the ſame ſyſtem are embued with different degrees of reſiſting or conſervative force. Hence the great body of the race periſh prematurely, each at his appointed hour, but with phenomena infinitely varied, according to the varieties of the organs principally affected, the periods of life and the conſtitutional peculiarities of every individual.

I have ſaid, that water is the principal vehicle in which this Septic Poiſon is conveyed into the ſyſtem. The proofs of

this and of the other poſitions, I think it better to throw together at the end of the Inquiry. Taking it for granted in this place, let us conſider, that from the creation of mankind, the earth has been more and more covered with animal exuviæ. Whatever, therefore, is ſoluble, of theſe exuviæ, muſt neceſſarily impregnate that fluid, which percolates the whole ſurface, and in which the ſoil is, as it were, infuſed and macerated. The arts of cultivation, in populous and civilized communities, have increaſed and diffuſed the evil, and the ſeeds of abundance and of deſtruction are ſown by the ſame hand. This immenſe maſs of animal *exuviæ*, I preſume then, to be the grand ſtorehouſe of peſtilence, which, by the intermedium of water, operates uniformly and inceſſantly, and undermines, indiſcriminately, the ſtrength and ſtability of the whole ſociety. If ſimilar matter be directly applied, it may be expected to be ſtill more deleterious. Thus I ſuſpect that putrid meat, muſty bread, and, in ſhort,

every article of diet approaching to corruption, is alſo a true poiſon to the human body. But as ſuch matters are received only occaſionally and reluctantly, from the diſguſt which they naturally excite, the effects of them are hardly perceptible in the ordinary circumſtances of life. On ſome occaſions, however, thoſe effects become ſufficiently obvious. Such are ſeaſons of ſcarcity or dearneſs, when, probably, far greater numbers periſh from the bad qualities of the proviſions than from abſolute want.

Such being the ſhort and ſimple view, which I have been induced to take, of the origin of Conſtitutional Diſeaſes, it muſt follow, that if there exiſt any method of preventing their fatal termination, it muſt be founded upon one of two principles, or upon a combination of both:—1ſt. By the application of ſubſtances which have the power of counteracting the poiſonous matter; and 2dly. By a regimen which will exclude, as much as poſsible, the in-

troduction of new matter into the ſyſtem. The firſt comprehends the medical treatment, properly ſo called, the imperfection of which, however beneficial it is in numerous caſes, and neceſſary, even when it fails to cure, I need not dwell upon any farther. The ſecond method has hitherto been wholly neglected, ſince the origin of our diſeaſes has been ſo imperfectly underſtood, or, rather, has been involved in the moſt profound darkneſs. If it has been practiſed at all, it has been accidentally and incompletely, by the reſort of invalids to ſprings, ſuppoſed to be endued with peculiar powers; but, in truth, diſtinguiſhed only for their purity. The moſt eſſential part of this method conſiſts in the uſe of fluids that are abſolutely pure: the water, in particular, which is the baſis of almoſt all the fluids we uſe, muſt be freed, by diſtillation, from every foreign contaminating matter. This, indeed, is ſo important, that by an attention to this point alone, a ſtop may be put to the progreſs of the moſt contumacious

diſeaſes; and in this aſſertion I am juſtified, by inſtances of benefits received in ſuch caſes, not, indeed, very numerous, and moſt of them ſtill only in the progreſs of amendment, but too ſtrongly marked to permit the the ſuſpicion of error or deception*. The only additional precaution I have much inſiſted upon, is the very ſparing uſe of ſalt and ſalted meats. Solutions of common ſalt preſent appearances ſimilar to common water; and the uſe of meat preſerved by ſalt, is, at leaſt, very ſuſpicious.

* It may be aſked, whether rain water may not ſerve as well as diſtilled water, as it is certainly free from all the *fixed* principles of ſpring water: But I ſuſpect that there are *volatile* principles, which are injurious to the human ſyſtem, as well as thoſe which are fixed. The water which riſes firſt from rain water, by diſtillation, is moſt offenſive to the ſtomach. Rain water depoſits a matter, from which it receives a peculiar taſte; this matter has been called carbonaceous, but it has not, I believe, been duly examined. Above all, rain water is a great fertiliſer, which property it muſt owe to putridity. It receives all the putrid effluvia, which are conſtantly exhaling from the earth, and itſelf readily becomes putrid by ſtagnation. For all theſe reaſons, I conſider it to be eſſentially different from pure diſtilled water.

Milk, I have allowed, whether taken entire, or in the form of whey, butter-milk, or any other preparation, which may make it more eaſy to the ſtomach, or more grateful to the palate. I have, of courſe, forbidden beer, porter, and all liquors, the baſis of which is common water, but have permitted fermented liquors, formed from pure vegetable juices, ſuch as cyder, perry, and good foreign wines, uſed in moderation. I have not even forbidden pure ſpirits, as rum, brandy, &c. diluted with pure diſtilled water. Not that I regard fermented liquors of any kind to be ſalubrious *per ſe*; but it cannot be denied, that, in many caſes, they are uſeful and neceſſary to our habits. I believe the true foundation of their utility conſiſts, in checking the diſpoſition to exceſsive ſecretions, and thus acting as a ſpecies of tonics. A great advantage of changing the nature of the fluids, as I propoſe, is, that we may, by this method, gradually diſcontinue the uſe of fermented liquors, without the ſmalleſt detriment to the health or ſpirits.

This is the ſimple plan of diet which I have been induced to recommend, and believe it to be adapted, and, indeed, the only one adapted to chronic diſeaſes of every ſort. I cannot expect that the practice and the principles on which it is founded, will be received and adopted on my ſingle authority; doubtleſs, they will be treated by the majority with ſuſpicion and incredulity, by numbers, probably, with ridicule and contempt. I muſt appeal from the deciſion of the many to the judicious few, and ſay to the ſcientific inquirer eſpecially, "*Fiat Experimentum.*" Let me urge too, in behalf of a treatment, that at firſt view may appear nugatory, from its very ſimplicity, that it can interfere with no medical treatment, that it impoſes little conſtraint, and that it is adapted to every regimen.

To remove, in ſome degree, the prejudices naturally attached to whatever is ſanctioned by cuſtom, let us inquire, for moment, whether there are not well known

facts in favour of the doctrine I wish to establish.

Now that our diseases, particularly that our chronic diseases are occasioned by errors of diet of some kind, all the world readily presumes. Our English HIPPOCRATES has expressed the popular sentiments, by declaring, that "as acute diseases generally proceed from God, so do chronic ones from ourselves*," that is, from errors in diet principally. The kind of solid aliment has been diversified in every possible way, and an abundance of restrictions have been imposed with regard to the liquids allowed, hitherto with how little success, I need not say. If, then, this whole doctrine of the importance of diet be not completely erroneous, I see not that there remains any object on which to rest our suspicions, except it be the water in common use.

Stomach complaints, under various de-

* SWAN'S SYDENHAM, p. 347.

nominations, affect ſo much the whole community, that an individual can hardly be found, at leaſt, one who has paſt the meridian of life, who is exempted from them. In almoſt all chronic diſeaſes, thedigeſtive and aſsimilating powers are greatly impaired and finally deſtroyed. But if ſuch diſeaſes were the conſequence of a natural imperfection or debility of parts, why ſhould the ſtomach be more conſtantly affected than any other viſcus, the liver, for example, or the ſpleen or the kidneys? From hence it is ſurely probable, that the popular opinion is well founded, and that ſome matter is conſtantly introduced into the ſyſtem, together with the *ingeſta*, which deſtroys the tone of the ſtomach, and ſo, through the medium of this important organ, gradually undermines the ſyſtem.

If the univerſality of cuſtom be thought an evidence of the common experience of mankind, in favour of the innocence or ſalubrity of the cuſtom, the univerſal pre-

valence of diſeaſe, the origin of which is unknown, may be adduced as a proof of the uncertainty of this pretended experience. The drinkers of water are ſo far from having the ſmalleſt exemption from the common lot, that they ſeem liable to ſome complaints almoſt peculiar to themſelves. They are ſubject (even thoſe whoſe habits are temperate) to hot and pimply eruptions on the face, more than beer drinkers. Probably ſome of the Septic Poiſon of the water is precipitated by boiling, and ſome, too, may be neutralized by the bitter of the hop, and ſo rendered leſs noxious. Very hard water alſo is unfit for brewing, which may be another reaſon why beer is, on the whole, more wholeſome than water. Further, it is notorious, that punch, that is to ſay, ardent ſpirits diluted with water, is much more unwholeſome than wine. Numbers of thoſe, who indulge much in its uſe, become dropſical, long before the period of old age. As the alcohol is the ſame in each liquor, this difference in their effects

on the conſtitution ſeems utterly inexplicable, unleſs we admit, in the one, the pernicious effects of the watery vehicle, of which the other is deſtitute.

Ireland has been ſaid, by a celebrated writer*, to ſupply this metropolis with a race of the fineſt women and the ſtouteſt men, which are known in the world. The children of the Iriſh are moſtly fed upon butter milk and potatoes. In Lancaſhire, a county famed for beauty, the ſame diet is much in uſe. A judicious obſerver has told me, that the fineſt family of children he had ever ſeen, was that of a very eminent ſurgeon of Liverpool, and that this family adhered very ſtrictly to this diet. To what can the ſuperior ſalubrity of this diet be aſcribed, if not to the purity of the fluid ſupplied by the butter milk? For any ſolid aliment whatever would ſupply an equal *quantity* of nutriment. Potatoes and water would

* Adam Smith.

certainly afford a very imperfect nouriſhment. I know not that the experiment has been tried, but no one can doubt the fact, who obſerves the condition of our own labouring poor, particularly the women and children. Their principal diet is bread and tea, of which the tea may be conſidered to be eſſentially the ſame as warm water.

If we conſider common water as abſolutely devoid of activity, we ſhould be apt to imagine, that whey can have no medicinal power, except conveying into the ſyſtem a ſmall quantity of nutritive and ſaccharine matter in a watery vehicle. But, on the contrary, perſons feel a very ſenſible lowneſs from its uſe; and it is univerſally allowed to be cooling. This is much the ſame as to ſay, that common water is heating; for the lowneſs can be no other, than the effect of the abſtraction of an accuſtomed ſtimulus.

How, indeed, can we account for the

emetic power of warm water, if it poſſeſs not an eſſential activity? What is its nauſeous taſte, but the natural impreſsion of its conſtituent principles, when the ſenſibility of the organs is increaſed by warmth? If diſtilled, it is not made at all offenſive by warming. When cold, habit has made it to us either inſipid or agreeable. But ſee animals ſmell it, taſte it carefully, and, after this examination, often turn from it with diſguſt. It evidently corrugates the ſkin. Can we wonder, then, that it ſhould affect the internal coat of the ſtomach, which is, perhaps, the moſt ſenſible membrane of the body?

The ſprings of Malvern have proved an efficacious remedy for many obſtinate and deplorable diſeaſes, which have reſiſted the powers of the moſt uſeful and appropriate medicines. They have proved very uſeful in ſcrophulous caſes, in inveterate ulcers, and ſores that have been called fiſtulous; in obſtructed and ſchirrous glands, and ſome that approached to the

ſtate of cancer; in diſorders of the eyes and eye-lids; in nephritic complaints and diſorders of the urinary paſſages; in cutaneous diſeaſes; in coughs from a ſcorbutic and ſcrophulous cauſe; in loſs of appetite, and in immoderate evacuations in the female ſex. Such is the teſtimony of Dr. WALL, a phyſician of great celebrity and unqueſtionable veracity*. His evidence has been confirmed by the ſucceſsive experience of ſome of the firſt of the profeſsion; and I know, that at this day, theſe ſprings are recommended as a dernier reſort, in the moſt deplorable caſes, by one of the moſt eminent phyſicians of the metropolis†.

But the moſt careful analyſis has not been able to detect, in the Malvern Water, any active ingredient whatever, to which medicinal powers can be aſcribed; it is

* See WALL's Treatiſes on Malvern Waters, publiſhed in 1756, 1757, and 1763; or WALL's Tracts, republiſhed by Dr. MARTIN WALL.

† Sir FRANCIS MILLMAN.

no more than the uncontaminated element, nearly approaching to the purity of diſtilled water. As it is, therefore, abſolutely deſtitute of all proper and peculiar medicinal powers, the benefit derived from its uſe can be attributed to no other cauſe, than to the ceſſation of the conſtant and habitual application of noxious matter, contained in the water of common ſprings. When the morbific force is removed, the innate powers of the ſyſtem are developed and become active, and thus is the body gradually reſtored to the actions and ſenſations of health. It is of conſequence to obſerve, that the diſeaſes, in which the pure waters of Malvern have proved beneficial, have no characteriſtic reſemblance, and have not been in the leaſt ſuſpected to be the progeny of a common parent.

The medicinal powers of ſprings, remarkable only for their purity, have been obſerved alſo upon the continent. At Schleuſingen, a town in Hennebergh, a principality of Franconia, are ſuch waters,

famed for their utility in chronic diſeaſes, particularly in calculous complaints, in arthritic, rheumatic, and ſcorbutic affections, and in caſes of muſcular debility. Near Oſterode, a mine town in the Hercynian foreſt, is a fountain of great celebrity, in which not a particle of mineral ingredients can be detected. Within two miles of Halle, at Lebeg, a ſpring riſes out of the rocks, the water of which is pure and imputreſcible. A beer is made of this water, which is uſed as a medicine, of great efficacy in nephritic caſes and in inflammatory habits. Some ſprings, formed by the melting of the ſnow on the Rhætian Alps, have been found to poſſeſs ſimilar virtues. At Piſa, Tettucci, and Nocera, in Italy, there are alſo medicinal ſprings, of great celebrity, which, like our Malvern wells, are deſtitute of all active ingredients*.

A curious error of ſenſation often happens on entering upon a courſe of the Malvern waters, and ſtill more ſtrongly

* Hoffmani Opera, tom. v. p. 206. Fol. Genev. 1740.

upon the firſt uſe of diſtilled water. They ſeem to have a metallic taſte, and this is often ſo remarkable, that perſons cannot be perſuaded, that the water has not contracted ſome metallic impregnation from the worm of the ſtill*. In a ſhort time this ſenſation vaniſhes, and the water, if it be free from empyreuma, becomes inſipid. Let us conſider for a moment, how this erroneous judgment is occaſioned. What we call water, is really a compound fluid, having a conſiderable degree of natural ſtypticity, but which from habit has become nearly inſipid. This can only be effected, in ſound organs, by the ſenſorial motions excited by the fluid, and propagated from the mouth, fauces, and æſophagus to the brain, being balanced

* This metallic, or braſſy taſte, is often obſerved to ariſe ſpontaneouſly in diſeaſe. I lately had an example of it in a lady, who died from a diſeaſe of the ſtomach.—"Viro cuidam," ſays HEBERDEN *, "qui nunquam hydrargyro uſus fuerat, omnes cibi, quoſcunque caperet, viſi ſunt inquinari ſapore æris adeo nanſeoſo, ut omnia faſtidiret, et corpus vireſque amitteret."

* HEBERDEN Commentarii, p. 240.

by equal motions in an oppoſite direction. The poſition of the mind itſelf, the very thoughts of water, are the efficient cauſe of the oppoſite motions, propagated from the ſenſorium to the organs of deglutition. Thus is the mind quieſcent, or, in other words, the fluid ſeems inſipid. But when the water applied is really pure and void of ſtypticity, the balance is deſtroyed, ſo that one force continues active after the oppoſite force has been removed; the motions excited by the poſition of the mind are continued, but are no longer counteracted by the motions excited by the ſtypticity of the fluid. In conſequence, the former motions are attended by their appropriate ſenſations, which appear to be thoſe we term metallic aſtringency*. In

* If theſe principles are juſt, we ſee how erroneouſly we are apt to ſuppoſe ſubſtances, which are inſipid, to be, for that reaſon, void of ſtimulus;—we ſee the mechaniſm of nature, in reconciling the mind to matters originally diſguſting;—and we ſee how there may be great derangements in the condition of the moſt important viſcera, without pain or any ſenſations, which may lead us to the knowledge of the organ principally affected. Indeed,

the one inſtance, the truth of this was extremely clear, for this ſenſe of conſtriction actually took place, and that repeatedly, even before the fluid was applied to the palate, whilſt the cup was approaching to the lips. This phenomenon imitates cloſely the genuine ſymptoms of Hydrophobia, and gives us the clue by which to unravel the ſymptoms of that curious, and, hitherto, inexplicable diſeaſe.

Many other facts might be adduced of a ſimilar tendency; but theſe may be ſufficient to diſarm prejudice and awaken ſuſpicion. I proceed, therefore, not without much diffidence, to hazard ſome opinions on the effects of common water on the ſyſtem, and ſuch practical inferences as may be naturally deduced from them.

In conſidering theſe effects, I lay it down as proved, that the Septic Poiſon is truly of an arſenical nature, and conſe-

theſe diſeaſes are by far the moſt intractable, in which no local affection can be diſcovered, as often happens in Mania, Melancholia, Epilepſy, &c.

quently, that the ſymptoms are of the ſame kind as thoſe produced by that mineral, however inferior in degree. Nor will this appear in the leaſt ſurpriſing, if we bear in mind, that ſome preparations of this mineral are abſolutely inert, and that, therefore, it may readily be preſumed to act with degrees of virulence, infinitely various, according to the form in which it is applied. In the caſe before us, its activity is reduced by the form of combination in which it is found. It is not introduced as a pure mineral, but as an animalized ſubſtance, the baſis of which is metallic. Still, however, its activity muſt be principally due to the arſenical part of the compound, and, therefore, we may be allowed to reaſon from the known effects of the moſt active ingredient, in inveſtigating the probable effects of the compound.

This metal has been moſt commonly received into the ſtomach, in the firſt degree of acidification, a condition in which

it is called *arſenious acid*, or *white arſenic*. In the metallic form, ſome have thought it inert, though ſtill highly dangerous, it being eaſily convertible into an oxide or an acid. When completely acidified (in which ſtate it is called *arſenic acid*), it is alſo leſs active. In every condition, whether it be active *per ſe*, or be rendered ſo by the animal fluids, the effects are uniform, ſo that we may conſider the effects of white arſenic, as the genuine operation of this poiſon.

If white arſenic be taken in a quantity, ſufficient to deſtroy ſuddenly, or to greatly endanger life, it produces inflammation, ulceration, and gangrene of the ſtomach, and what may be conſidered as a ſphacelation of the whole ſyſtem, indicated by a deſtruction of the tone of the fibres, a conſequent ſwelling of the whole body, or of different parts, and by the blood being deprived of the property of coagulating. Theſe are the regular conſequences of exceſsive excitement, or of actions

which completely exhauſt the vital powers. Thoſe who eſcape immediate deſtruction are frequently reſerved only for a more lingering fate, and ſink after an illneſs of a few months, or ſometimes of two or three years. The conſtitution has leſs powers of reſtoration after ſuffering from arſenical poiſon than from others. The compoſition of common water enables us to explain this apparent imperfection of the ſyſtem. At the ſame time it evinces the propriety of uſing in theſe caſes whey, milk and oily matters, in preference to watery liquors; and of making them a principal part of the diet, during the convaleſcent ſtate.

Medicine has conſpired with accident to increaſe our knowledge of the operation of this ſubſtance upon the body. It has been uſed, and ſometimes with much efficacy, as a remedy for intermittent fevers, periodical pains of the head, cutaneous diſeaſes, and in other caſes. When taken with this intention, and in very mi-

nute quantities, the ſenſible effects have been found to be ſimilar in kind to thoſe already deſcribed, though, of courſe, much inferior in degree. It irritates and inflames the parts to which it is applied, and ſo cauſes heat, pain, or uneaſineſs of the ſtomach, with nauſea, vomiting, griping, and purging. It increaſes the ſecretions, and irritates the ſecretory veſſels, through which it paſſes. Thus it excites ſtrangury in paſsing through the kidneys and bladder, and an eruption, like nettleraſh, on the ſkin; the face ſwells, and ſometimes other parts of the body. When its uſe has been continued too long, and ſometimes even when managed with great precaution, it has done much eſſential and permanent injury, and that of different kinds in different ſubjects. Hectic fevers, paralytic weakneſſes, tremors and dropſical ſwellings, have been the moſt common forms of ſubſequent diſeaſe.

All theſe phenomena prove, that the

primary action of this ſubſtance is that of an univerſal ſtimulant, exciting into increaſed and preternatural action every organ to which it is applied. And when we conſider the very minute quantity which is adequate to extraordinary effects, that the thirteenth part of a grain, or leſs, after a few repeated doſes, has cured the moſt obſtinate intermittents, we cannot but deem it the moſt powerful of thoſe with which we are acquainted, and perhaps of all that exiſt in nature.

I ſuppoſe then the Septic Poiſon, conveyed by common water, to occaſion an habitual and preternatural excitement of all the moving and ſenſitive fibres of the bodies, to accelerate the circulation and increaſe all the ſecretions; and as a more abundant nutriment is neceſſary under theſe circumſtances to the ſupport of the body, to increaſe, perhaps, indirectly the appetite and digeſtive powers. And in this manner, I preſume that many phenomena of health may be accounted for,

which are otherwiſe inexplicable; and thus may diſeaſes be traced to a common origin, and be made to yield to a common treatment, though their ſymptoms may be infinitely varied, by reaſon of original differences of the conſtitution, or varieties in the form and quantity of the morbific matter.

In ſome ſyſtems, happily conſtituted, in which the conſervative powers are very great, and uniformly diffuſed over all the organs, this preternatural excitement may not occaſion any apparent diſeaſe; but it is inconceivable, that any morbific force ſhould continue perfectly inert, if conſtantly applied. It may therefore be fairly queſtioned, whether, in every ſubject it does not accelerate the period of old age; and whether it has not been a powerful inſtrument in preventing the race from attaining to that longevity, for which nature ſeems to have deſtined it, and to which, as we are informed by tradition, it arrived in the primitive ages of the world.

In others, this increaſed excitement would appear to lay the foundation of that condition of the ſyſtem, which has been termed the *phlogiſtic diatheſis*, and to ſhew itſelf upon the application of occaſional exciting cauſes in the form of Inflammatory Fever. The ſubjects of this affection have often the appearance of perfect health, or are even more than commonly robuſt. The diſeaſes of ſuch perſons, it is uſual to attribute to *plethora*. But, if I miſtake not, this plethora is itſelf the effect of the artificial introduction of ſtimulant matter into the ſyſtem. In that large tribe of diſeaſes, called inflammatory, the uniform appearances of the conſtitutional affection, however various may be the local ſymptoms, and the relief experienced in all the diverſities of the ſymptoms by an uniform method of treatment, ſtrongly point out the operation of a common cauſe influencing their production. Nature alone is frequently adequate to the cure of theſe diſeaſes. This ſhe effects by deſtroying the appetite, and increaſing the ſecretions;

thus is the plethora ſucceeded by inanition, and the conſequences diſappear as the cauſe is removed. There is probably alſo, a change effected in the compoſition of the blood, by the proceſs of fever, though in what it conſiſts we are unable diſtinctly to deſcribe. Medicine too is, in theſe caſes, of very great efficacy, when judiciouſly directed to ſecond the efforts of nature, to limit her exceſſes, ſupply her imperfections, and correct her aberrations*.

* This account of the generation of diſeaſes, has not the misfortune or the recommendation of novelty, ſo much as may at firſt ſight be imagined. MORTON (whoſe ſagacity no one acquainted with his works will deny) grounded his whole doctrine upon a ſimilar hypotheſis.—"In ſtatu præternaturali," he ſays, "ſpiritus animalis, non ſecus ac maſſa ſanguinis, *fermento peregrino* inquinatus, morboſum characterem recipit. Ex quo non tantum morbi cephalici, uti Apoplexia, Vertigo, Lethargus, Coma, Epilepſia, Convulſio, Mania, Melancholia primaria, verum etiam Incubus, Hyſterica Paſſio, Affectiones Hypocondriacæ, Paralyſis, cæterique morbi generis nervoſi, immo et febres cujuſcunque generis, Variolæ, Morbilli, Scorbutus, et generaliter loquendo, omnes morbi ſive Acuti ſive Chronici generantur, &c." MORTON Opera, Pyretologia, p. 5. Genevæ, 1727.—Again "Febris

In the application of medicines to the cure of inflammatory diſeaſes, there ſeems little room for improvement. But I cannot but think, that the treatment would be oftentimes more ſucceſsful, by ſubſtituting whey, butter-milk and *pure* water (by which I always mean *diſtilled*) for all liquids impregnated with the Septic Poiſon. This is of the more conſequence, as the principal part of the aliment is of neceſsity confined to liquid matter. Where I have applied the principle, I have thought it ſhortened the progreſs of the diſeaſe, and alleviated the violence of the ſymptoms; and in ſome inſtances of great ſeverity, it has appeared to preſerve the life of the patient. But ſuch caſes are not a proper ſubject for detail, ſince it is hardly poſſible to impreſs upon others the ſame perſuaſion which you feel yourſelf of the degree of danger, to which a patient is ex-

acuta in genere eſt calor præternaturalis in ſanguine accenſus a ſpiritu animali, *miaſmate quodam deleterio* contaminato, &c. ib. p. 20.

poſed, in diſeaſes which have frequently a natural termination in recovery.

No one doubts, that by the abuſe of wine, or of ſpices, or of opium, a mild inflammatory fever will be greatly exaſperated, and perhaps be rendered fatal. In theſe affections, a very powerful operation is produced by a quantity of ſtimulant matter, too ſmall to have any perceptible influence in health. A ſingle glaſs of wine, for example, will occaſion headach and accelerate the pulſe, as much as a bottle in the ordinary condition of the ſyſtem. On the ſame principle, the Septic Poiſon of common water may be ſuſpected to be more powerfully injurious in inflammatory fever than in health, and the withdrawing of it, as much as poſsible, to prove more ſenſibly beneficial.

Though we denominate theſe diſorders by certain ſpecific names, as *phrenitis*, *pneumonia*, &c. they are rarely ſo well defined in nature, as theſe terms would

lead us to imagine; on the contrary, different organs are often affected ſimultaneouſly. The ſtomach, in particular, is apt to participate greatly in the inflammatory condition of the ſyſtem, ſo that it poſſeſſes an extreme degree of irritability, naufeating ſolid aliment, and rejecting even liquids, except of the mildeſt nature. I can venture to aſſert moſt confidently, that the abſtraction of common water, and the uſe of pure diluents, tends moſt powerfully and ſpeedily to remove this condition of the ſtomach. By this change, then, we may acquire a great controul over a train of very diſtreſsing ſymptoms, which greatly aggravate the ſufferings of the patient, and augment the danger of the diſeaſe. On all accounts then, I apprehend the antiphlogiſtic regimen to be very imperfectly obſerved, unleſs to the other methods in common uſe be joined the removal of all irritation from this ſource.

But there are other conditions of the

ſyſtem beſides that juſt deſcribed, which, form the foundation of *chronic diſeaſes*. Some of theſe are marked by weakneſs and mobility of the fibres; others by ſtrength and torpor. In ſome, the ſenſorium is preternaturally ſenſible to impreſsion; in others, it is morbidly obtuſe and inirritable. *Pulmonary Conſumption* furniſhes an example of the firſt condition; *Melancholia* and *Mania** of the ſecond. The diſeaſes which are aſſociated with theſe different ſtates of the nervous power, are, in general, very imperfectly under the controul of medicine. Some are wholly intractable; others, though not ſpeedily terminating in death,

* I cannot forbear introducing the following remarkable teſtimony of VAN SWIETEN, on the effect of fruit and fruit *only* in *Mania*. It coincides, completely, with the doctrine I wiſh to eſtabliſh, and the practice I am anxious to introduce. "Furentiſſimos ex melancholiâ maniacos ſe-"natos vidi, dum *ſolis* fructibus horæis veſcebantur; et "quidem ceraſis, aut fragis, ad viginti et ultra libros "quotidie per aliquot ſeptimanes aſſumptis, dum reliquos "omnes cibos et cuncta remedia, ob veneni ſuſpicionem, "quam pertinaciſſime averſabantur."—VAN SWIETEN Comment. in BOERHAAVE Aphoriſm. 1097.

are the habitual companions of a wretched and valetudinary condition. And if ſome of theſe are not deemed in their own nature fatal, it is often owing to the acceſſion of new ſymptoms, in conſequence of which change, a new denomination is given to the aggregate of the phenomena, and that is eſteemed a new diſeaſe, which is, in truth, no more than a continuation of the old.

The antients attributed almoſt all chronic diſeaſes to the exceſs in quantity, or change in quality, of the humours, and particularly of the *atra bilis*, or *melancholic humour*, which they eſteemed a conſtituent principle of the animal fluids. The adoption of this theory is a proof, that they thought a great variety of chronic diſeaſes to be the offspring of ſome common matter, either received from without or generated within the body. Certain evident appearances, either on the ſurface of the body, or in the conditions of the ſecretions, which they obſerved to be common to moſt

of them, gave a probability to this hypotheſis. How theſe appearances were generated, they could not but be wholly ignorant, as, indeed, we have continued to be even to our own days.

In aſcribing then theſe diſeaſes to one common cauſe, I am ſupported by the ſpirit, at leaſt, of antient obſervation. In the ſame ſpirit of ſimplicity is it maintained by BOERHAAVE—"hos (morbos "chronicos) varietate quidem infinitos ra-"tione ſymptomatum, tamen ex origine "non adeo compoſitâ pendere, neque tam "varia medicamenta medendive metho-"dum requirere*." In all the great proceſſes of nature, the laws of which have been juſtly developed, a ſimilar ſimplicity, equally grand and beautiful, has been diſcovered. Thus may a ſingle fact, or a ſingle principle, preſented, perhaps, by accident, or detected by induſtry, be made to explain an infinity of phenomena, and

* BOERHAAVE Aphoriſm, 1056.

facts, the moſt inſulated and inexplicable, be reduced into order and harmony.

It may be obſerved, in general, that the digeſtive organs are, in almoſt all chronic diſeaſes, greatly injured, inſomuch that the ſtomach has been aptly denominated the univerſal ſympathiſer. The derangement is different in different diſeaſes, or in different ſubjects. In ſome, the appetite is impaired; in others, the digeſtive powers; in others again, both the one and the other is morbidly increaſed. Whether this condition of the ſtomach is to be eſteemed an effect of the alteration of the remote organs, or a cauſe of ſuch alteration, it has not been poſsible to determine. I apprehend it neither to be the one nor the other, but rather the conſequence of its ſituation and functions: theſe expoſe it moſt directly and powerfully to the influence of the poiſon, and it is, therefore, the firſt to feel the injury, which through it is communicated to the maſs, and to feel it the moſt ſenſibly,

from the direct application of it, in the higheſt degree of concentration.

It is eaſy to foreſee a multitude of objections, which will be raiſed againſt this account of the generation of diſeaſes. Water, it will be ſaid, is the fluid deſtined by nature to the uſe of man, and to aſcribe theſe miſchiefs to this matter, is to charge them directly upon nature, and the great Author of nature. To this it is enough to anſwer, that the true nature of man is to be improveable, without limit, by the exertion of his intellectual powers. Every thing about him is artificial, and, in a manner, created by himſelf. As he is obliged to ſubmit almoſt every article of his ſuſtenance to artificial proceſſes, what difficulty is there in the ſuppoſition, that the fluids he admits ought to be treated with equal care? This is, in fact, what is done with almoſt all that are uſed. Few ſurely will contend, that theſe proceſſes, or any others, have hitherto at all approached to perfection.

It may be thought, that the quantity of deleterious matter is too minute to operate the effects attributed to it; or that, by its mode of combination, it may be rendered inert. The quantity cannot eaſily be eſtimated; but being enough to cauſe a ſenſible impreſsion on the palate and often on the ſtomach, there can be no difficulty in apprehending, that it may be active on the whole ſyſtem. Doubtleſs, the Septic Poiſon is infinitely leſs powerful than its arſenical baſis would be, if it were uncombined and acted with its whole energy. But as its nature is ſtill arſenical, how much weight is to be given to theſe circumſtances, it is impoſsible to determine by reaſoning *a priori*: experience alone can fully reſolve the queſtion. To the ſmallneſs of the quantity and the inertneſs of the compound, may be oppoſed the extraordinary activity of the arſenical baſis of the poiſon. If a portion of poiſon, equivalent in power to the one hundredth part of a grain of white arſenic, be introduced daily, it would ſeem more than

ſufficient to effect all the evil I attribute to theſe ſolutions.

It has even been queſtioned, whether the ſtimulant power of common water, granting it to poſſeſs ſuch a power, may not be uſeful and neceſſary to the actions of life. Little need be ſaid in refutation of this notion, univerſal experience having ſhown that thoſe ſprings, which are the moſt free from impregnations of all kinds, are perfectly ſalubrious; and of the very few, who have been known to confine themſelves to the uſe of perfectly pure water, ſome have enjoyed a ſingular exemption from diſeaſe*. But wiſhing to acquire correct notions of the effect of ſuch a courſe, and particularly to watch the changes which are introduced by it into the habit, I have cauſed a family,

* "FRANCIS SECARDI HONGO, who made diſtilled wa-
" ter his conſtant drink, without the addition of wine,
" or any ſtrong liquor to the laſt, lived, with remarkably
" good health, to the age of 115 years."—Medical Tranſactions, vol. 1. p. 22.

conſiſting of two perſons and ſeven children (the eldeſt of the age of nine years), to abſtain entirely from the uſe of common water, and to uſe none but diſtilled. This injunction was complied with by all about nine months.

The children were as healthy as is common in families of equal numbers; what complaints they had were chiefly of the bowels, demanding that attention to preſerve regularity in the inteſtinal evacuation, which is ſo commonly requiſite.

The firſt effect of the change was univerſally a paleneſs of the countenance and ſhrinking of the features, a dryneſs of the mouth and fauces, and the ſecretion by the ſkin was evidently diminiſhed. But the inteſtinal ſecretion was increaſed, ſo that there were, for ſeveral days, very large evacuations of dark and lumpy fæces. In about a fortnight the countenance recovered its natural appearance, and for ſeveral months there was little to be obſerved,

except that, upon the whole, the health was very good.

During the whole continuance of this courſe, the bowels continued perfectly regular, ſo that not one of them required a ſingle doſe of phyſic. The fæces alſo, which had often been fetid, hard and dark, in all aſſumed a perfectly healthy colour and conſiſtence. In all, the complexion became much clearer; this was very diſcernible in the two eldeſt, in whom it had been dull and muddy. In all (except the fifth) the habit has been ſtrengthened, though ſome became very ſenſibly thinner. This appears ſtrongly in the firſt and third. The firſt had always been feeble, and had ſhewn a diſpoſition to a curvature of the ſpine: to this there is not at preſent the ſlighteſt tendency. The third (a boy of ſix years) was of a ſcrophulous habit; ſtrongly characteriſed by a fair and pale complexion, extraordinary thinneſs, hardneſs and ſwelling of the abdomen with habitual coſtiveneſs, a

roughneſs of the ſkin, habitual redneſs of the eyelids, and a dilated pupil. Theſe tendencies to diſeaſe have diſappeared. In all, the dark or yellow incruſtation which had formed on the teeth was almoſt removed; and the diſpoſition to form freſh incruſtation is entirely deſtroyed, ſo that the teeth in all will become quite white without any artifice, and the gums perfectly ſound *.

One only of theſe children (the fifth) was of a plethoric and inflammatory habit. In her there was a diſpoſition to turgeſcence and congeſtion in the brain, with a thick and oppreſſed reſpiration, and a ſtrong craving for animal food. The firſt change was, that the reſpiration became more free. The whole habit has gradually

* This black and foul incruſtation appears to be gradually decompoſed by the atmoſphere; but this proceſs is extremely ſlow, ſo that the cruſt remains, long after the diſpoſition to depoſit freſh matter is removed, and the teeth become clean in thoſe parts firſt where the cruſt is thinneſt. As it decompoſes, it puts on different colours, and theſe changes are the ſame in all the teeth in the ſame ſubject, but not in different ſubjects.

become leſs inflammatory, and the fondneſs for animal food has changed to the more natural and healthy appetite, for a light and vegetable diet*. The front teeth of this child were remarkably foul; the black matter did not diſappear, but in this time much of it had worn off, and it wards continued to diminiſh daily.

The mother, whoſe health had been often very infirm, experienced very ſingular benefit from the change. The digeſtion and reſpiration were remarkably ſtrengthened, and that neceſsity for conſtant artificial evacuation, which makes life itſelf ſo uncomfortable, was almoſt entirely obviated. She was enabled to nurſe an infant (remarkable for his ſtrength and livelineſs) during the whole time uninjured. This ſhe could never do before for half ſo long a time, and that too at a great expenſe of her own ſtrength and the health of her offspring. But the benefit

* The ſame is true of them all, but in a ſmaller degree.

was not obtained without ſome inconvenience. At firſt (beſides experiencing the ſame conſequences as the children) a great ſoreneſs was perceived, firſt in the ſtomach and bowels, and afterwards over the whole body; and for ſome time, particularly during the hot weather, ſhe was tormented with exceſsive thirſt and profuſe perſpirations. However, theſe ceaſed gradually, as the ſyſtem became reconciled to the change.

The father had been troubled with a high degree of *dyſpepſia* for a ſeries of years. This was connected with its uſual concomitants, oppreſsive flatulence, pains and uneaſineſs of the ſtomach, coſtiveneſs and tenſion of the *abdomen*, nocturnal reſtleſsneſs and jactations. The indigeſtion was very ſpeedily relieved, and it became ſo trifling as hardly to deſerve notice: with this, all the attendant ſufferings have diſappeared. The bowels became perfectly regular. It may be worth while to add, that he had been troubled for two

months with a conſtant twitching of the left eye-lid, which quickly left him. This complaint, though only an inconvenience, I have known the forerunner of ſerious paralytic affections. The teeth, as in the younger part of the family, which had been much ſoiled, have loſt their dark incruſtation ſpontaneouſly. One tooth has repeatedly received a freſh incruſtation *, whilſt the progreſs of the others towards whiteneſs has been almoſt uniform. This is exactly in contact with a gland in the lip, which occaſionally ſwells; an obſervation which makes it evident, that the dark incruſting matter is mucus blackened by the air; and that though the condition of the fluids, which gives occaſion to this peculiar ſecretion, can be entirely removed, a courſe of nine months is not long enough for the purpoſe †.

* This appearance took place even after the courſe had been continued fifteen months.

† At this period a fatal event neceſſarily withdrew the greater part of them from my immediate inſpection. The ſcarlet fever appeared in the family, which proved fatal,

All theſe obſervations demonſtrate that the confinement to pure water operates, firſt, by ſtrengthening the digeſtive organs, and through them the whole habit; and, ſecondly, by changing the compoſition of blood, and conſequently of the ſecretions: it forms, therefore, a courſe which is completely alterant, and which perhaps is the only one in nature, which truly merits this

firſt to one of the children. The mother too, oppreſſed with fatigue, anxiety and grief, was ſeized with it; her delicate frame withſtood its violence only two days, when her ſpotleſs and tender ſpirit was received into the boſom of her God.

Several months have elapſed ſince this occurrence. Of the two, who have continued under my obſervation, the dyſpeptic ſufferings of the father were entirely removed, after a courſe of about fifteen months. About the ſame time, and not before, every appearance of ſicklineſs was eradicated from the little boy, whoſe ſcrophulous habit has been noticed, and the change in ſtrength and colour was generally remarked. A ſtronger proof can hardly be given of the great ſalubrity of this practice, than that of this child. He was formerly, in the country, very frequently indiſpoſed. For the laſt ſixteen months, the greateſt part of which has been paſſed in the metropolis, he has not had an illneſs of a ſingle day, except a mild attack of ulcerated ſore throat, received by contagion,

denomination. The change is ſo great, that at firſt it is often attended with ſerious inconveniences. In a lady of great ſenſibility, who wiſhed to adopt it, it occaſioned ſuch a dryneſs of the mouth, thirſt, and fever, that ſhe relinquiſhed the attempt*. Another remarked, that it appeared to brace him, as if he had taken large doſes of bark. None of theſe effects can be ſaid juſtly to be cauſed by the proper power of the water, but rather by the ſubduction of an habitual morbid force, and by the diſpoſition to diſeaſed action, which had been previouſly engendered. Theſe feelings of uneaſineſs muſt be eſteemed, therefore, the firſt proceſſes of the conſtitution towards healthy action. Therefore, inſtead of concluding, from any immediate ſufferings, that the water diſagrees, and may prove injurious, the very

* She has recently adopted it again, and the ſecond attempt has been unattended by any ſuffering, and has been followed with the ſame relief to the ſtomach, which all have experienced, who have ſuffered much pain or uneaſineſs of that organ.

oppoſite inference is the juſt one; and they furniſh a powerful motive for perſevering in the courſe. The firſt changes induced, have been as various as the different habits of thoſe who have tried the experiment. Some have not felt any inconvenience, but, on the contrary, have experienced inſtantaneous and progreſsive relief. All who have had any uneaſineſs of the ſtomach, have perceived it to ſit lighter than common water, and, in particular, have found the ſenſe of fullneſs and oppreſsion, which is apt to be felt after meals, to be ſpeedily and greatly diminiſhed.

It may be aſked, and indeed the objection deſerves mature conſideration, if conſtitutional diſeaſes are generally to be eſteemed artificial, and the effects of the *ingeſta*, why do not infants eſcape them? We know that this period is, perhaps of all others, the moſt ſuſceptible of diſeaſed impreſsions, nor is even the fœtus in the womb exempted from them. The anſwer

to this objection, I think, is obvious; viz. that the Septic Poiſon does not act merely by being received into the ſtomach, but by being abſorbed into the circulation, and contaminating the fluids. Infants then become tainted from the blood of the mother. In confirmation of this, all the accounts we have of the infants of ſavage nations, prove them to be more robuſt and leſs liable to be affected by external impreſsions, from their very birth, than among civilized nations. They bear cold bathing in the very firſt days of their exiſtence, a ſhock which would certainly be fatal to the greater part of our infants. There is, then, a ſort of phyſical diffference between the races from the firſt moments of life. With us the infantine nature is diſtinguiſhed chiefly by the activity of the circulation, and the copiouſneſs of the ſecretions. Thus, the very firſt ſtage of life is marked by a cutaneous eruption (the *red gum)* and the whole period of infancy by abundant ſecretions from the ſalivary glands, from the inteſtines, and from the

external mucous glands. The tendency of all theſe evacuations is evidently to the depuration of the fluids, and they are not to be deemed diſeaſes, properly ſpeaking, but conſtitutional proceſſes for the conſervation of the ſyſtem. Even the green acid ſtools of infants, will be found in the moſt healthy, and would appear to be an uſeful and ſalutary evacuation, if not exceſsive in quantity. When theſe fecretions are checked, from cauſes either external or internal, fevers are inſtantly excited, or epilepſies, which are ſtill more dangerous.

Under the view I have taken, the origin of conſtitutional diſeaſes is from without; and the prediſpoſition is to be ſought for in a morbid condition of the fluids. The humoral pathology was adopted, not from any accurate reſearches into the properties of the fluids, nor any profound reaſoning on the phenomena of diſeaſes, but as the reſult of plain, palpable, and obvious obſervation, and affording to common com-

prehenſion an eaſy explanation of a multitude of facts, which are perpetually occurring. If it has been rejected by ſome of the moſt eminent of modern teachers, this has certainly not happened in conſequence of our knowledge of the conſtitution of the fluids having arrived at perfection; on the contrary, it is allowed that no part of chemiſtry is ſo abſtruſe and ſo defective, as that which treats of the compoſition of animal matter. Doubtleſs, to underſtand, as far as it is given to the human intellect to underſtand, the principles of life, is a knowledge of the firſt utility. But thoſe who limit their inquiries to the vital actions, cannot but have a very imperfect view of the economy of nature. To the perfection of phyſiology and pathology, the developement of the compoſition of the matter of the body is as neceſſary, as the inveſtigation of the laws, to which the motions of the ſyſtem, and the ſenſations aſſociated with them, are ſubjected. Theſe are ſiſter branches of the ſame ſcience, each def-

tined to give light and ſupport to the other; and as long as either of them remains rude and uncultivated, medicine muſt continue an art almoſt wholly empyrical, in which the niceſt judgment is liable to great errors, for the want of proper *data*, by which to guide its deciſions.

Waters, which are very hard, ſenſibly coagulate vegetable juices; and, in their ordinary condition, they have a ſimilar action in an inferior degree. The fluids of the animal and vegetable kingdoms have many common properties. Hence there is a great preſumption, that theſe waters have an analogous action on the blood and other fluids of animal bodies. It ſeems probable then, that a portion of the Septic Poiſon is not evacuated, as faſt as it is introduced, but that ſome is conſtantly retained in the maſs, which by the application of freſh matter perpetually increaſes, till the blood and the other fluids become ſaturated. This ſuppoſition is conformable to known facts. Poiſons

or medicines which occaſionally act as ſuch, often appear inert for a time, and then ſuddenly ſhow their deleterious power with extraordinary and unexpected violence. In this caſe they act, not by repeated impulſes, or perpetual irritation, but by their quantities being accumulated (as it has well been termed) in the ſyſtem, and their force being developed by external impressions or accidental circumſtances. Much the ſame thing frequently happens in the formation of acute diſeaſes, of which it may be perceived, that the foundations are laid for a length of time, before any alarm is taken from any great derangement of the vital functions.

Theſe conſiderations explain readily how it comes to paſs, that the changes introduced into the ſyſtem, by abſtaining from the uſe of all but pure liquids, are ſo very ſlow and gradual; and, at the ſame time, they form the limit to the utility of this practice. Such of the conſtitutional ſymptoms, as proceed from a taint of the

whole maſs of fluids, can be removed only by a complete change of the compoſition of the blood; a change neceſſarily requiring a great length of time to be effected, though preciſely how much it is impoſſible to determine. Fifteen months I have ſhown to be inſufficient to prevent the ſecretion of mucus, which blackens by the contact of the atmoſphere, an appearance which is undoubtedly morbid.

I find that the ſame eminent phyſician, whom I have cited, as confiding ſo much in the efficacy of the Malvern water, enjoins a reſidence of two years in caſes which are very ſerious. It is moreover obvious, that where diſeaſe is the effect of this accumulation, the advanced ſtages muſt often prove incurable, though the introduction of new portions of Septic Poiſon be totally prevented. For the diſeaſed actions neceſſarily continuing for a length of time, the opportunity for effecting any important conſtitutional change may have paſſed, ſo that the diſſolution of

the ſyſtem is inevitable. At the ſame time, as it is hardly poſsible to appreciate exactly the reſtorative powers of the body, no caſe is ſo deſperate, as not to warrant a trial of a method ſo ſimple and innocent, and at the ſame time ſo efficacious, as that which I have propoſed.

I have already detailed the effects of the confinement to pure fluids on ſeveral ſubjects; moſt of theſe, enjoying pretty good health, could not be expected to experience any very remarkable change, and therefore, the obſervations which were made may have the appearance of being triflingly minute. To afford ſtill more ſatisfactory evidence of the utility of the practice, I ſhall relate a few trials, which have been made of its efficacy in caſes of diſeaſe. They have the eſſential requiſite of being caſes of great obſtinacy, and to the cure of which medicine alone was inadequate. On the other hand, they have the diſadvantage of the courſe not having been purſued long enough for the patients

to reap all the benefit, that is expected from it. The facts, however, even under this difadvantage, will, I think, be deemed ſufficiently ſtriking.

CASE I.

The Rev. Mr. M——s, aged thirty-three, a gentleman of dark complexion and melancholic temperament, had been afflicted with ſick headach for ſixteen years at the leaſt. The paroxyſms were of ſingular ſeverity, continuing commonly for twenty-four, often for forty-eight hours, during which time he was incapable of any exertion, and was generally confined to his bed for a great part of it. Theſe paroxyſms were attended with great derangement of the ſtomach, eructation, and frequently with ſickneſs and vomiting. The attacks had recurred at irregular intervals: for the laſt year or two they had generally happened weekly; ſometimes twice a week: for about two months, at

the end of the ſummer of 1803, he had intervals of two or three weeks; but in the autumn and beginning of the winter, they returned as frequently as ever, and with great ſeverity. Many articles of diet would certainly bring on a paroxyſm, from which he was obliged therefore to abſtain, or to uſe them very ſparingly. At all times the bowels were much confined, and the ſtomach perpetually oppreſſed with flatulence. From medicine, which had been applied under the beſt advice, he had received occaſional relief; but it had never proved laſting, ſo that he was obliged to content himſelf with regulating the bowels, by the conſtant uſe of aperient medicines. Excepting theſe diſtreſsing paroxyſms, he could not be ſaid to be out of health; the ſtrength, ſleep, and appetite were unimpaired, but the countenance had always a dull and ſickly paleneſs.

About the beginning of 1804, he entered upon the courſe propoſed, and has

adhered to it with the greateſt regularity. It has not been at all irkſome to him, as he is a water drinker, and very ſparing in the uſe of wine. No change was made in his diet, and the only medicine he has taken are ſome aperient pills, to which he had been accuſtomed. The fluid he confined himſelf to for the firſt five months was diſtilled water.

After uſing this courſe for three weeks, he experienced very ſenſible relief. The paroxyſms of headach ſtill recurred as uſual, but with much leſs ſeverity, and ever ſince the diſorder has continued to decline. During the months of March, April, and May, he had only three attacks, and thoſe of ſo little ſeverity as not to interrupt his uſual occupations. From the beginning of June to October, not being able to procure the water, he confined himſelf to whey. During this period of four months he has ſuffered only two attacks; one trifling, the other of ſome ſeverity, but ſtill much leſs violent

than formerly. The flatulence of the ſtomach is removed, the indigeſtion greatly relieved, ſo that he now uſes many articles of diet, which formerly he could not venture upon; and the countenance has entirely loſt the ſickly paleneſs, which has been ſucceeded by a freſh and healthy colour.

But it is evident, that, notwithſtanding he has received ſuch ſtriking benefit, the diſpoſition to the diſeaſe is not eradicated. The conſtipation of the bowels ſtill remains, and he did not find the whey, when uſed in this manner, to have any laxative powers; nor does he think it corrects the ſymptoms of *dyſpepſia* ſo powerfully as the pure water. The paroxyſms of headach were commonly preceded by a ſenſe of laſsitude and debility of the legs. This feeling he often has at preſent, but not followed by headach, as heretofore. He thinks alſo, that this diet has produced a degree of muſcular debility, which is however but trifling.

During the month of October, he was forced to abandon the ſyſtem, and to uſe common water. After three weeks the headachs began to return as frequently as ever, ſo that he ſuffered three in the ſpace of twelve days; and, in a ſhort time, the change of his countenance evidently betrayed the irritation of the ſyſtem. Towards the middle of November, he had again recourſe to the diſtilled water, and experienced the ſame advantage as before.

Mrs. M—— has uſed the ſame courſe with her huſband. She was in perfect health before ſhe entered on it, and has obſerved no ſenſible alteration from the change.

CASE II.

A little boy, between five and ſix years old, nephew to Mr. ROBERTS, Surgeon, of Chancery-lane, had loſt the uſe of his lower limbs, ſo that he could move only

on crutches, and the body was ſupported by irons. The diſeaſe had been formed three years and a half, and the weakneſs of the legs was ſuch, that he could not imitate the motions of walking in the ſmalleſt degree. This weakneſs was obviouſly from a defect of the nutrition of the parts, and the left leg was more ſhrunk and contracted than the right. The other parts of the body were perfect in ſize and ſtrength; but the health was not good. The ſtomach was oppreſſed with flatulence; the abdomen tenſe; the bowels irregular; the ſtools foul, dark, and loaded with gelatinous matter; the countenance ſallow and bloated.

To the uſe of medicines, which ſeemed adapted to the circumſtances of the caſe, was joined the dietetic courſe, which I have ſo often mentioned; it was begun about the beginning of February, 1804, and purſued ſteadily four months. By this time, he could uſe his legs ſo much as to

form the motions of walking, and the muſcles of the contracted limb had began to ſwell out, and were ſtronger. His health improved, his countenance became clear, and his evacuations natural, except that a calomel purge ſtill brought away much gelatinous matter. It was obſerved too, that by taking beer, the flatulence and oppreſsion of the ſtomach returned immediately.

In June he left town, and has ſince been for a time at the ſea, and in the country, where he reſides. The ſame regimen has been obſerved, but not with perfect ſtrictneſs. The laſt account I have heard of him was in the middle of December, at which time his mother writes—"That "he is well in health, and ſtronger; gets "about very much, has got up ſtairs three "times without help, and wiſhes much to "to leave off his irons;" and ſhe requeſts to be told, whether this may be allowed.

CASE III.

Rev. Mr. W——s, aged thirty-ſix, had for a ſeries of years been falling into a deplorable ſtate of muſcular debility. This had at length become ſo extreme, that the hands were nearly uſeleſs, and he walked with much difficulty, going very ſlowly, and with ſteps of leſs than half the natural length. The circulation was very feeble, the extremities cold; there was a kind of ſtricture at the joints of the knees and ancles, diminiſhing the flexibility of the limbs, and there were old ulcers upon each ancle, which had been dried up, but had never healed from the bottom.

He uſed the regimen I have laid down for about four months pretty ſtrictly, with the effect of ſtrengthening the habit very remarkably, ſo that at the end of this time he could take long walks; the extremities had recovered their natural warmth, and the ulcers had firſt inflamed and be-

come painful, and afterwards perfectly healed and ſkinned. The flexibility of the lower extremities was alſo reſtored.

During the ſummer the regimen was continued very imperfectly. Still, from having been enabled to uſe exerciſe, he has continued to gain ſtrength. The upper extremities have regained their powers more perfectly than the lower. He has found a good deal of aſsiſtance in walking, by the uſe of a bandage laced tightly over the legs.

The condition of the arms, in this patient, reſembled ſo perfectly that of thoſe, who become paralytic after ſuffering ſaturnine colic, that I doubt not that the peculiar ſymptoms of the caſe were cauſed by the poiſon of lead. I poſſeſs ſome collateral evidence (which it is needleſs to adduce here) that the water in common uſe was the vehicle of this poiſon. But as this ſort of palſy remains, and often increaſes, after its ſpecific cauſe has long

ceaſed to operate, this continuance is due to other morbific forces, preventing the reſtoration of the nervous energy. Such ſufferers are objects, therefore, of this treatment as much as the ſubjects of other chronic diſeaſes; nor are there any in which medicine more requires every aſſiſtance, that can be given to it by diet.

CASE IV.

A widow lady gave a very ſtriking proof of the great change introduced into the ſyſtem by the uſe of pure water. She had been afflicted ſome months with a very hot and red efflorescence on the face and forehead, producing a ſcurfy matter on the ſkin. The eye-lids partook of the diſeaſe of the face. She uſed the regimen for a week. The efflorescence faded greatly during its uſe; but the change produced great flatulence, ſick headach, conſtipation, and other ſevere and diſagreeable ſymptoms. Upon diſcontinuing it, the efflorescence quickly returned. After a

fortnight ſhe reſumed the regimen, and a ſecond time it faded as before, and the uſe of the water was now unattended by any diſagreeable effects. But as the habit became reconciled to the change, the diſeaſe returned. After four months, however, the forehead had become clear, and on the cheeks it ſometimes faded, and at other times returned as much as ever. Since the cold weather it has been ſtationary, and the eye-lids (which had been well) have become again inflamed. It muſt undoubtedly take many more months before this diſorder is eradicated.

This lady thinks, that the regimen has produced a ſenſe of debility, ſimilar to that obſerved by Mr. M——s. Page 76.

CASE V.

An unmarried lady, under middle age, had been ſubject for a ſeries of years to toothach and pains about the face and head. After ſuffering ſeveral attacks of

this kind, almoſt annually, her health began to fail, and ſhe became afflicted with a variety of irregular nervous ſymptoms. The eyes became preternaturally ſenſible to light, the pupils contracted, the eye-lids ſtiff, and ſhe was unable to raiſe them, and brown and yellow ſpots were floating before her, on attempting to read or work. The mucus of the noſe was altered in its texture, became fetid, and approached the nature of pus. The power of articulation was impaired, the ſpeech being at times thick and indiſtinct. The whole head was cold, uneaſy, and very ſore and tender externally, with a great confuſion of the mental faculties. All theſe uneaſy feelings were greatly aggravated by motion, which occaſioned an irritation, as if the head was ſplitting; in conſequence of which, and of her debility, ſhe could ſcarcely take any exerciſe; her ſleep too was very ſcanty and diſturbed. The digeſtive organs ſuffered as much as the ſenſorium; the appetite was much impaired, and the ſtomach oppreſſed with diſtention, ſpaſms,

uneaſineſs, and flatulence. The general ſtate of health was very bad. There was great muſcular debility, the pulſe very low and feeble, the gums looſe and purple, and a degree of *febricula* was always hanging on her. If I were to mention the eminent and honourable practitioner, whoſe advice ſhe had received without benefit*, I ſhould give the ſtrongeſt proof, that from medicine alone no benefit was to be hoped for. Her complaint had affected her with great ſeverity for two years, but the ſtiffneſs of the eye lid had been of much longer duration. This aggregate of ſymptoms would have been denominated by the old writers *Cachexia Scorbutica*: I know not that there is any appropriate name for it in modern ſyſtems of noſology.

She has adopted my dietetic regimen nearly ſeven months, in union with ſuch medicines, as ſeemed ſuited to the circumſtances of her caſe; and in conſe-

* The medicines ſhe had tried were Flores Cardamines, caſcarilla, æther and camphor.

quence, all the ſymptoms have been ſlowly, but ſteadily receding. The ſtomach, as it received the firſt benefit from the change, has experienced the greateſt improvement, in a permanent increaſe of the appetite and digeſtion. The ocular *ſpectra* have diſappeared, the thickneſs and difficulty of articulation is quite removed, as is likewiſe the foreneſs of the ſcalp; the gums have become firm and florid, and the countenance has regained correſpondent mark of returning health. But the cure is not as yet complete. The eyelids have only partially recovered their flexibility, which gives a peculiarity to the countenance; there remains a conſtant uneaſy feeling in the back part of the head, and this is ſo much aggravated by exertion, as to be a great obſtacle to taking proper exerciſe. Notwithſtanding this inconvenience, ſhe is, even at preſent, enabled to walk more than ſhe has done for upwards of a twelvemonth.

This lady had perceived, for many

years, that a ſlight concuſſion of any kind, as a falſe ſtep in walking, ſhocked the whole head very ſeverely. From this circumſtance and the whole train of ſymptoms, it ſeems probable, that a degree of organic læſion of the brain itſelf, has laid the foundation of the other ſufferings. This ſymptom has declined, with all the others, and in the ſame proportion.

I have ſeen ſtriking benefit from what I conſider to be a partial imitation of this regimen. I directed a poor man, who was a perfect cripple with the rheumatiſm, in which condition he had been the whole of the winter and ſpring of 1804, to confine himſelf, as much as poſsible, to the uſe of milk and whey. In a few weeks he exchanged his crutches for ſticks, and, towards the middle of ſummer, was able to follow his work. Towards the end of autumn he relapſed, though he had perſevered in his diet, but the attack was trifling compared to his former ſufferings, and the great change that has been effected in his

countenance, ſtrength, and voice, make me entirely aſſent to the panegyric on the virtues of milk, pronounced by WEPFER. (Epiſt. ad VERZASCHAM.) "Certe "divini aliquid in lacte latet. Antea "nunquam credidiſſem, niſi id ſenſibus "comperiſſem. Vidi his meis oculis quaſi "novos homines inde factos fuiſſe. Nam "legitimo ejus uſu, habitum firmiorem, "colorem nitidiorem et vires robuſtiores "plurimi acquiriverunt."

I have tried the efficacy (in conjunction with medicine) of this regimen, in a caſe of *Anaſarca* and *Hydrothorax*, which, following *aſcites*, was deemed deſperate. The benefit received from the firſt change was remarkable, but as the patient was ſoon removed from my inſpection, and, after a few weeks, renounced the method, I think it uſeleſs to detail the particulars. I need hardly add, that the diſorder proved ſpeedily fatal.

I have alſo uſed it for ten weeks, in

conjunction with medicine, in a caſe of great torpor of the inteſtines, with atrabiliary evacuations, and ſymptoms, which ſtrongly indicated diſeaſe of the liver. The patient ſeems convaleſcent, but not in a ſtate of ſufficient ſecurity to warrant a deciſive prognoſtic. It may be enough to ſtate, that, in this caſe, the number of the pulſe was at firſt 96 in a minute; during the firſt fortnight it ſunk gradually to 82; at this point it remained ſtationary for five weeks, when it again ſunk to about 74, which is, probably, the natural ſtandard.

It may be remarked of theſe caſes, concerning which we may venture to predict, from the progreſs already made, that they will all, in the end, entirely yield to the treatment purſued, that none could be ſelected more diſſimilar in appearance*.

* I wiſh it alſo to be particularly obſerved of them all, (and, indeed, of all that are related throughout this Inquiry, unleſs it be otherwiſe expreſſed,) that the ſtrength, though much impaired, was not radically exhauſted. I

As far as they go, they prove that the variety of ſymptoms proceeds much more from the variety of habit in the ſubject, than from a difference in the morbific matter, and that in all, the fluids received into the body are the principal vehicles of this matter. This argument might be confirmed by a minute conſideration of the ſymptoms of almoſt all the chronic diſeaſes, to which the frame is liable. But as ſuch an inveſtigation would lead me into a field, infinitely too wide for this occaſion, I ſhall confine myſelf to taking a very curſory view of the principal phenomena of four. Theſe are Scrophula, Conſumption, Cancer and Gout. Scrophula and Conſumption are deemed almoſt endemical to the Britiſh Iſlands, and, doubtleſs, from the univerſal ravages they commit, any improvement in the treatment

ſay this, particularly, becauſe a friend in the country, who has been uſing the method, feels ſurpriſed to obſerve ſo little amendment in three months in ſome caſes, every one of which, (as far as I can collect from his deſcription) were expected to be ſpeedily fatal.

of them is a matter of the greateſt intereſt to the Britiſh public. Towards the cure of Cancer, the moſt tremendous of human calamities, the efforts of profeſſional ſkill have of late been much directed. Beſides the reaſoning on the origin of this cruel malady, I poſſeſs a few facts, which ſtrongly corroborate my opinion, and confirm my hopes, that it is in our power to eradicate it. I may ſay the ſame with regard to Gout. The ſubjects of this diſeaſe, have, in all ages, been the principal victims of the arts of impoſition. It may be reaſonably expected, that the rank and wealth, which have expoſed them ſo much to theſe artifices, will render them more active in the introduction of ſolid improvements, if it ſhould appear, that ſuch are within our reach.

SCROPHULA.

I SHALL content myſelf with a very few words on this diſeaſe, becauſe the ſcrophulous diatheſis is nearly the ſame as that of the purely conſumptive, and will, therefore, be more particularly conſidered hereafter, and becauſe my opinion of the origin of Scrophula has been already maintained, by an authority much ſuperior to my own, though not, perhaps, to the ſame extent. The facts on which it is grounded (independent of thoſe peculiar to myſelf), lye in a narrow compaſs; for it muſt be remarked of the writers, who have ſeemed to eſpouſe this opinion, that, by ſtrumous ſwellings, they have com-

monly underſtood the *Bronchocele*, or Derbyſhire neck, a diſeaſe diſtinct in its ſymptoms from genuine Scrophula, and, probably, dependent upon a different conſtitutional diſpoſition.

It is the opinion of the majority of writers, that a peculiar acrimony is the foundation of this diſeaſe; but they are not agreed upon the nature of this acrimony, nor in what part of the fluids it principally reſides. The lymph has been moſt commonly accuſed, from the diſorder affecting ſo frequently the lymphatic glands: but as the lymph is directly drawn from the blood, the latter cannot well be thought of a healthy compoſition, whilſt the former is acknowledged to be morbid. The ſuppoſition, indeed, of the lymph being peculiarly affected, does not accord with the phenomena of the diſeaſe. If any one diſeaſe, whatever, can be truly called conſtitutional, it is Scrophula. Beſides the lymphatic ſyſtem, it affects almoſt every part of the body, external and

internal. The ſkin, the organs of ſenſations, thoſe of generation in both ſexes, the mammæ, and the bones, ſuffer from its ravages*. Scrophulous tumours or abſceſſes, have been found within the cavity of the *pericardium*, in the lungs, *peritonæum*, *omentum*, meſentery, liver, ſpleen, kidneys, bladder, *veſiculæ ſeminales*, proſtate gland, teſticles, and connected with the membranes of the brains†. Moreover, there is evidently in ſcrophulous ſubjects a laxity of all the muſcular fibres, ſo that the parts, which are not diſeaſed in ſtructure, are, notwithſtanding, morbid in their actions and powers. It is obvious then, that Scrophula is a conſtitutional diſeaſe, and if dependent upon acrimony, that is to ſay, upon a morbific matter, it muſt be ſuch as pervades the whole maſs.

The ſigns of this acrimony have not been very diſtinctly laid down; ſo that

* Hamilton on Scrophula.

† Baillies' Morbid Anatomy—paſſim.

its exiſtence is, by many, ſtill deemed a gratuitous aſſumption; and,, doubtleſs the hypotheſis has led to no uſeful practical inference. I think it is ſhewn by the diſpoſition to increaſed ſecretions (as the diſcharge behind the ears); and the habitual ſtate of inflammation of the parts moſt affected (as of the mucous membrane of the upper lip and noſe, or the ciliary glands), plainly evinces, that the inflamed parts are habitually irritated by the fluids, which paſs through them.

There will ſeem no improbability in this ſuppoſition to thoſe, who reflect on the examples of the virulence and activity of the ſecretions, which are related by writers of the beſt credit. Matter has been thrown from the ſtomach, cauſing an indelible ſtain on ſilver veſſels*. The ſweat has been obſerved to be ſo acrid, as not only to excoriate the ſkin, but to deſtroy the texture of the linen†. The acidity of

* Schenkii Obſerv. Med. Lib. iii. Obſ. iii.

† Hoffmanni Opera. Tom. iv. p. 407.

the perſpiration, in different diſeaſes, has been very commonly obſerved*. The urine of ſcorbutic patients has corroded linen†. The blood itſelf has been ſaid to corrode and render friable the lancet uſed in phlebotomy‡. VAUQUELIN has ſhown that the ſerum of the blood diſſolves copper§. Triturating mercury with fat, effects a true oxidation of the metal||. The ſaliva not only oxidates iron, copper, and mercury, but even gold and ſilver, according to the curious obſervation of MICHEL DU TENNETAN¶.

Diſſections have ſhown, that in caſes of deep Scrophula the glands of the meſentery ſuffer like the external glands, and it is known alſo, that the former are very commonly diſeaſed, where there are no

* HALLER Phyſiolog. Tom. v. p. 49.

† SENNERT. Tr. de Conſenſa et Diſſenſu Chymicorum. Lib. I. c. xvi. p. 16. DORING Tr. de Scorbuto, p. 109.

‡ Miſ. Nat. Cur. Dec. ii. A. II. Obſ. 107.

§ FOURCROY Connaiſſances Chymiques. Tom. ix, p. 154.

|| Ib. 183. ¶ Ib. 366.

marks of Scrophula on the ſurface of the body. This fact, alone, renders it highly probable, that the acrimonious matter is not generated within the body, but that it is introduced from without, and paſſes through the lacteals into the blood. If ſo, it muſt be received with the *ingeſta*.

This opinion nearly coincides with that of thoſe, who attribute the frequency of Scrophula among the poor to the poverty of their diet. But the ſame cannot be alleged of the rich; and I cannot find any writer who directly attributes it to the impurity of water*, unleſs it be the venerable HEBERDEN, and that in a manner very guarded and reſerved. He has ſaid, that glandular ſwellings, in thoſe

* Dr. PERCIVAL* cites the Comment. Med. Lips. Vol. ii. p. 103. for the fact, that thoſe who uſe the waters of the river Kirenga, in Siberia, become ſcrophulous. But the diſeaſe ſaid to be produced by theſe waters is the Bronchocele. The original authority is GMELIN, Reiſſe durch Sibirien. Tom. ii. p. 282. 8vo.—Gottingen, 1752.

* Eſſays on Water, Vol. i.

who have enjoyed an habitual ſtate of good health, are cauſed by unwholeſome diet*, of which we know, from the tenour of his writings, that he eſteemed hard water to be a very principal article. He has adduced a remarkable change, which took place in the health of the inhabitants of Rheims, as a proof of the great importance of the purity of water in this diſeaſe. The facts are ſo ſtrong, that it is worth while to produce the authority, on which they reſt. The following is the ſtatement of M. LAIGNIERES, a phyſician of Rheims, to M. THOUVENEL.

" Since an excellent inhabitant of this " place has generouſly expended a large " ſum of money in the conſtruction of " an hydraulic machine on the canal of " the Veſle, by which the water of this " river is diſtributed to every part of the " town, a favourable change has been " obſerved in the health of the inhabitants,

* HEBERDEN Comment. p. 362.

" not only in regard to the Bronchocele,
" but alſo in ſcrophulous complaints,
" which were equally common. Beſides
" the common and general belief, I have
" aſcertained the fact of the diminution
" of ſcrophulous diſorders by particular
" evidence. The hoſpital of St. Mar-
" couff is appropriated ſolely to the vic-
" tims of this cruel diſeaſe. I have con-
" ſulted the regiſters of this inſtitution,
" and find that the number of patients
" has been diminiſhed more than one
" half in about the laſt thirty years. The
" religious ſiſterhood of the hoſpital aſ-
" ſured me, that the number is ſtill de-
" creaſing daily; ſo that if, as is probable,
" this diminution continues, the greater
" part of the funds of this hoſpital may
" be diverted to objects of more urgent
" neceſsity*."

This account renders it probable, that Scrophula and Bronchocele have the ſame

* Soc. Roy. de Medicine, Vol. ii. Hiſtoire, p. 280.

origin. But with regard to the latter diſeaſe, there is ſuch a hoſt of evidence in favour of its being produced by water, that it is quite needleſs to adduce either argument or authority to eſtabliſh this point. The inference is obvious. In certain ſituations, Scrophula is common and Bronchocele rare: in others, the reverſe is the fact. The proportionate frequency either of the one or the other, depends on accidental circumſtances, which have power enough to modify the conſtitution, but which would not alone be ſufficient to excite either the one or the other diſeaſe.

The following hiſtory is given us by HEBERDEN, on his own authority:—"An "impure water, which curdled with ſoap, "appeared evidently, in one adult pa- "tient, to lay the foundation of ſtrumous "ſwellings. This perſon had lived, for "thirty years, free from every ſtrumous "taint, the ſigns of which, at laſt, be- "came viſible, after drinking a water of

" this ſort a few years. The lymphatic " glands became tumid, both in the neck " and the *axilla*, and ſometimes ſuppu- " rated, as long as he uſed theſe waters, " but after he began to uſe a purer ſort, " the ſwellings began to recede, and, at " length, they all diſappeared, nor had " they returned after the lapſe of thirty " years*."

It ſeems ſurpriſing, that one who viewed the ſubject in this light, had not brought the queſtion to the teſt of experiment; for it is evident, that citing *one* caſe is equivalent to an acknowledgement, that he was not furniſhed with any others of equal weight. But the evidence, if duly weighed, furniſhes ground for ſuſpicion, much beyond the direct proof it affords. In the caſe of the city of Rheims, the uſe of the waters of the Veſle did not eradicate the Scrophula, but ſimply diminiſh the number of ſufferers. It would ſeem,

* Heberden Commentarii, p. 362.

therefore, that this water furniſhed the tainting matter, but in leſs abundance, or in a milder form, than the water of the wells. The prejudice which the very accurate obſerver, whom I have quoted, entertained againſt the *hardneſs* of waters, probably miſled him, ſo that he took for granted, that ſoft waters are innoxious. But the Septic Poiſon may undoubtedly be found, both in hard and in ſoft waters; and there is no reaſon to think, that the inſalubrity of different ſprings bears any certain proportion to the reſpective quantities of ſolid matter, contained in a given quantity of the fluid. The experience of CULLEN leads us to form the oppoſite concluſion*.

If to this evidence we add the acknowledged power of the pure water of Malvern, in many caſes of deep Scrophula, it affords no ſmall preſumption, independent of the proof furniſhed by this inveſtigation, that impurity of water is the

* CULLEN's Materia Medica, Vol. i. p. 406.

real ſource of this moſt common and univerſal of all diſeaſes. The juſt inference to be drawn from this preſumption, is of great latitude and importance.

The Bronchocele is univerſally allowed to be generated by the uſe of impure water, which diſeaſe, though more frequent in certain ſituations, is diffuſed ſporadically over the whole country; and it has been made probable, that Scrophula may be traced to the ſame ſource. But Scrophula is the baſis of many other of the moſt ſerious and fatal diſeaſes, which afflict the human frame. The connection between Scrophula and Pulmonary Conſumption is obvious and acknowledged; the latter being often no more than conſtitutional ſymptoms ingrafted upon the ſcrophulous diatheſis. It has been aſſerted by writers of great experience, that ſchirrus is always found in ſcrophulous ſubjects; and even that moſt dreadful of human maladies, Cancer, has been deemed a modification of the ſame diſeaſe; undoubtedly

there are features of reſemblance, ſtrong enough to warrant this ſuſpicion.

But let us carry this reaſoning one ſtep farther. It is not unuſual, that out of large families, the greater number periſh before puberty; and that ſome bear deep marks of a ſcrophulous taint, from which the others are exempt. But can it be believed, that the poiſon, which is powerful enough to excite Scrophula, is abſolutely inert upon thoſe, who bear no external marks of its action? Is a matter, which in ſome inflames the emunctories, through which it is ſecreted, and irritates the lymphatic glands, through which it paſſes in the courſe of abſorption, is it probable, I ſay, that this matter is abſolutely innoxious upon thoſe, whoſe fibres are more firm, whoſe ſyſtems are more torpid, or whoſe glands are leſs irritable? Surely, ſuch an aſſumption is repugnant to every law of ſound reaſoning. On the contrary, if the *data* be granted, we can hardly avoid ſuſpecting, that a ſub-

ſtance ſo active will betray its energy in a variety of forms, and that tribes of diſeaſes, the moſt diſsimilar in their obvious external characters, may be traced to a common ſource, and be ſubdued by a common regimen.

In addition to the proofs already adduced of the connection of Scrophula with water, we may add, that domeſticated animals are ſubject to it. It affects ſwine and cats. The Farcy of horſes is a ſcrophulous diſorder*. I think Mr. HUNTER uſed to obſerve, in his lectures, that tame monkeys are very ſubject to it. Sheep have it in all its forms.

I have not had an opportunity of treating any ſubject, labouring under pure Scrophula, according to the method propoſed in this Enquiry. I entertain no doubt, from the changes I have related, which took place in the habit of the little

* SAUVAGES Noſologia, Vol. ii. p. 543 et 544.

boy, who has undergone this courſe (See p. 61), that it would yield to this treatment, but there is no reaſon for ſuppoſing that this would happen ſpeedily. On the contrary, caſes that are deeply rooted, would, probably, demand much patience and perſeverance. Medicines, likewiſe, of which experience has ſhown the utility, may very properly be combined with the dietetic courſe. The utility of taking a large proportion of milk (where it could be procured good,) has been often experienced, which is the regimen approaching the neareſt to that, which I would adopt.

It muſt be allowed, that, notwithſtanding the ſingular utility which has been derived, in many ſcrophulous caſes, from the uſe of the pure natural ſprings, as the Malvern water, many caſes have reſiſted their power. On this ſubject it may be obſerved, firſt, it has not been underſtood how ſlow is the conſtitutional change introduced by the change of water. Eight or ten months may have great

effect in ſtopping the progreſs of diſeaſe, but it cannot have much in producing a radical change in the animal maſs. But, ſecondly, it is to be ſuſpected, that no natural ſpring whatever at all approaches the purity of diſtilled water. They are none of them wholly free from fixed ingredients. But Septic Poiſon, or animal and vegetable matter in a ſtate of putrefactive decompoſition, exiſts, probably, in an infinite variety of forms, and, doubtleſs, in great abundance in the form of gaſes, or united to acriform fluids. Theſe may be diſſolved, and will eſcape the action of the chemical teſts hitherto employed. The following conſideration proves, that this is not a mere gratuitous ſuppoſition. None of the natural ſprings have ever been found to produce thoſe extraordinary, and (for a time) thoſe diſagreeable changes, which are ſometimes the firſt conſequences of the uſe of perfectly pure water*. It muſt, therefore, follow, that their medicinal power cannot be, by any means, ſo great.

* See the preceding pages, 64—67—85.

CONSUMPTION.

BEFORE conſidering the ſymptoms of Pulmonary Conſumption, it may be uſeful briefly to notice the principal functions of the organs of reſpiration.

The lungs are a complicated organ, which are ſubſervient to various purpoſes in the animal economy. Firſt, they are an excretory organ, perpetually ſecerning from their extenſive ſurface, a large quantity of aqueous vapour. As the breath of many perſons is very offenſive, even in health, and as this is common in diſeaſe, it is probable, that at all times, much of the excrementitious and putrid parts of the blood are eliminated, by the ſecreting

ſurface of this viſcus. Perhaps the carbonic acid, which is perpetually paſsing off, diſſolves theſe putrid exhalations, and, by its union, makes them inoffenſive to the byſtanders, if they are not more than commonly abundant*.—Secondly, the oxygen of the atmoſphere deprives the blood of a portion of oxidizible baſes, carbone and hydrogen, which are ſeparated and eliminated in the form of carbonic acid, and a quantity of water, in addition to that, which is ſecreted by the ſurface of the lungs. Another portion of oxygen, and (as is made probable by ſome recent experiments,) ſome azote likewiſe combines with the blood itſelf, by which a great change is produced in its chemical and phyſical properties, with which we are very imperfectly acquainted. It is

* Carbone, the baſis of this acid, is known to unite with putrid matter, and deſtroy its odour. Carbonic acid alſo, according to the experiments of MACBRIDE and others, ſweetens putrid fleſh, but without ſtopping the putrefactive proceſs, that is to ſay, it unites chemically with putrid vapour.

known, generally, that in the pulmonary circulation, its colour is changed from violet to a bright red; that both its temperature and its capacity for heat is increaſed; that its ſpecific gravity is diminiſhed, and that it becomes the peculiar and ſpecific ſtimulant of the arterial ſyſtem. Which of the conſtituent principles of the blood it is, that, by fixing the oxygen, receives the power of ſtimulation, has not been determined or conjectured; it is, probably, the metallic matter, which is eſſential to its compoſition. The decompoſitions and new combinations which are formed by theſe proceſſes, are the ſource of animal heat, which is abundantly generated both in the lungs, and throughout every part of the body.

As the arterial ſyſtem is ſtimulated by the blood, ſo all the veſſels of the body and all the glands (which are a congeries of ſmall veſſels) are ſtimulated into action by their proper and peculiar fluids, which are the ſecretions of the various glands or membranes.

Let us ſuppoſe now, that from an alteration in the compoſition of the blood, it becomes more powerfully ſtimulant, and that this property is communicated alſo to the various fluids ſecreted from it. In theſe circumſtances, the circulation would become accelerated, all the ſecretions would be increaſed, and if the ſupply from the ſtomach were not equal to the conſumption, the body muſt inevitably waſte and decay.

Converſely, when we ſee theſe appearances taking place, there is reaſon to preſume, that the radical cauſe is to be found in the morbid condition of the blood and ſecreted fluids, ſtimulating the veſſels to increaſed action, and, at the ſame time, deſtroying their tone by over-excitement.

Such, preciſely, appears to me, to be the condition of the pure conſumptive conſtitution. The eſſence of this condition ſeems to be a morbid ſtate of the blood and ſecretions, exciting to increaſed

action, united to a diminiſhed tone of the moving fibres. This condition of the blood, which has often been ſuſpected in Conſumption, as well as in Scrophula, has been commonly denominated an *acrimony* of the fluids*. I would rather deſignate it an accumulation of extraneous ſtimulant matter. To prove its exiſtence by any other method than by conſidering the phenomena of diſeaſes, ſeems impoſſible, at leaſt, in the preſent imperfect condition of the chemiſtry of animal matter. The conſtant heat and redneſs of the urine, the fetidneſs of the breath, the ſaltneſs of the expectoration, the ſcalding and fetid ſtools make, however, the truth of this hypotheſis almoſt evident to the ſenſes. The diminiſhed tone of the ſyſtem is obviouſly marked by the dilated pupil of the eye, that ſtrong characteriſtic of conſumptive diatheſis, and of the diminiſhed energy of the ſenſorium. This

* Hæc (temperies) conſiſtit in teneritudine vaſorum exterioſorum, et in impetu acrioris utcunque ſanguinis, &c. BOERHAAVE Aphoriſm, 1198.

ſymptom has been ſaid by the celebrated DARWIN, to denote inirritability of the fibres, and as to its immediate condition, this phraſe is undoubtedly correct. But the defect is not from an inherent and radical loſs of ſenſorial power ; it is the conſequence of the ſenſorium being under the influence of an irritation too violent, and thus being rendered leſs ſenſible of healthy ſtimulation. The proof of this is very ſimple. I have ſhown, that by withdrawing the irritating matter, the dilatation can be removed.

The confumptive are thin, pale, with an accelerated pulſe and reſpiration, and a ſlow fever for a long time, either before the acceſsion of cough, or when it is trifling. All this time, the ſecretory organs are perpetually ſtimulated to increaſed actions, and the ſtomach is unable to ſupply nutriment enough to repair the waſte of the body, and this happens, though, at the ſame time, (as is often the caſe,) both the appetite and digeſtive powers

are preternaturally increaſed. The perpetual fever indicates the preſence of ſomething noxious conſtantly irritating the ſyſtem.

This perpetual fever and increaſed activity of the ſecreting organs, cannot but effect a ſort of depuration of the whole maſs. Hence the external ſigns of the morbid condition of the fluids, may not be very obvious to the ſenſes. What is noxious is thus conſtantly eliminated; but as the nutriment of the body is alſo carried off at the ſame time, in the end, the ſyſtem muſt, of neceſsity, be deſtroyed.

If this account be correct, fever is truly an effort of nature (to uſe the ancient language), for the expulſion of matter injurious to the ſyſtem, as it was accounted by the old writers. What indeed is it, but the vital actions being performed with greater energy and velocity than in health? The circulation and reſpiration being carried on with increaſed activity, the ſyſtem

muſt be more highly oxygenated, greater heat muſt be generated and diffuſed, and the ſecretions be, upon the whole, more abundant. That this is ſo, in fact, is clear from the waſting of the body. Fever is the ſame, whatever be the diſeaſe with which it is conjoined. Be it a catarrh, a conſumption, or an ague, there are the ſame ſucceſsion of ſymptoms, and the ſame varieties. Fever then cannot, of itſelf, be termed a diſeaſe, but rather an adjunct of other diſeaſes; a proceſs truly conſtitutional; and, therefore, it can hardly be doubted, that its tendency is ſalutary.

Conſumption is commonly deemed a local diſeaſe, originating in the lungs, and excited by a variety of occaſional cauſes. But if my view of the ſubject be correct, it muſt be accounted a conſtitutional diſeaſe, and the changes produced in the lungs are to be eſteemed the conſequences of the peculiar functions of this organ. It is evident to obſervation, that from the very beginning of the diſeaſe, and through the whole courſe of it, the

ſtomach and bowels ſuffer equally with the lungs, and that all the parts of the frame ſink together*. In the beginning there is often great tenſion of the bowels, and ſigns of abdominal infarction: at this period, the body is more apt to be bound than otherwiſe; the coſtiveneſs, indeed, is ſometimes exceſsive. The digeſtion is, throughout, performed with great irregularity; hence the utility of frequent emetics, which have been propoſed as a cure. Nor are inſtances rare, of the diſeaſe affecting principally, and being, for a long time, confined to the abdomen: in theſe examples, the fever, emaciation, and weakneſs, have taken the ſame courſe as in the more common caſes; but the cough and expectoration have not appeared till the

* "In all decays we generally perceive the ſtomach the "firſt bowel affected."

ROBINSON on Conſumption, p. 128. An. 1727.

"In all conſumptive caſes, nay, I might have added "in all chronical diſeaſes, it will be perceived, that the "ſtomach is the part that is affected."

STEPHENS on Conſumption, p. 140. An. 1761.

latter periods. Inſtances, too, are not unfrequent, of obſtinate diarrhœa being the firſt and prominent ſymptom, before the acceſsion of cough. I need hardly add to theſe proofs, the incurable diarrhœa of the laſt ſtage, joined with the aphthous mouth, the excoriated tongue and throat, and the general diſeaſe of the ſecreting ſurface of the whole inteſtinal canal. Theſe ſymptoms are nearly uniform towards the cloſe, and afford almoſt an ocular demonſtration, that theſe membranes are under a conſtant irritation, and are as extenſively and radically diſeaſed, as the lungs themſelves.

How happens it then, that the lungs are found affected ſo univerſally, that, by common conſent, the name of *Conſumption* implies a diſeaſe of this viſcus? What are the tubercles, the *vomicæ*, the *hæmoptoe*, the expectoration, which ſo ſtrongly mark the deſtruction of this important organ? All theſe ſymptoms, muſt, I think, be

conſidered as effects, and not as cauſes of the conſtitutional diſeaſe.

The lungs are the great exhalant and ventilator, as it were, of the blood. Through them all the morbid effluvia of the body are eliminated, more copiouſly than by all the other excretory organs. The moſt virulent contagions paſs out with the breath, and are diffuſed with it through the atmoſphere. It cannot, therefore, be difficult to conceive, that by the pulmonary exhalation becoming habitually acrimonious or ſtimulant, and by the mucous ſecretion of this organ being impregnated with ſtimulant matter, it ſhould be the firſt to ſuffer. We ſee the ſame thing happen to the kidneys, when the urine is impregnated with poiſonous or acrimonious matter, introduced through the ſtomach, as ſublimate, cantharides, or turpentine. What wonder then, that under theſe circumſtances, the lungs are, at times, converted into ſcrophulous maſſes? that other parts undergo more active in-

flammation and conſequent ſuppuration? that ſome of the veſſels give way in a part, which is ſo eminently vaſcular? that the glands of the mucous membrane are excited into increaſed activity, in conſequence of which the cough and expectoration become perpetual?

All theſe ſymptoms doubtleſs add greatly both to the ſufferings, and to the danger of the patient; but they are ſo little the cauſe of the fever, that much greater alterations in the ſubſtance of the lungs are perpetually occurring, attended, nevertheleſs, with little conſtitutional derangement. Large abſceſſes have been formed in them, upon the rupture of which extenſive ulcerated ſurfaces have become expoſed to the air, and the patients, notwithſtanding, have ſuffered little fever during the formation of the abſceſs, or the healing of the ulcer; and have hardly been in danger, except from the hazard of ſudden ſuffocation. Is it poſsible that tubercles, which have the

ſame external character of indolence, as a ſcrophulous gland in the neck, can cauſe a perpetual fever, which ſometimes is not excited even by an extenſive ſuppuration of the ſame parts?

It has happened, that perſons have been pronounced conſumptive at ſome periods of their lives, but have had the good fortune to eſcape the apprehended danger. In ſome of theſe, the lungs, after death, have not ſhown a veſtige of morbid appearance to confirm the ſuſpicions, that had been entertained*. But ſtill further, perſons have died with every ſign of pulmonary conſumption, the cough, the expectoration, the emaciation, the diarrhœa, and the lungs, notwithſtanding, have been found, on examination, to be perfectly ſound†.

* Morgagni Epiſtol. Anatomic. IV. 21. X. 11.

† Lieutand Hiſtoria Anatomico-medica. Lib. i. Obſ. 1496. Ib. Lib. ii. Obſ. 404 et 404 (a). Sauvages Noſologia, Vol. ii. p. 451. Van Swieten Comment. ad Boerhaave Aphoriſm. 1206. Bennet Theatrum tabidorum, p. 62. Lugd. Bat. 1733.—Other examples may be found in writers of good authority.

If the animal ſyſtem be ſubjected to laws of the ſame uniformity, as the other parts of nature, one well authenticated caſe of this kind will counterbalance a thouſand contradictory examples; and we may ſafely and firmly conclude, that conſumption is a diſeaſe, originating, not in a morbid condition of the lungs, but of the whole ſyſtem.

Conſidering the diſeaſe under this point of view, all the arguments already uſed, to prove conſtitutional diſeaſes to be the offspring of deleterious matter, introduced into the ſyſtem from without, may be readily applied to this peculiar, and very common form. Many circumſtances in the hiſtory of the diſeaſe ſtrongly corroborate the opinion, that water is the vehicle, by which this matter is principally conveyed into the body.

Conſumption affects many of the ſame family, and ſhould be aſcribed, therefore, to ſomething, which is common to them

all. There is often very great difference in the articles of diet uſed by different perſons of the ſame family, particularly in that of the elder and the younger branches, and of the males and females. In the habit of uſing wine, ſpirits, malt liquors, animal or vegetable food, this is very obvious. Water, however, the baſis and chief ingredient of ſuch a multitude of articles, both of food and drink, is common to them all, and is, perhaps, the only matter, of which this can be truly affirmed. It has been commonly thought ſufficient, to aſcribe the frequency of conſumptions in certain families, to an hereditary taint, and to ſuppoſe the germ of the diſeaſe to be implanted in the primordial ſtructure of the frame. The hereditary prediſpoſition to various diſeaſes, muſt undoubtedly be admitted, as confirmed by the evidence of the ſenſes and daily experience. But prediſpoſition is only a greater aptitude than common to be affected by morbific cauſes. Remove the cauſe, and the prediſpoſition continues

dormant. It is the impenetrable darkneſs, in which the cauſes of diſeaſe have been enveloped, that has rendered the appearances of prediſpoſition ſo ominous and alarming.

In the caſe of huſband and wife, the argument is more direct and more ſtriking. The examples of huſband and wife both becoming victims of conſumption, where, at leaſt, one of the parties have been exempt from the ſuſpicion of hereditary prediſpoſition are ſo numerous, as to have afforded ſtrong ground for the opinion which has been prevalent, of the diſeaſe being contagious*. It ſeems, however, a more legitimate concluſion, to ſuppoſe, that the ſufferers have been equally expoſed to ſome common cauſe,

* This ſeems formerly to have been the common opinion in England. "Contagium hunc morbem propagat," ſays MORTON. (Phthiſiolog. Lib. ii. Cap. 1.) "Hic enim affectus "(ut frequenti experientiâ obſervavi) lecti ſocios miaſmate "quodam, ſicuti febris maligna, inquinat." MORGAGNI and VAN SWIETEN were of the ſame ſentiments, and on the continent it is ſtill the more prevalent doctrine.

acting with more than ordinary violence. It muſt, however, be a dangerous practice to ſleep in a confined room with a conſumptive perſon. The oxygen of the atmoſphere is more rapidly conſumed than in health; and the emanations from the lungs cannot but be ſuppoſed to be noxious.

If we examine attentively the marks of the conſumptive prediſpoſition, they will be obſerved to be the conſequence of a debility of the moving fibres, and a great activity of the excretory organs. For example, the narrowneſs and flatneſs of the cheſt is evidently the effect of debility of the pulmonary circulation. Univerſally, in the growth of the body, the containing parts are adapted with geometrical preciſion to their contents. If the action of the right auricle of the heart and pulmonary artery are habitually feeble, the lungs muſt be habitually leſs powerfully expanded; their volume muſt be proportionally leſs, and the cheſt muſt in conſe-

quence be of more contracted dimenſions. That perſons of this habit ſhould ſo frequently become conſumptive can excite no furpriſe, ſince the diſeaſe, in its exquiſite form, is no more an aggravation of their conſtitutional peculiarities. But it is evident, that, as prediſpoſition alone is not enough for the formation of the diſeaſe, ſo conſumption is every day occurring, where no ſigns of prediſpoſition are obſervable. Indeed, fair perſons, who are ſo commonly the victims of this malady, would ſeem *a priori* to have the beſt chance of enjoying perfect health in our climate, ſince their complexion is that, which is moſt directly ſuited to northern latitudes.

The coldneſs of our atmoſphere, and ſtill more the variations, to which it is ſubject, have been thought capable of producing this diſeaſe. Doubtleſs, the conſumptive are extremely ſenſible of the impreſsions of heat and cold, and of the variations of temperature. But heat and cold ſeem rather to be morbific forces

acting upon diſeaſed ſyſtems, and exaſperating diſeaſed actions, than to have the power of engendering the morbid prediſpoſition. For what is the climate, that is exempted from this malady? It was familiar to HIPPOCRATES, whoſe treatment of it was nearly the ſame, as at preſent; it has been common in all ages, and I know not any European country, which is without it. If it be leſs common in very hot countries, the reaſon ſeems to be, that in ſuch the cuticular ſecretion is more copious, than the pulmonary. In this caſe, acrimonious matter paſſes more abundantly by the ſkin, and gives occaſion to a variety of cutaneous diſeaſes, which are hardly known to us. The very worſt ſpecies of theſe, the *Elephantiaſis*, is, like the Conſumption, evidently a diſeaſe of the whole conſtitution. For in this cruel malady, it is not the ſkin only which is affected, but the lungs likewiſe; ſince the breath is extremely offenſive, and the voice is hoarſe and impeded.

As Conſumption is ſo much a diſeaſe of a particular time of life, it may be thought to depend rather upon ſome unknown and myſterious change, connected with that period, than upon any matter, which has been taken in more or leſs abundantly during the whole of life. But, in the firſt place, the fact is not true, to the extent commonly ſtated in ſyſtematic works. Though the number of the conſumptive be much greater between the ages of ſixteen and thirty-ſix, than in the other ſtages of life, yet there is, in truth, no period whatever, that is totally exempted from it. The eſſential difference ſeems to be, that as perſons advance in life, the hectic fever is much milder, and the whole progreſs of the diſeaſe more ſlow. Secondly, the variety, which is obſerved in the forms of diſeaſe, and the conſequent prevalence of this, at the period commonly aſsigned to it, may, I think, be readily explained on the principles I have laid down, in conjunction with the change,

which ariſes in the ſyſtem at the period of puberty.

During the firſt ſtages of life, morbid activity, produced by exceſs of ſtimulation, is developed principally in thoſe parts of the ſyſtem, employed on the growth and modelling of the body; that is to ſay, in the actions of the extremities of the arteries, and of the abſorbents. The effect of the firſt eſcapes our ſenſes, being ſhown only by the increaſe of the parts, which is common to the ſound and the unſound. But that of the ſecond, by reaſon of the ſtructure of the lymphatic glands, is often obvious. Theſe glands being overſtimulated, loſe their power, and become diſtended by the liquids, which ought to paſs through them; theſe concrete by ſtagnation, and induce inflammation; but from the weakened powers of the parts, it is of the moſt indolent kind, and the reſtoration to health is therefore very ſlow and imperfect.

Under this form, we call the diſeaſe *Scrophula*; a form univerſally acknowledged as a common precurſor and parent of pulmonary Conſumption. As puberty advances, the activity of the abſorbent veſſels diminiſhes, with the utility which gave birth to it. We are now preſented with an appearance demonſtrating almoſt to the eye, that this diſeaſe is the conſequence of exceſsive ſtimulation. Young people are obſerved to grow with extraordinary rapidity, and upon reaching their full ſtature, the pulmonary ſymptoms appear. In theſe caſes, every body remarks, that ſuch ſubjects have overgrown their ſtrength.

At puberty this morbid activity becomes concentrated, as it were, to a point. All the organs have attained perfection, and all the actions are directed to the purpoſes of conſervation. The morbid activity becomes confined to the excretory organs, of which the lungs is the principal. Through theſe is the ſtimulating matter

perpetually eliminated; but being as conſtantly renewed, the viſcus becomes injured by exceſsive action, and the vital powers ſink under the perpetual irritation and conſtant exhauſtion.

If after a certain age, the ſyſtem becomes leſs ſubject to Conſumption, it is becauſe the excreting organs are leſs active, and the mobility of the ſyſtem is greatly impaired. Under theſe circumſtances, large parts of the ſyſtem are apt to become torpid or paralytic. Therefore if, after the conſumptive period, the vital powers begin to give way, the forms of diſeaſe incline to dropſical ſwellings, congeſtions in the bowels, *leucorrhœa*, hæmorrhoids, aſthma, palſy, &c. The colour and countenance alter, inclining perpetually more and more to that, which is termed melancholic. Thus, the conſumptive ſyſtems muſt in ſome reſpects be deemed the moſt perfect, ſince they perish from the exceſs of their own actions. In the chronic diſeaſes of more advanced periods,

the powers themſelves become impaired, and are in the end deſtroyed.

Though medicine has hitherto effected ſo little in the cure of Conſumption, many circumſtances in the hiſtory of the diſeaſe incite us not to relinquiſh the attempt as hopeleſs. We know, that many have arrived even at old age, who have been deemed conſumptive the greater part of their lives. We know, that the moſt diſtinguiſhed practitioners have been occaſionally deceived in their melancholy prognoſtics; and that thoſe even, in whom the diſeaſe has proved fatal, have frequently enjoyed long intervals of improved health. We know, that a ſea voyage and change of climate have ſometimes wrought unhoped-for cures. But we have not been able to aſcertain what, in theſe circumſtances, is the peculiar change, whether by medicine, by food, by liquids, or by habits of life, which has directly effected the benefit; we are, therefore, ſtill unable to imitate theſe cures, to ſelect

the good, and to avoid the evil of the methods, which have proved the moſt ſalutary.

The very ſtructure of the lungs encourages us to believe, that few caſes are ſo deplorable as to exclude all hope, if a proper method of treatment can be fully aſcertained. The volume of this viſcus is very large, and may ſuffer much diminution without deſtroying life. By this contrivance we are enabled to converſe and to uſe ſtrong exerciſe, without impeding the purpoſes of reſpiration; ſo that perſons in health, with ſound lungs, have a conſiderable interval between the ſucceſsive acts of reſpiration. Many have enjoyed comfortable health, in whom a large portion of the lungs has been deſtroyed; and in the moſt conſummate hectic, the breathing is comparatively free and eaſy, during the remiſsions of the fever. If the fever, therefore, is ſuſtained by matter received with the *ingeſta*, as it has been ori-

ginally excited, it would ſeem, that if due attention be paid to theſe, it is hardly poſsible to aſsign a limit, *a priori*, to the reſtorative powers of the ſyſtem.

To this opinion of the generation and ſupport of the hectic fever, it has been objected, that we ſee this fever diſappear, whenever the cauſe exciting it has been removed, though the *ingeſta* continue the ſame. Thus, if it be excited by a diſeaſed joint, let the diſeaſe be removed, or the limb be amputated, and the hectic will immediately vaniſh. But this fact proves only, that the *ingeſta*, though they may have (as is evidently true) a very powerful influence over the febrile ſymptoms, are not the direct and immediate cauſe of its formation. Still they may indirectly and remotely lay the foundation of the *febrile diatheſis*, and this diatheſis may be corrected, or, perhaps, eradicated, by a diet entirely anti-ſtimulant. The fever itſelf is to be eſteemed a con-

ſtitutional proceſs, and, as ſuch, varying with the occaſions, which have given riſe to it.

Even in the laſt ſtages of the diſorder, there hardly appears to be any real deſtruction of the nervous energy. It often happens in this and other diſorders, attended with fever, that as the ſtrength ſinks the fever riſes, and becomes more violent. It ſeems impoſsible to explain this common phenomenon, by any ſuppoſed laws of action and reaction, accumulation and exhauſtion of ſenſorial power. Nor is it the arterial ſyſtem only, which is excited to morbid exertion in the hectic fever: the muſcular power alſo acquires, at intervals, a temporary energy, and even the mind receives an unnatural vigour, as is ſhown by the extraordinary vivacity and delirious ſpirits, ſo characteriſtic of this diſeaſe. It ſeems doubtful, from theſe appearances, whether the ſenſorial power is really deſtroyed in any, even in the laſt ſtage of Conſumption. Death ſeems

to be occaſioned, often, perhaps, from the injury done to the ſubſtance of the lungs, as the eroſion of a large blood veſſel, or burſting of an abſceſs, but moſt commonly by the inanition and collapſe of the veſſels, in conſequence of the profuſe and long continued evacuations.

Change of air, or, to ſpeak more correctly, change of reſidence, and milk diet have, in all ages, been the grand refuge of the conſumptive. As we ſend them to Liſbon, Naples, or Madeira, ſo from Rome they were ſent to Tabiæ*, or to Alexandria†. We attribute the benefit to the warmth of a ſouthern latitude; the antients thought it due to the removal into a drier or a denſer air. The utility of milk has been at all times acknowledged. In the worſt caſes, making it enter as largely as poſsible into the aliment, has palliated the ſymptoms, and has ſeemed

* Upon Mount Veſuvius. GALEN. lib. meth. med. 5.

† CELSUS, lib. 3. cap. 22.

to protract the diſeaſe. But it may be doubted, whether the uſe of it has been carried by us nearly to the ſame extent, as was formerly practiſed; and whether, on this account, we have not often failed of reaping the full advantage of it. "Let "all thoſe, who ſpit blood, (ſays TRALLIAN*) "uſe milk; for neither medi- "cine, nor food, nor any thing elſe is "ſo proper and uſeful to them, as milk: "thoſe who, from the firſt, have con- "ſtantly lived upon *nothing elſe* for a "length of time, have all perfectly re- "covered."

Where the ſtomach will admit of it, there can be no doubt of the propriety of this advice, and that it will often have the effect deſired. But to many, milk ſeems abſolutely indigeſtible; it oppreſſes the ſtomach, and occaſions heartburn, flatulence, drowſineſs, and headach. Beſides, it cannot quench thirſt, which, in hectic

* Lib. vii. Cap. i. p. 304. DE HÆMOPTYN.

fever, is ſo urgent. The uſual reſource has been to dilute the milk with water, which, on the principles laid down, is wholly inadmiſsible. Inſtead of this, it may be converted into whey, which may be made the vehicle of any agreeable or nutritious matter, as cocoa, chocolate, rice, &c. I believe this to be a diet much better adapted to the conſumptive, than the entire milk. It ſeems very probable, that whatever is noxious in the milk, (for this ſecretion muſt poſſeſs the qualities of the nutriment of the animal, which ſecretes it) is precipitated with the curd. This ſimple method may be readily adopted in ſituations, in which it is impoſsible to procure diſtilled water. I have already ſhown it to have an effect very nearly as good, in a caſe of chronic indiſpoſition. (p. 78.)

In conſidering the diet of the conſumptive, I cannot help expreſsing a doubt, whether wheaten bread is a proper article to be uſed largely, particularly by those

who are exquiſitely hectic. The labourer finds ſuch bread to be very heartening, as he terms it; he feels that he can work upon it better, than upon any other vegetable nouriſhment. This is ſtrong evidence, independent of that afforded by the chemical analyſis of the flour of wheat, that bread approaches to the nature of animal food, and cauſes a general and powerful excitement — that condition, which in hectic fever is already in exceſs. It ſeems then upon good grounds, that a preference is given to mucilaginous and pure farinaceous ſubſtances, as ſago, rice, potatoes, arrowroot, &c. On the ſame grounds it is, that the *Lichen Iſlandicus* has recently obtained conſiderable repute. I believe it to be an uſeful auxiliary, both on account of its medicinal and dietetic qualities.

Such is the view, which I have been induced to take of the more ordinary ſymptoms of Pulmonary Conſumption. I think theſe ſymptoms in no reſpect repug-

nant to the doctrine, that the diſeaſe is artificial, and that it has the ſame origin, as the great body of Conſtitutional Diſeaſes. A more intereſting taſk remains; viz. to relate how far this doctrine has been confirmed by experience. I regret that the evidence, which I have to adduce on this head, is not ſo ſtrong as I wiſh. The inſtances, indeed, in which I have applied the method I have laid down, have been more numerous, than in any other diſeaſe; but I have not, as yet, had the opportunity of uſing it for a due length of time, and with proper regularity, in any ſtrongly marked and confirmed caſe. At the ſame time I muſt add, that I have not met with a ſingle occurrence, which has, in the ſmalleſt degree, tended to ſhake my opinion: on the contrary, the method has uniformly ſhown its power more ſpeedily in this, than in any other diſeaſe. I ſhall relate, briefly, both the good and the bad ſucceſs, which have hitherto occurred.

CASE

CASE I.

In one inſtance it has ſhown its prophylactic powers completely. A lady had, for ſeveral years, been confined to the houſe, the whole winter ſeaſon, with pulmonary complaints, and thoſe of great ſeverity. During the ſummer, and by the aid of going into the country, ſhe regained pretty good health; her cough diſappeared, but ſome habitual oppreſsion of the breath remained. The autumnal cold and reſidence in London, had brought back the uſual precurſors of her winter complaints. She adopted my method about the middle of October: for a month ſhe remained much indiſpoſed, particularly with ſtomach complaints and headachs, when ſhe became (to her own feelings, at leaſt) quite well. She has continued ſo between three and four months, with the exception of one cold, which occaſioned her a ſhort confinement. This, though of very little ſeverity, brought back, for

a few days, the old pains in the cheſt, which ſhe had been accuſtomed to ſuffer.

CASE II and III.

A young man, who had every ſymptom of confirmed *Phthiſis*, but who was not reduced to a ſtate of great weakneſs, followed this method for three weeks. In this time the perſpirations were checked, and he experienced a great improvement in ſtrength, ſpirits, and countenance. He had procured an eighteen gallon caſk * full of diſtilled water, to proſecute the trial; but as I have neither ſeen nor heard of him ſince, I can ſay no more than that the improvement, in ſo ſhort a time, ſurpaſſed my expectations. This was in January, 1804.

* This Water ſhould never be put into a caſk, as it contracts a diſagreeable taſte from the wood, but ſhould be kept in perfectly clean earthen jars, and, if with a conſiderable ſurface expoſed to the atmoſphere, it is ſo much the better.

Another young man, with very decided ſymptoms of approaching *phthiſis*, experienced immediate relief both to the ſtomach and lungs, and ſpeedily recovered. But as he had been ill only two months, and had not been confined to the houſe, I do not think it worth while to enter into further particulars.

CASE IV.

The following is the worſt caſe in which this method has proved ſucceſsful. The pulmonary ſymptoms were not confirmed, but the nature of the diſeaſe was wholly unequivocal.

Mr. BURGESS, an ingenious young artiſt, aged about 20, had loſt a ſiſter of pulmonary conſumption. He was himſelf troubled with pains in the ſide, breaſt and ſtomach, dyſpnæa, emaciation, and a ſhort hacking cough. He had perceived his breath to fail upwards of a twelve-

month, ſo that he was not equal to his uſual exerciſes, nor could make a full inſpiration. Beſides theſe habitual ſymptoms, he had ſuffered two or three febrile attacks of great ſeverity, but in which the abdominal *viſcera* ſeem to have been affected more than the pulmonary ſyſtem. He entered upon a courſe of diſtilled water, juſt as he had paſſed through an attack of this kind, but whilſt he was ſtill confined to the bed. He continued to recover gradually and uniformly; the breath ſtrengthened, the pain of the ſide was removed, that of the breaſt and ſtomach gradually wore away, and at the end of ſix or ſeven weeks, he found his reſpiration to be more free than it had been habitually, before his laſt febrile attack. He perſevered in the uſe of this method about twelve weeks, when he conſidered himſelf to be entirely reſtored. I ſaw him about two months afterwards, with every appearance of perfect health, in which ſtate, I underſtand, he has remained to this time.

This took place during the middle of the ſummer of 1804, a ſeaſon, which, doubtleſs, tended much to favour and accelerate the cure. The courſe was diſcontinued much ſooner than I had wiſhed; for which reaſon I cannot help entertaining doubts of the ſtability of this recovery.

Theſe examples are ſufficient to prove the power of this method in conſumptive caſes, and to induce a confident expectation, that the diſeaſe may, in its early ſtages, be made to yield readily. But in deep and confirmed caſes, where the ſubſtance of the lungs is greatly injured, and where the ſtrength is greatly impaired, a ſpeedy reſtoration cannot be expected, and the event muſt be regarded as precarious. In all, however, upon whom it has been tried, it has ſhown a great degree of power. I ſhall briefly notice three caſes, in which it failed to cure.

CASE V. and VI.

I attended, with Dr. FRAMPTON, a young man, who uſed this method ſixteen days. The pulſe was 130, full and ſtrong, but we thought the period for venæſection was paſt. Before he died, the pulſe fell 10 ſtrokes in a minute, he ſcarcely ſweated at all, and the expectoration was diminiſhed. But after twelve days, ſo much inflammation came on the lungs, that the reſpiration became laborious, in which condition he died.

In a woman alſo, who died, after uſing the method twelve days, the pulſe was lowered, and the ſweats almoſt removed, till the laſt day of her exiſtence. Her diſſolution ſeemed occaſioned more by the death of the ſtomach, than the oppreſsion of the organs of reſpiration.

CASE VII.

The following caſe proved fatal, after the patient had put on very ſtrong ſigns of recovery.

A young woman, aged twenty-two, a ſervant to a lady at Pimlico, had been afflicted with ſevere pulmonary complaints during the winter of 1803-4. She became better in the ſpring; but at the beginning of the ſummer, her diſorder returned with increaſed ſeverity. She was of a deeply ſcrophulous habit; the tonſils were ſchirrous, and, from the tenſion and ſoreneſs of the *abdomen*, there was reaſon to ſuſpect the meſenteric glands to be diſeaſed. She had expectorated a large quantity of blood, and had every ſymptom of pulmonary conſumption; the ſtrength, though greatly depreſſed, was not ſo far gone, but that ſhe could walk conſiderable diſtances. After uſing the regimen eight weeks*,

* This trial was made under the care of Mr. REECE, of Henrietta-ſtreet, who, from ſeeing the good effects of

the ſtrength and reſpiration were much improved, and the ſweating left her. The expectoration had become more free and copious, the matter thrown up was ſtill tinged with blood; the cough was more full and deep. Unfortunately, a young gentleman of the family was, at this period, brought home with a dyſentery, which proved fatal; this young woman ſuffered much fatigue from the attendance, and caught the diſeaſe. However, ſhe recovered, and the pulmonary complaints ſtill diminiſhed, the expectoration being no longer bloody; the tonſils were alſo ſofter. She now went into the country, with directions how to proceed, according to the principles I have laid down; and I have reaſon to think ſhe adhered to them. The accounts received from her were ſtill favourable, but, notwithſtanding, after four or five weeks, intelligence arrived of her death. She uſed the regimen twelve

this regimen in the caſe of the Rev. Mr. W——s, (p. 83.) has applied it extenſively. He alſo put a ſeton in her ſide, and gave her ſuitable medicines.

or fourteen weeks, but, for a part of the time, particularly during the dyſenteric attack, not with perfect regularity.

I hope very ſoon to be able to offer much more deciſive evidence on this moſt important ſubject. In the mean time I am glad to avail myſelf of an authority of the firſt weight, to ſcreen the opinions which have been advanced, from the charge of extravagance and preſumption. "Potui optiſsima erit (ſays the venerable "HEBERDEN,) aqua pura, qualem præ- "bent fontes montis Malvernenſis, vel "diſtillata. Quæ vero copiam magnam "habet calcis, et acidorum mineralium, "veneno pejus eſt vitanda; cum hujuſ- "modi aqua, ut mihi videtur, corpori "præcipue inimica eſt, glandulas lympha- "ticas impediendo, et exulcerando, etiam "in adultis, et qui ab omni labe ſtrumosâ "liberi ſunt. Porro, hæc vitia, niſi fallor, "vidi aquæ purioris uſu diſcuti*."

* HEBERDEN Commentarii, p. 327.

But there is ſtrong and direct evidence, of this very diſeaſe having been produced by impure water, and that ſanctioned by a name ſacred to ſcience, that of the illuſtrious HALLER. In a paper*, now publiſhed more than half a century, he relates the circumſtances of a particular ſpot, where this diſeaſe was extremely prevalent. In one particular farm-houſe, there had occurred thirty deaths in the courſe of ſixteen years. Of theſe, fourteen had been known to die of conſumption. The diſeaſes, which had been fatal to the remaining ſixteen, were not aſcertained. Thoſe who lived there, at the time of theſe obſervations, had all a conſumptive appearance. He examined very minutely the cuſtoms and manner of living of theſe people, but he could not find that they differed, in any reſpect, from thoſe of the ſame country and ſtation. He concluded, therefore, that the water which they uſed, was the cauſe of this great mortality. The houſe was in a

* Shwenſk Acad. Handl. 1750. n°. 4. p. 298.

low ſituation, open on one ſide; on all the others ſurrounded by mountains. A ſtream paſſed near it, of which the current was ſo ſlow, that it ſeemed almoſt ſtagnant. Out of this they drank. The water was fetid, offenſive, and ſo full of thick matter, as to have its tranſparency deſtroyed. By boiling it depoſited a copious precipitate. Can it be doubted, that, in this explanation, a cauſe has been aſsigned, adequate to the effect? Let me aſk again, is not the production of diſeaſe, a proceſs as regular as the growth of the animal, or the revolutions of the ſeaſons? If, in one example, the proof of the origin of conſumption has aſſumed almoſt the force of demonſtration, what difficulty is there in ſuppoſing that it may be the ſame in all?

But HALLER was far from thinking with HEBERDEN, that the miſchiefs from unwholeſome water were occaſioned merely by the lime and mineral acids, that may be found in its compoſition, ſubſtances which, in the form in which they exiſt in

water, are uſed abundantly, without any ſigns of their being injurious. The *fetid* matter is that which he ſuſpected. In his great work, he throws out the ſame ſuſpicion. "River waters," he ſays, "and thoſe which are turbid, are purified "by the uſe of the filtering ſtone, or of "ſand, or ſponge, or by long reſt, from "earthy matter, but not from *putrid conta-* "*mination**". A fact related by GMELIN has eſtabliſhed, in a particular inſtance, the poiſonous nature of this putrid contaminating matter. The river Uſſolka, in Siberia, overflowing its banks, forms pools in the neighbouring plains. After a part of the water has been frozen, what remains fluid has a nauſeous taſte, ſo as to to be unfit for uſe. The cattle which drink of it are often ſeized with diſeaſes, and ſome of them even die in conſequence†. Can that which is a poiſon in a ſtate of concentration, be made innocent

* HALLERI Phyſiologia, Tom. vi. p. 243.

† GMELIN Reiſe durch Sibirien. Tom. iii. p. 396.

by dilution? May we not alſo, from this example, receive a uſeful hint, how to obtain, in abundance, water ſufficiently pure? Would not the mere melting of ice furniſh enough, and that ſo free from contamination, as to have no ſenſible bad effect upon the health.

I think it right to add, that two patients, labouring under *phthiſis pulmonalis*, have been treated, according to the method I have laid down, in the infirmary at Hereford, under the care of my friend and relation Dr. BLOUNT, ſenior phyſician of the infirmary. Both caſes were of the worſt poſsible deſcription. In one the diſeaſe proved fatal, after a trial of about three months; in the ſecond, who has been treated nearly as long, as no unequivocal ſigns of recovery have as yet appeared, it is probable that the reſult will be the ſame. But in both of theſe I am informed, that the regimen ſhowed the ſame power over the conſumptive ſymptoms, as in thoſe who have been under

my own care. The perſpirations were removed, the expectoration much diminiſhed, the hectic fever greatly aſſuaged. But the ſtrength could not be reſtored, and, in conſequence, death was inevitable.

In a third caſe, of long ſtanding, but in which the ſymptoms aſſume more the form of *aſthma*, treated by the ſame gentleman, it is expected that the patient will be reſtored.

I have clearly obſerved, that in caſes both of Pulmonary Conſumption and others, where there is great weakneſs, that, for a time, the debility has continued to increaſe. This circumſtance evidently forms the natural limit, which muſt bound the utility of this practice, and, indeed, of any other, however well adapted to the end propoſed.

CANCER.

EVEN this moſt tremendous of human calamities, I cannot help conſidering as deriving its origin from the ſame ſource, as other Conſtitutional Diſeaſes. I proceed, therefore, to lay down the grounds of this opinion, and to relate the progreſs that has been made towards its cure or palliation. The exquiſite ſufferings with which it is commonly attended, the horrible nature of the diſeaſe itſelf, and the very precarious relief afforded by ſurgery, have concurred to direct, moſt earneſtly, my hopes and my attempts, to the relief of the victims of this cruel malady, and, I rejoice to ſay, with a degree of ſucceſs, that has hitherto rather exceeded than

fallen ſhort of my expectations. Doubtleſs, the ſame conſiderations have ſtimulated the zeal of benevolent individuals, to form particular eſtabliſhments for the treatment of theſe patients. No one can withhold applauſe from the motives of theſe humane exertions; but can we feel the ſmalleſt ſurprize, that they have only tended to confirm the experience of all ages, by proving that, in this diſeaſe, medicine alone is wholly inert and unavailing? We cannot, by medicine alone, cure a ſcrophulous gland, though the powers of the conſtitution are equal to the taſk, ſince, at length, it often diſappears ſpontaneouſly. We cannot, by medicine, cure Pulmonary Conſumption, though the ſubjects of it are in the flower of their age, and every motion ſeems directed to the conſervation and reſtoration of the ſyſtem. What chance then can there be, that medicine alone ſhould put a ſtop to the ravages of a diſorder, in which, commonly, there is not a ſingle action, either local or conſtitutional, which tends to health? If

medicine could effect ſuch a cure, it muſt be ſuch a one as would renovate the powers of the ſyſtem, and which would be equally powerful in other diſeaſes, at preſent incurable—ſuch an one as has not hitherto been diſcovered, and which, probably, exiſts not in the ſtore-houſe of nature. What can be done by a complete change in the habits of life, remains ſtill to be tried; from the hopeleſsneſs and miſery of their ſituation, theſe ſufferers are the moſt proper of all to attempt this change, and not for their own ſakes only, but for the ſake of others; ſince, if any relief were obtained in theſe caſes, the example would have the moſt powerful influence in other diſeaſes, leſs terrible, indeed, in external form and features, but not leſs fatal in their event. Let us firſt conſider, for a moment, what reaſons may be found in the hiſtory or well-known circumſtances of the diſeaſe, for thinking ſuch relief not impoſsible.

I ſhall ſay nothing upon the external

ſigns of this diſeaſe, or the internal ſtructure of the affected parts; as thoſe, who are beſt informed on theſe ſubjects, acknowledge the difficulty of diſcrimination between cancerous and other tumors, and the variety in the appearances of the parts, which have been ſaid to be affected with carcinoma*. It is more to my preſent purpoſe to enquire, whether it be not truly a conſtitutional diſeaſe.

However great may be the local predispoſition of particular parts to this peculiar degeneration, I think it cannot be doubted that there is alſo a conſtitutional diſeaſe, which renders the ſyſtem unequal to the reſtoration of the diſeaſed parts. The almoſt uniform ill ſucceſs of the operation, the recurrence of the diſeaſe either in the ſame part or in others, different and often diſtant parts of the

* On the hypotheſis of Dr. ADAMS, that Cancer is cauſed by a peculiar ſpecies of Hydatid, occupying the adipoſe membrane, it is obvious to obſerve that ſuppoſing it true, it ſtill remains to enquire what is it that makes this part in ſome a proper nidus for the Hydatids, and in others not?

body being affected at the ſame time, theſe facts all concur to eſtabliſh this doctrine. There is no neceſsity for inſiſting on this point more fully, as this opinion is the more prevalent. It is of far more importance to enquire, whence is derived the *Cancerous diatheſis?* Is it from a poiſon introduced from without?*

Now it is well known, that theſe diſeaſes are, as in Conſumption, almoſt always preceded and accompanied by a great derangement of the digeſtive organs. Sick head-achs, flatulence, vomitings, acute colicy pains, and a train of thoſe ſymptoms, which are called bilious, are apt to haraſs them, often for years before the appearance of Cancer, and to recur

* The hypotheſis that the poiſon of Cancer is arſenical, is not entirely new. Serjeant WISEMAN on this ſubject ſays, "I think the matter of the Humour to be in fault, "which by ſome errour in Concoction became ſharp and "corroſive, (it may be *arſenical*, as appears by the "Sloughs we ſometimes finde made in a night.)" WISEMAN's Surgery, Book 1. chap. 21.

frequently after its formation. In this, therefore, as in ſo many other conſtitutional diſeaſes, the foundation ſeems to be laid in the chylopoietic viſcera, and, therefore, probably in the matters applied to the chief of them, viz. to the ſtomach.

If it be objected, that in this and other conſtitutional diſeaſes, the ſtomach ſometimes ſeems unaffected; I anſwer, 1ſt, That the exceptions are rare; and 2dly, That they do not diſprove the inference I would eſtabliſh: for the ſtomach, and, probably, every other organ accommodates itſelf to habitual irritations, which are, therefore, not accompanied by conſciouſneſs. Senſation is produced, only when the irritation is exceſsive, or the organs endued with great ſenſibility. In fact, few perſons in health feel their ſtomachs before they are thirty; and few are without ſuch a feeling after they are forty.

In the progreſs of the diſeaſe, and as it draws to a cloſe, the ſtomach complaints

become more ſevere. Often food is entirely rejected, and I have ſeen the ſame apthous ſtate of the *fauces*, with excoriation of the tongue, extending down the throat and the whole inteſtinal canal, as diſtinguiſhes the laſt ſtages of *phthiſis pulmonalis*. At this period, there is an acceſsion of cough, and the reſpiration becomes difficult, even after operations, which had been more ſucceſsful than common, and after which there has been no return of the local diſeaſe. Nothing can ſhow more ſtrongly, that Cancer is is chiefly a Conſtitutional Diſeaſe, ſince death is occaſioned not by external, but by internal cauſes.

This affection of the reſpiration, is not attended with any proportionate diſeaſe of the ſtructure of the lungs*. The ſcientific writer, to whom we are indebted for this obſervation, ſays, that "of late I "have ſcarcely doubted, but that the diſ-

* ABERNETHY's Surgical Obſervations, p. 75.

" turbed ſtate of the reſpiration has ariſen " from an affection of the liver, which " almoſt conſtantly occurs in the laſt " ſtages of carcinoma." But is it not as reaſonable to ſuppoſe, that both the ſtate of the reſpiration and the condition of the liver are connected with ſome common condition of the ſyſtem, as that the cough ſhould ariſe from ſome inexplicable ſympathy with the diſeaſe of the liver? Beſides, I know that it is the opinion of this diſcerning phyſiologiſt, that not in Cancer only, but in Pulmonary Conſumption, the liver becomes diſeaſed, and gives riſe to many of the ſymptoms. This is allowing an analogy in the cauſes of each diſeaſe, to the full extent to which I wiſh to carry it.

But there is an eſſential and conſtitutional difference in the ſubjects of theſe diſeaſes. In the conſumptive there is an exceſs of mobility and of action: on the other hand, in the cancerous there is moſt commonly a torpor and immobility per-

vading the whole ſyſtem. They are often abſolutely without fever, and where there is a ſpecies of hectic, it is comparatively mild. Theſe differences are founded, I preſume, on radical differences in the ſyſtem, differences which may be obſerved among members of the ſame family, brought up in the ſame habits, from the earlieſt period of their lives.

This torpor pervading all the ſyſtem, prevents thoſe abundant critical ſecretions, which ſo ſtrongly characterize the pure conſumptive hectic. But ſtill it happens, that particular parts, placed under peculiar circumſtances, will occaſionally betray a ſimilar diſpoſition. It has often been obſerved, that after the extirpation of a cancerous breaſt, the diſcharge has been ſo great as to exhauſt the patient, who has periſhed of a true maraſmus. The ſame has occurred in other great operations, or glandular diſeaſes ariſing ſpontaneouſly. Such conſtitutions may be ſaid to poſſeſs the conſumptive diatheſis,

though the conſumptive action does not take place in the lungs, but is transferred, as it were, to ſome other part of the body.

It is greatly to be lamented, that in ſo common and ſo deplorable a malady, the hiſtories ſhould be, even to this day, ſo defective. It is aſſerted, by one of the moſt competent judges of this ſubject (Mr. JOHN HOWARD) "that it would be dif-"ficult to point out three caſes of cancer "of the female breaſt, in which the local "appearances and ſymptoms, produced in "the ſyſtem in general, are detailed in "a correct manner, from the beginning to "the end of the diſeaſe." Still more ſcanty are the obſervations, which have been made on the connection between this and other diſeaſes. It ſeems allowed, however, that ſcrophulous habits are the moſt common ſubjects. Numerous inſtances of this are given in the tract, from which I have extracted the foregoing remark*. It has fallen in my own way

* See the Notes to "The Plan for the relief of Can-"cer at the Middleſex Hoſpital."

often to meet with Cancer and Conſumption in different members of the ſame family. Cancer and Gout are united, not uncommonly, in the ſame ſubject.

Mr. HOWARD has inſiſted too on the affinity between Cancer and Leproſy. That between Cancer and Elephantiaſis has been obſerved many ages ago by GALEN. On the latter diſeaſe he has made a remark, which may be transferred to the former with ſtrict juſtice, ſuppoſing this affinity to be real. He preſumes the Elephantiaſis to be the joint effect of climate and diet. Hence, he obſerves, that it is common in Alexandria, but in Germany and Myſia it is rarely met with. Among the *milk-drinking* Scythians (γαλακτοπόταις Σκύθαις) it is almoſt unknown*. Theſe Scythians lived in about the ſame latitudes as the Germans and Myſians, and, therefore, the efficacy of their diet is the more ſtriking.

* GALEN Method. Medend. ad Glauconem.

The antient phyſicians were convinced, that ſchirrus and cancer are conſtitutional diſeaſes, and they expreſſed their conviction by attributing them, in common with many others, to an exceſs of atrabiliary matter in the conſtitution of the fluids. Let us for a moment examine the foundation of this hypotheſis, which is treated with ſo much contempt by the great majority of modern theoriſts.

It is obvious, that the ſerum of the blood in many perſons contracts a tinge of a deeper or of a lighter yellow, and that the ſkin receives its hue very much from this diſcolouration of the ſerum. In the cornea of the eye, this may be obſerved moſt diſtinctly, as this part receives its colour from the ſerum only, and it is often very yellow, when there is no ſuſpicion of any real bile having been abſorbed, and diffuſed through the maſs of fluids.

But the ſecretions betray this diſcolouration much more ſtrongly. The perſpi-

ration blackens the linen, and where it collects in any quantity is itself black. The soil on the hair is of the same colour. The *fæces* are in many persons, particularly in those much subject to costiveness, constantly black. This discolouration of the secretions is in part contracted after their separation from the blood, and is obviously a change effected by contact with the atmosphere. Thus we see the clothing round the neck, where the air has access, the most and the soonest discoloured. It is still more evident in the extremities of the mucus, which may be expressed from the cutaneous glands, and which vulgarly are called *worms*; in these the part exposed to the air is black, whilst the remainder is yellow or white; the blackness extending below the surface shows, that it is produced by the chemical agency of the air. The lips too, after sleep, are often covered with a black *sordes*, and, doubtless, the matter, which incrusts and darkens the teeth, is of the same nature.

I think then there can be little doubt concerning the true nature of the *atra bilis*, which has occaſioned ſo much controverſy in the ſchools of medicine. I believe it to be the mucus of the inteſtines, or ſome matter involved in and eliminated with the mucus, blackened by the air.

There is little difficulty in comprehending how the air gains acceſs to the interior parts of the body. It is mixed with the food; it is entangled in the *ſaliva* which is conſtantly ſwallowed; and this humour, beſides detaining a portion of air by its viſcidity, abſorbs oxygen by a chemical attraction*. The deſcription given of this ſubſtance cannot well be referred to any other matter. It is ſaid to be "black, ſhining, and acrid †." This quality of *ſhining* muſt

* THOMSON's Chemiſtry, Vol. iv. p. 611. Second Edition.

† The antients made a diſtinction between the *ſuccus melancholicus* and the *atra bilis*; but ſtill they were fundamentally the ſame, ſince they believed the firſt could be

belong to mucus; and, in corroboration of this, I have often obſerved that the blackneſs of ſolid feculent matter is only ſuperficial, as if it were contracted from the ſurface of the inteſtines.

Mucus being deſtined never to re-enter the ſyſtem, may be deemed a ſpecies of excrement, though adapted by its form, with that conſummate wiſdom, which is conſpicuous in every part of the animal ſyſtem, to anſwer uſeful purpoſes, before it ceaſes to be a part of the body. As it is evidently contaminated by atrabiliary matter, (for ſo in reverence to antient authority I would call it) other excrementitious fluids may be ſuſpected to be alſo a vehicle of the ſame matter. A modern phyſiologiſt of great eminence deems the bile to be no more than an excrement from the blood. This ſecretion alſo is ſome-

changed into the ſecond, in peculiar conditions of the ſyſtem. See SENNERTI, Med. Pract. lib. 3. part 2. ſect. 2. cap. 10.

times black, which will of courſe diſcolour the fæces throughout. This, however, is a much more rare occurrence, than the ſuperficial blackneſs, I have mentioned.

I have dwelt on this ſubject, as theſe plain and palpable obſervations ſeem to me to reſcue antiquity, and ſome of the wiſeſt of modern obſervers, from the imputation of having framed an idle hypotheſis, and having acted upon it, in diſcharging the moſt ſerious of human duties. That thoſe ſyſtems, in which the ſigns of a great ſuperabundance of this matter, that is to ſay, thoſe in which there is a yellowneſs of the cornea, darkneſs and muddineſs of the complexion, foulneſs of the teeth, or blackneſs of the fæces, are peculiarly ſubject to the moſt intractable diſeaſes, is equally evidently to common obſervation.

But may we not go a ſtep further, and ſay, that certain parts of the glandular ſyſtem take upon them the office of eliminating this matter, and preſerving thereby

the integrity of the body? and that in different conſtitutions there are different parts, which ſerve this purpoſe? If we examine the teeth, we may ſee that this depoſit is made in ſome on the external ſurface; in others, on the internal; in others again it is ſtill more partial: and I have ſeen very diſtinctly, that where this black depoſition has been moſt abundant, the gums have been moſt unſound. In confirmed ſcrophula, the whole upper lip and mucous membrane of the noſe ſecrete an acrimonious matter, and become ſwelled and inflamed from the irritation it occaſions. How, indeed, is it poſsible to explain the injury experienced by ſtopping habitual diſcharges, without ſuppoſing that ſomething noxious is conſtantly paſsing off along with them? That any matter which pervades the whole maſs can be derived to a particular point, ſeems hardly conſiſtent with the laws of the circulation. But that a certain *exceſs* of a matter, which is conſtantly preſent, may thus be got rid of, which exceſs, if retained, would prove

injurious, there is no difficulty in comprehending.

Now all theſe ſigns of the exceſs of what has been called atrabiliary matter can be removed by the courſe, which I have ſo frequently deſcribed. The foulneſs upon the teeth, and the blackneſs of the inteſtinal evacuations diſappear: even the yellowneſs of the cornea can be removed, and the complexion be reſtored to its original clearneſs. Hence, therefore, all thoſe appearances, which have given riſe to this notion of the exceſs of atrabiliary matter, are clearly artificial, and the effect of the conſtant introduction of a foreign ſubſtance into the ſyſtem, of that very ſubſtance, which I have denominated Septic Poiſon. This affords no feeble preſumption, that all the effects, which can be juſtly traced to this matter as a cauſe, may alſo ceaſe upon the removal of the cauſe.

In the ſubjects of the malady, which is

the immediate object of our enquiry, there are often no ſigns of melancholic temperament. But we may readily be deceived, if we truſt entirely to obſervation of the countenance and complexion. In one example, which, happening to a near relative of my own, I had the opportunity of attending to with great minuteneſs, I never ſaw a complexion more characteriſed by the appearance of health. But this lady had been highly bilious for a ſeries of years, and the inteſtinal evacuations were, as I have deſcribed, lumpy, dark, and ſometimes of an intolerable fœtor. I ſhould ſay, that the determination of the atrabiliary matter to the inteſtines, was the circumſtance which kept the complexion ſo clear. The operation was performed on her with ſkill and ſucceſs. But after a few months ſhe became epileptic, and was ſo carried off.

As theſe patients are expoſed to the cauſes of the exceſs of this matter, there can be no improbability in aſcribing the

origin of the diſeaſe to this accumulation, or the action of a matter connected with it. The *plumbean* countenance, which in many has been found to be characteriſtic of Cancer, indicates, pretty ſtrongly, that the whole habit is tainted, fluids and ſolids; the fluids in their compoſition, and the ſolids in their action, which, as it is the antient doctrine, ſo I doubt not it is the true.

On this ground, principally, have been founded the hopes and expectation, that much benefit might be received, even in this, the moſt intractable, and, in certain circumſtances, the moſt tremendous of human diſeaſes. Theſe hopes have not been a little ſtrengthened, by conſidering that Carcinoma, in its incipient ſtate, is often ſtationary for years; and that, when it has ceaſed to be ſo, the progreſs is ſtill ſo ſlow, as to afford ample opportunity for effecting a conſtitutional change. In ordinary caſes, the vital parts of the body are uninjured, if the diſeaſe is not ad-

vancing quickly to a termination. Is it not owing to this very integrity of the *viſcera*, that the parts, which are not eſſential to life, as the *mammæ*, teſticles, &c. give way firſt? And is it not for the ſame reaſon, that the diſeaſe continues ſuch a length of time, before it proves fatal? However this may be, this condition of the vital parts cannot but augment our power of correcting the diſpoſition, on which the diſeaſe depends.

But the conſtitutional diſpoſition in Cancer makes it probable, that great patience will be required, before unequivocal appearances of amendment can be expected. The Cancerous diatheſis is diſtinguiſhed by a torpor of the vital actions and a defect of power: the conſumptive by an exceſs of action and of energy. To repreſs what is exuberant is more eaſy by far, than to excite what is deficient. The operation of the pure waters of Malvern corroborates this remark. In caſes where there are ſigns of much

inflammation, in cutaneous eruptions, for example, or in ophthalmia, attended with great heat, redneſs, and acrimony, they preſently afford very great relief. On the contrary, in diſeaſes of debility attended with coldneſs and want of action, as they produce no ſpeedy ſigns of amendment, they have been deemed uſeleſs. "In "very lax habits," ſays Dr. WALL, "as "in leucophlegmatic and anaſarcous "caſes, where the fibres and veſſels have "loſt their ſpring and elaſticity ſo much, "that they cannot act againſt the cold- "neſs and *pondus* of the water, there it "cannot do ſervice*." So it muſt be in the Cancerous conſtitution. Before the actions of health can be renewed, and the proceſſes of reſtoration begun upon, a change muſt be effected in the ſyſtem, which, as it can only be done very ſlowly and gradually, will, undoubtedly, demand much patience and perſeverance. It may be preſumed, that if, for the firſt ſix

* WALL on Malvern Waters, p. 105.

months, the diſeaſe can be kept nearly ſtationary, with any evident change for the better in the general ſtate of the health, it is as much as can be reaſonably hoped for. Indeed, this is what I have found to be pretty near the truth, in the examples in which the method has been applied.

The dietetic plan ſhould, of courſe, be ſeconded by every aid, that can be given by the ſcience of the phyſician, and the ſkill of the ſurgeon. On this head it is not my purpoſe to enter into detail; and I believe it to be hardly poſsible to lay down any general rules on the ſubject. The ſubjects of Cancer poſſeſs great diverſities of habit, which require correſponding diverſities in the conſtitutional treatment, and probably too in the application of the remedies, general or topical, which have ſeemed peculiarly appropriated to the ſpecific nature of their complaint.

It will be objected, that the very ſubſtance which is the baſis of the Septic

Poiſon, and to the deleterious power of which I attribute the diſeaſe, is one which has been adminiſtered as a remedy, with ſome appearance of ſucceſs. LEFEBVRE, JUSTAMOND and others, have even deemed it to poſſeſs a ſort of ſpecific virtue in theſe caſes*. But it is acknowledged, that whatever benefit has been apparently derived from the uſe of arſenic in Cancer, it has never been permanent. Its operation has been merely in conſequence of its powerful excitement, in which it ſeems ſuperior to every other ſubſtance, and which very power probably renders it ultimately injurious. It has commonly happened, that tremors and palſies have quickly ſucceeded the temporary and apparent advantage, that has been obtained.

* Mr. JUSTAMOND in one caſe adminiſtered white arſenic, to the extent of two grains for ſix months daily, with apparent relief, which, however, was only temporary;—a ſtrong proof, indeed, both of the real inefficacy of the method, and of the extraordinary torpor of the ſyſtem in this diſeaſe.—See JUSTAMOND's account of his treatment of Cancers, &c. p. 43.

The condition of the limbs in the advanced ſtages of Cancer, is very ſimilar to that which is produced by the immediate introduction of arſenical poiſon.

It by no means follows, from any thing that has been ſaid, that this moſt active ſubſtance may not, in diſcreet hands, be applied occaſionally to uſeful purpoſes. Torpor often ariſes in different parts of the ſyſtem from temporary cauſes, to remove which arſenic is, perhaps, the moſt powerful inſtrument we poſſeſs. I ſhould wiſh even its uſe to be extended to certain caſes of great hazard, in which our means of relief are at preſent very feeble and inefficient; and ſuſpect, from its extraordinary efficacy in intermittent fevers, that there are periods, in fevers ariſing from contagion, in which it may be advantageouſly employed. But wherever we are able to increaſe the real power and energy of the conſtitution, it cannot be doubted, that to do this muſt be far preferable to all the methods practiſed for ex-

citing the actions of the ſyſtem, particularly by agents, which may be deſtructive to the frame itſelf.

I have had the opportunity of uſing this method in four caſes; one of a diſeaſed condition of the tongue, which was intractable by medicine; in a ſecond of a diſeaſed noſe, which was ſtill more threatening; and in two caſes of genuine Cancer of the female breaſt. In none of them, as far as it has been tried, has it diſappointed the hopes I had formed of its power. I ſhall relate the particulars of each.

CASE I.

The particulars of this diſeaſe will be related under the article of Gout, in the words of the patient himſelf.

CASE II.

Mrs. MOORE, the wife of a reſpectable

tradeſman in Portland-ſtreet, had perceived an aching pain in the left ſide of the noſe, about a year and a half ago. It afterwards affected moſt the right ſide, and a kind of fiſſure appeared on the cartilaginous *ſeptum* upon this ſide. The noſe became ſtiff, and could not bear handling, without exciting pain; the noſtrils were a little ſwollen; and though there was no appearance of inflammation, nor any redneſs, there was a perpetual ſenſe of burning heat at the extremity. There was no diſcharge, but the diſeaſed part was rather preternaturally dry. She conſulted many eminent practitioners; among others, Dr. BAILLIE, Dr. HOOPER, Mr. ABERNETHY, and Mr. CLINE; but the diſeaſe continued to gain ground. The aching pain was almoſt conſtant and depreſsing, and it ſpread higher up towards the frontal ſinuſes. The general health was much broken, ſhe had loſt her fleſh, the ſpirits were greatly depreſſed, the appetite was bad, the ſtrength impaired, though ſhe was ſtill equal to many of her

occupations; and the countenance had that lurid and truly *plumbean* aſpect, which is ſo characteriſtic of theſe diſeaſes in their moſt ſuſpicious forms.

She firſt attempted to uſe the regimen I have adviſed in the ſpring of 1804, and purſued it ſteadily for ſix weeks; but finding no benefit, and feeling an uncommon ſenſe of weakneſs and lowneſs, ſhe abandoned it. She afterwards was perſuaded to take to it again, and finding her ſtomach eaſier, even from an imperfect adoption of it, about June ſhe reſolved to adhere to it with regularity. I did not ſee her from this time till the October following. She then complained, that the local diſeaſe was no better; ſhe thought it even worſe, and that the pain had advanced ſtill higher up the noſe. But ſhe confeſſed that her health was better; the appetite, ſtrength, and ſpirits, were all improved; the countenance, too, had loſt its plumbean appearance, which was changed into ſimple paleneſs. Thus I was convinced,

that the conſtitution is ſuſceptible of improvement in theſe diſeaſes.

In another month the progreſs was more decided. The countenance was ſtill more improved. The ſenſation of burning heat at the tip of the noſe was gone; it had become more flexible, and ſhe could bear handling it without uneaſineſs. The aching pain was nearly the ſame. At this time ſhe went into the country, where ſhe has remained ever ſince. Mr. MOORE informs me (Feb. 18, 1805), that the amendment has continued to be uniformly progreſsive. The appetite is quite reſtored, and the health is good. The aching pain is much diminiſhed in ſeverity, and it is confined to the extremity of the noſe. The intervals of perfect eaſe are alſo of much longer duration. The anxiety and depreſsion of ſpirits are quite removed*.

*I am very little anxious to enquire, whether this diſeaſe or that of the tongue (to be related below) would be called Cancer by ſurgical writers. It is quite enough for my purpoſe, that it was of ſuch a kind, that the conſtitution was unequal to the cure.

CASE III.

The following is, by far, the moſt intereſting of all the caſes, in which the cure has been attempted by the uſe of pure liquids, whether we conſider the nature of the diſeaſe, which is wholly unequivocal, the very advanced ſtage at which the method has been adopted, or the very reduced and debilitated condition of the patient. Though I dare not, as yet, pronounce that this individual patient will be reſtored, the effects of the regimen have been ſo decided, as to give me great confidence, that in favourable ſubjects, the Cancer of the female breaſt can be eradicated.

The patient, Mrs. J——s, is about 45 years of age. She reſides at a great diſtance from the metropolis. I ſaw her in the beginning of October, 1804. The other particulars of the hiſtory I have obtained from the account and letters of Dr.

BLOUNT, who recommended the trial, and from the letters of Mr. POWELL, of Weobly, Herefordſhire, her ſurgeon, and Mr. J——s, her huſband.

The circumſtances of the local diſeaſe, when I ſaw it, were theſe. The whole of the right breaſt was converted into a ſchirrous maſs, adherent to the ſide, of a ſtony hardneſs, and with an irregular tuberculated ſurface; but it was not of more than the natural ſize. The ſkin over the ſchirrous tumour was entire, and of its natural colour, but round the tumour it was elevated into ſpots, or empty veſicles; theſe were moſt abundant below the breaſt, and diſperſed upon the ſide to the diſtance of ſeveral inches. Two of theſe veſicles had ulcerated: one of the ulcers had increaſed to the ſize of a half crown; this had callous edges, and a ſerous fluid exuded from it, but not very abundantly. The other ulcer was of no more than the bigneſs of a pea. The glands of the *axilla* were ſwollen, and Dr. BLOUNT ſuſpected the meſenteric glands to be in the ſame

condition; but from what ſymptoms he formed his opinion I am not preciſely informed. Mr. CAM, an eminent and very experienced ſurgeon of Hereford, had been conſulted about the propriety of an operation, which, of courſe, he determined to be wholly unadviſable.

The conſtitutional ſymptoms were, if poſsible, ſtill more unfavourable than the local. She had been long in a very feeble ſtate of health; the gums were looſe and ſpongy, and hardly any teeth remained in the head; the diſeaſe of the breaſt had been formed about a year and a half. The ſtrength was much reduced, the extremities cold, ſhe was emaciated, and had ſuffered pains like rheumatiſm, during which the lower limbs had been almoſt paralytic: the pulſe was quick and feeble.

She began the courſe of diſtilled water on the 26th of June, 1804. Previous to its uſe, the ſtrength had been ſinking rapidly, and the local diſeaſe had been likewiſe gaining ground. The ſmall ulcer

formed after it had been entered upon; but after the courſe had been continued a month, no further ulceration took place, and ever ſince that period the local diſeaſe has been almoſt entirely ſtationary. Dr. BLOUNT therefore thinks, "that from "the ulcerative proceſs there is no longer "any apprehenſion." The larger ulcer at the end of ſeven months, Mr. POWELL informs me, "is rather wider, but the "diſcharge from it is diminiſhed." The breaſt itſelf is nearly in the ſame condition: the change, however, that has taken place has been for the better. This is the opinion of the patient, who is the beſt judge; and Mr. J——s ſays, "we have "great reaſon to believe, that the com-"plaint in her breaſt is much relieved."

The effect upon the conſtitution has not been ſo ſatisfactory, though ſtill it has been ſuch, as not to exclude hope. For between four and five months the health continued to decline, and the ſtrength to decay more and more. About the middle

of November, the general pains were ſo ſevere as to excite convulſions, and the ſtrength was ſo much impaired, that her friends and medical attendants deſpaired of her recovery. But ſince that time, the health has been mending. The debility is ſtill very great; but ſhe thinks herſelf better, and is thought ſo by her friends. She perſeveres in the regimen adviſed, and takes medicines, conſiſting of calomel and ſulph. aurat. antimon. æthiops mineral, and nitre, by the preſcriptions of a noted London doctor, who, however, has never ſeen her, nor can (as I believe) have been ever correctly informed of the circumſtances of her caſe.

I hope to be excuſed for entering ſo much in detail on this caſe. It is clear, that, had it been allowed to follow its uſual courſe, the ſkin having actually begun to partake of the diſeaſe, every one of the ſpots or veſicles would have become the centre of an ulcer, which would have ſpread, and the whole ſide

would have been excoriated. Under theſe circumſtances, the patient muſt have ſunk many months ago, exhauſted by the diſcharge and worn out by the irritation. As therefore in this caſe, the local diſeaſe, which was becoming rapidly worſe, has for upwards of ſix months been kept ſtationary, and as life has been evidently prolonged for many months, and the appearances under the worſt circumſtances have improved, whatever may be the event, I cannot but think myſelf juſtified in the confidence I have expreſſed, that in favourable ſubjects, the Cancer of the female breaſt can be eradicated.

CASE IV.

In a ſecond inſtance, the influence of this regimen upon a cancerous breaſt has been evident to my own eyes. The patient, Mrs. S——, a reſpectable woman, aged 56, has had a ſchirrous tumour of the right breaſt eighteen years. For the three

laſt years, the ſkin over the diſeaſed breaſt has become red, the tumour adheres to the ſide, and has every characteriſtic of the true Cancer. The glands of the *axilla* are ſwollen. At the ſuperior part of the tumour there was a portion which, from the florid redneſs of the ſkin, heat and tumefaction, I judged to be in a ſtate of active inflammation. She uſed the courſe of diſtilled water a month. In a fortnight's time the redneſs of the ſkin over the inflamed part began to diminiſh, and continued to do ſo (though with ſome fluctuation) as long as ſhe perſevered in the courſe.

Whilſt living in the common way, but avoiding fermented liquors almoſt entirely, except the local diſeaſe, this patient felt in a comfortable ſtate of health, and her ſpirits were good. But inſtantly upon confining herſelf to the diſtilled water, ſhe experienced conſiderable general uneaſineſs. At the end of the month, ſhe had ſo great a ſenſe of debility, languor

and lowneſs, accompanied with ſo much paleneſs of the countenance and ſhrinking of the features, that ſhe renounced the trial. Nor am I ſurpriſed, that I did not poſſeſs ſufficient authority, to make her believe, that theſe ſymptoms (they were too mild to be alarming) ſhould be conſidered as proofs of the activity of the method, and furniſhed the ſtrongeſt motive for perſeverance.

GOUT.

HOW much ſoever the humoral pathology has been decried, ſince the doctrines of CULLEN, founded upon thoſe of BAGLIVI and of HOFFMAN, have been prevalent, the notion of Gout being occaſioned by the action of a morbific matter is by no means eradicated. Even within theſe few years, the opinion of the exceſs of acidity has found partizans; and I believe it is full as rational as the more abſtruſe explanations of metaphyſical theoriſts. As the celebrated teacher of the Edinburgh ſchool has laboured with ſingular earneſtneſs, to deſtroy this opinion, of the exiſtence of a gouty humor, it may be worth while briefly to notice the arguments he has adduced.

1ſt. "There is no direct evidence of "any morbific matter being preſent in "perſons diſpoſed to gout." Nor is there any evidence againſt it, ſince we have not known how to analyſe the blood. "There "are no marks of any morbid ſtate of the "fluids, previous to the attack." Nor are there any ſuch marks, before the ſecondary ſymptoms of ſyphilis, for example, though we are certain that, in this caſe, a poiſon is circulating through the ſyſtem.

2d. "The ſuppoſitions concerning the "nature of this matter have been various "and contradictory." Such will ever be the caſe in the abſence of experiment, and the ſuppoſition itſelf may, notwithſtanding, be founded in truth.

3d. "It is inconſiſtent with the pheno-"mena of the diſeaſe." This is aſſerted without proof, and no more reaſonable explanation has as yet been offered.

4th. "The operation of this matter

" ought to be uniform; whereas it is ſti-
" mulant in the limbs and ſedative in the
" ſtomach." The true operation of the matter is *previous to the fit*, when it is debilitating in the limbs, as well as in the ſtomach.

The 5th objection only refutes a feeble argument, and the 6th, entering into the nature of hereditary diſeaſes, would lead us into a diſcuſsion too extenſive for this place, and very little to the purpoſe.

7th. " It is uſeleſs and neglected in
" practice. When the gout has affected
" the ſtomach, nobody thinks of correct-
" ing the matter ſuppoſed to be preſent,
" but of reſtoring the tone of the fibres."
But may not tonics owe their power to a chemical action on the liquids contained in the ſtomach? It is experience that has taught their utility; of their mode of operation we are ſtill ignorant.

8th. " It explains nothing, without

" ſuppoſing the matter to produce a " change in the ſtate of the moving " powers; and this change, produced by " other cauſes, explains every circum- " ſtance, without the ſuppoſition of a " morbific matter." But it is an undoubted truth, that the blood is the great agent upon the moving powers, either directly, or through the medium of the ſenſorium; and therefore a change in its compoſition muſt be infinitely more powerful, than any other cauſe whatever. Beſides this, no explanation of the phenomena of the diſeaſe has yet been offered, that is at ſatisfactory to intelligent enquirers.

Laſtly, " It is alſo ſuperfluous, becauſe " without any ſuch ſuppoſition, I think the " diſeaſe can be explained in a manner " more conſiſtent with its phenomena, " with the laws of the animal economy, " and with the method of cure, which ex- " perience has approved." To anſwer this objection, it would be neceſſary to analyſe the Cullenian theory of Gout—a

uſeleſs taſk, as, I believe, no phyſician deems it deſerving of attention, or thinks that it explains a ſingle fact, either of the hiſtory or treatment of the diſeaſe.

Such is, in truth, the ſum of the reaſoning againſt the humoral pathology; for the ſame arguments may eaſily be transferred to all other diſeaſes: of how little weight they are, I leave to the judgment of the enlightened enquirer*. In the caſe of Gout, the doctrine of its being cauſed by a morbific matter has been much weakened by its having been ſuppoſed, that in the fit this matter is depoſited upon the extremities, and ſo evacuated; a uſeleſs and not very intelligible hypotheſis. My theory of Gout, if ſo ſimple an explanation merits the name, is as follows:—

* It is ſaid that Mr. COLEMAN has given a ſound horſe the glanders, by transfuſing into its veins the blood of a glandered horſe. Wherever the cauſes of diſeaſe have been really detected, they have been uniformly found in the operation of ſome foreign matter on the body, as marſh *miaſma*, putrid effluvia, variolous, morbillous, ſyphilitic poiſon, &c.

In the gouty conſtitution the poiſon, artificially introduced, makes the bones radically diſeaſed, as in Scrophula, and this diſeaſe begins at the extremities, and affects the joints and their appendages, more than the central parts of the bone. This condition of the parts exiſts as much during the intervals, as during the paroxyſms of Gout. When the conſtitution is vigorous, fever fits are produced for its relief, during which the diſeaſed parts inflame, and by this inflammation are ſometimes reſtored. The power of poiſons to produce a diſeaſe of the bones, is obvious in the action of the ſyphilitic poiſon, and of its counter-poiſon, Mercury.

1ſt. The firſt appearance of Gout is often produced by a long walk, or preſſure on the foot. Here the diſeaſe is merely local, the conſequence of the parts being unſound, and the fever is ſymptomatic.—2d. The ſame kind of accidents will bring on a gouty ſwelling at any time, in thoſe who have had frequent fits.—3d. There

are ſymptoms of the feet being diſeaſed before the fit, as coldneſs of the parts, cramps, ſwellings of the veins, &c.—4th. After repeated attacks the diſeaſe in the feet is permanent.—5th. In old patients the bones of the foot often becomes carious, the ſkin ulcerates, and the carious parts crumble away.—6th. Regular exerciſe on foot very much keeps off the Gout from the parts; but riding and carriage exerciſe has no ſuch effect. It has even been aſſerted, that thoſe, who write much, preſerve the fingers ſo employed. All theſe facts ſeem ſtrongly to point out, that the diſeaſe, firſt of the toe, and afterwards of the other joints is ſtrictly local, and, of courſe, varying, as diſeaſed parts are apt to do, with the condition of the conſtitution, more than parts that are ſound.

This previous diſeaſe of the bones determines the ſeat of inflammation, whenever the occaſional cauſes are applied; as a perſon with an unſound tooth will have a tooth-ach, or inflammation of the jaw

by catching cold. It is a common remark, that the circumſtances which excite catarrhal affections in common ſubjects, cauſe gouty ſwellings in gouty habits.

Whilſt, therefore, I contend for the exiſtence of a morbific matter in Gout, I ſee no reaſon for ſuppoſing it to be at all peculiar to gouty ſubjects, or any other than the ſame Septic Poiſon, which I believe to lay the foundation of other Conſtitutional Diſeaſes. And the relief received from the paroxyſms I preſume to be due, not to the inflammation of the feet, but to the changes induced by the proceſs of fever.

That paroxyſms of common inflammatory fever, aſſuming various forms according to the varieties of the local affection united to it, are very commonly a relief to the conſtitution is, I think, a matter of daily experience. Such are attacks of rheumatiſm, or eryſipelas. Theſe, too, are, like gout, often preceded by long conti-

nued *dyſpepſia*, *hypochondriaſis*, loſs of appetite, general heavineſs and torpor, headachs, &c.

As there is nothing peculiar in the gouty fever fits, neither is there any thing in the dyſpeptic ſymptoms, which form ſo large a part of the habitual ſufferings of the patient. The ſame ſymptoms, attended by all their concomitants, are to be found in a greater or leſs degree in many, nay in the greater part of chronic diſeaſes. Nor are the more calamitous *ſequelæ*, which are uſual in the latter ſtages, when life is drawing to a termination, more than what are attendant upon decayed and broken conſtitutions, whatever variety there may have been in the form of the previous diſeaſes, when the ſyſtem poſſeſſed its original energies. Such are, for example, (I quote from the reſpectable authority of Dr. LATHAM) "the paralytic "tremors of the limbs, the convulſive "twitchings of the muſcles, the relaxed "joints, the frequent ſyncope, the inter-

" rupted reſpiration, the apoplectic verti-
" go, the ædomatous extremities, the
" univerſal maraſmus*." All theſe ſymptoms are to be found aſſociated with diſeaſes of different denominations, and may reaſonably be attributed to the influence of ſomething common to the whole tribe, and not peculiar to any ſingle *genus*.

What is really peculiar and ſpecific muſt be looked for in an original peculiarity of the conſtitution, rather than in the action of a peculiar matter. This peculiarity appears to have its ſeat in the actions of the ſtomach: but as we have but a very rude notion of the proceſs of digeſtion, we can ſpeak of it only in very general terms. The ſtomach however is commonly in ſuch a condition as to bear ſtimulating applications, which ſeem almoſt requiſite for the proper performance of its functions. This is ſo much the caſe, that even in a ſtate of fever ſtimu-

* LATHAM on Rheumatiſm and Gout, p. 71.

lant matters, as wine, ſpices, &c. are not injurious; at leaſt, by no means in the ſame degree as in other conſtitutions. Hence, according to our preſent habits, gouty perſons are placed between two rocks, ſo that if they ſteer clear of one, they almoſt inevitably ſplit on the other. The uſe of ſtimulants eventually deſtroys the digeſtive organs, and accelerates the diſeaſes attached to the latter ſtages of life. The abſtracting of them frequently throws the ſyſtem into a direct ſtate of atony, from which it may be impoſsible to raiſe it.

This laſt condition has very often been the conſequence of the milk diet indiſcreetly undertaken. This courſe has ſtopped the paroxyſms of gout, to the exiſtence of which a certain vigour of the arterial ſyſtem is eſſential. But it has not eradicated the gouty *diatheſis*, for, on reſuming the former habits, it has appeared again in its original ſeverity, if the conſtitution has been found; whilſt in others,

it has induced a permanent ſtate of atony and debility. There are numbers, however, to whom this experiment is impracticable, ſince to moſt gouty ſtomachs milk is abſolutely indigeſtible.

The ſyſtem which I have laid down, of confining the patient to the uſe of pure liquids, promiſes to give all the advantages of the milk diet, or rather to ſuperſede it, by rendering harmleſs a reaſonable indulgence of other habits. This practice ſtrengthens and reſtores the digeſtive organs more powerfully and permanently, than any medicine can poſsibly do. Independently, therefore, of all theory, it may be expected to be particularly beneficial in a diſeaſe, the *fomes* of which is allowed by common conſent to be ſeated in the organs of digeſtion. In Gout too, the whole frame, even parts the moſt remote, ſympathiſe more directly with the affections of the ſtomach, than in other diſorders. If therefore the ſtomach can

be radically reſtored to a healthful condition, there is little doubt that the whole body will be reſtored with it.

But, I am happy to add, this is not a theoretical ſpeculation, framed in the cloſet, and annihilated by the firſt touch of ſolid experience. The firſt perſon (beſides the family, which underwent the courſe I have related) who followed my advice is a gentleman, who had been long a martyr to this diſeaſe. He has now ſteadily purſued it about a year and a half, and the advantage received has, undoubtedly, far exceeded the expectations I had formed of its efficacy. He has thought right (from that principle of public ſpirit, for which he has been diſtinguiſhed through life) to draw up a very minute detail of all the circumſtances of his caſe, in two letters addreſſed to myſelf, which (with his permiſsion) I here ſubjoin.

LETTER I.

Rowdel, Suſſex, September 30th, 1804.

My dear Sir,

You wiſh me to give you the moſt accurate detail of the effects of confining myſelf to the drinking of diſtilled water, which I now have done, ſince the beginning of September, 1803. You know how miſerable a martyr I was to the Gout, which firſt affected me about thirty-five years ago*. In the beginning I uſually had it every year; for ſome years afterwards it attacked every other year; but the fits became more violent, of longer duration, and more univerſally diffuſed over my frame. The laſt violent fit I had I find marked in my almanack of that year, the 15th of January, 1802. I remained ſix weeks in the country extremely ill. I then thought it neceſſary, wrapt

* The firſt ſymptoms of Gout appeared at the age of twenty-ſeven, but the firſt regular fit was at the age of forty, about twenty-two years ago.

up in blankets, to proceed to town for better advice; there I remained above a month confined to the houſe. The ſeverity of the fit being ſomewhat abated, I returned again to the country, and did not recover the effects of that fit till the month of Auguſt following. In September, 1803, I commenced the courſe you adviſed of diſtilled water, under the greateſt apprehenſions of being again attacked the enſuing winter, as it was the the year I expected it. To my agreeable ſurprize, the only ſymptom I had of Gout that winter was, after a very long and fatiguing walk in London, to feel a ſlight attack in my heel, which laſted me three or four days; and once again in the ſpring I felt a gouty affection in the left hand for about a week. The extraordinary ſtiffneſs upon my ancles, which I had been ſubject to for a ſeries of years, is totally removed. I can now take long walks without feeling any ill conſequences from it, or any return of the Gout, which was never before the caſe.

I feared myſelf liable to be attacked by another and more ſerious calamity, which I felt yearly increaſing upon me; I mean a diſeaſed condition of the tongue. This uneaſineſs ſeveral years ago affected me by an extraordinary dryneſs, tingling and aching, particularly in the morning. On firſt waking, it appeared to me as ſomething not belonging to myſelf; but as if it were a dried tongue put into my mouth, whoſe flexibility was impaired and almoſt deſtroyed. It has now in a great meaſure regained its moiſture and flexibility; it has ſometimes a tingling in the morning, but the aching pain is gone, though yet occaſionally an uncomfortable feeling ariſes, particularly if I ever exceed a glaſs or two of wine, which is ſometimes unavoidable from company.

A further circumſtance I think neceſſary to mention, which may in ſome meaſure account to you for the riſe of this complaint in my tongue. In the year 1778-9, I returned from the Eaſt

Indies for the laſt time. I came in a French ſhip, as all the Engliſh ones were departed. The paſſage was of eight months, and the ſhip wretchedly provided with freſh proviſions and water. For a ſeries of time we had nothing to depend upon but ſalt proviſions, and thoſe putrid and full of worms. This, I apprehend, was the cauſe of the general corruption of my juices; as almoſt immediately after my arrival in England, I was attacked with a very violent fever, which fell upon my lower gums, and deprived me in the end of all thoſe teeth. Soon after I felt a circle riſing and gradually extending itſelf towards the root of my tongue, occupying internally both the upper and lower jaw, including the tongue; this I occaſionally waſhed with warm water and ſpirits of wine, which cauſed it to ſmart exceedingly, whilſt the ſound parts bore it without pain. This circle has been gradually decreaſing, ſince I have drunk the diſtilled water; it is now confined to the lips and end of the tongue, whereas

it

it was before getting gradually more and more towards the root of the tongue.

My ſtomach for a great many years was troubled with wind, acidity, violent heat, cramps and diſtention, with acute pain after eating. The acid I now feel very little, of diſtention none after eating: I have occaſionally ſuffered the cramps, but the heat is gone. Within the laſt month the pain has been greatly relieved.

I had a feeling of perpetual tightneſs about the head, and often ſevere thumps, as if from external violence. The thumps I now ſeldom feel, and by no means ſo violent as they were, and the tightneſs has left me entirely.

In addition to this, I had all over my breaſt and ſhoulders a violent yellow ſcurfy and itching eruption, eating into the fleſh; this is ſo totally removed, that nothing can be perceived of it but the veſtiges in the ſkin, which I ſuppoſe will always remain.

I think it proper to add, that in the courſe of this ſummer, commencing about the hay harveſt, I was ſeized with a moſt violent cough, attended with an enormous defluxion both from the head and breaſt, throwing up by cough a ſtrong tough yellow phlegm. This made me ſomewhat apprehenſive of an attack upon the lungs; but it is now almoſt gone, and inſtead of any ill reſult, I feel myſelf infinitely better in health, than I have been for the laſt twenty years.

My appetite, which has been always very bad, remains nearly in the ſame ſtate; but this may perhaps ariſe from too ſedentary a life, as I obſerve by travelling about I occaſionally recover it. My bowels ſtill continue conſtipated; and the ſleep I get, though ſhort, is perfectly ſound.

I ſhall certainly perſevere in continuing to drink the diſtilled water, having already found ſuch great benefit from it; and doubt not in the end it will reſtore

me, as far as can be expected at the age of ſixty-two years.

With regard to the uſe of wine, I confine myſelf to a pint of wine a day, never, if poſsible, exceeding it, and never finding any ill effects from it; if at any time I exceed that quantity, I am ſure to ſuffer by it.

I am, dear Sir,

your affectionate and faithful ſervant,

CHARLES GORING.

P.S.—On reading over this letter, I find I have not fully explained what I mean by my laſt fit of the Gout being ſo univerſally diffuſed: it occupied every one of the great joints of the body; ancles, knees, elbows, wriſts, and ſhoulders.

To Dr. Lambe,
King's Road, Bedford Row.

As ſeveral months have elapſed ſince this letter was written, he has favoured me with the following account, of what has ſince occurred.

LETTER II.

My dear Sir,

A ſecond* winter is now paſſed without any fit of the Gout, though certainly I deſerved one by my imprudence, in expoſing myſelf to the inclemency of the weather, and getting very wet in my feet in October laſt; the conſequence, however, was a very ſevere rheumatick attack in my right ſhoulder, the pain of which was equal to that of the Gout during a fortnight; and was effectually removed by two bliſters. This attack was followed by a ſlight appearance of Gout in my left hand, which laſted two or three days.

Since this, my health has been more

* From the uſe of the diſtilled water, but a third from the laſt paroxyſm.

confirmed than ever. My appetite is now quite reſtored, and is indeed better than I ever before poſſeſſed.

My head is quite well; I feel only ſome ſlight uneaſy ſenſations occaſionally in my tongue, if I catch cold.

The only inconvenience I now feel is a torpor of the bowels, which is ſtill conſiderable. I have found for theſe three months paſt my inclination to wine greatly abated; in conſequence of which, I have reduced my pint of wine to three glaſſes, and I think, without inconvenience, I could do without that.

Adieu, ever yours,

London, CHARLES GORING.
March 18, 1805.

This minute and faithful account requires little comment. I may be allowed to obſerve, that ſome of the facts related cannot, by any diſtortion of ſcepticiſm or

prejudice, be attributed to accident, or to any other cauſe, than that aſsigned by the relator. Paroxyſms of Gout, indeed, will occaſionally have irregularities in their intervals; and they have been kept off by internal medicines, though almoſt always, eventually, to the great detriment of the patient. But in the example before us, the reſtoration of the flexibility of the ancles, the diſappearance of the cutaneous eruption, the ſlow and gradual cure of the diſeaſed condition of the tongue, and of the affection of the head, and, finally, the complete reſtoration of the appetite, but not till after the courſe had been followed for fourteen months at leaſt; all theſe phenomena wholly exclude the ſuſpicion of deluſion from any ſource whatever, and irreſiſtibly impreſs the mind with the conviction, that the cure of this *opprobrium medicorum* is no longer hidden in "the well of Democritus," where our honeſt SYDENHAM hath placed it, but is to be found in the moſt ſimple practice, that can be deviſed.

But I do not regard the Gout of this gentleman as cured. As in the caſe of Mr. M——s's headachs, (page 79) I conſider the paroxyſms to be ſuppreſſed, but the diatheſis not as yet to be eradicated. Still a little exceſs in wine, expoſure to cold, and other cauſes are apt to bring on gouty pains, which laſt for a day or two, and then diſappear. If the diatheſis, which lays the foundation of Gout, can be eradicated entirely in three years, the practice, I think, will fully anſwer every reaſonable expectation.

After the diſtilled water had been uſed a few months, the ends of all the fingers became tender, and continued ſo about a twelvemonth. It ſeems certain then, that, in Gout the extremities are habitually and permanently diſeaſed; that from habit this condition of the extremities is unattended by ſenſation, but that it excites ſenſation, when the ſenſibility of the ſyſtem is increaſed, or new habits are formed.

The diſreliſh for wine, which the uſe of pure water cauſes, is ſtrongly exemplified in this caſe. Mr. G—— has been, in the younger part of life, a very free liver, and latterly by no means abſtemious in the uſe of wine. No one, who knows the ſtate of atony and languor, which oppreſſed him, and the frequent attacks of Gout in the ſtomach, to which he was ſubject a year and a half ago, can doubt that, had he tried to practice the ſame abſtemiouſneſs at that time, the conſequence of the experiment would have been ſpeedy and inevitable death.

As far as a ſingle inſtance can be allowed to prove any thing, it is proved by this caſe, that *Dyſpepſia*, Gout, Cancer,*

* I do not call the diſeaſe of the tongue in this caſe a Cancer, nor do I believe that it would have ever become a Cancer; but for this reaſon only, becauſe I think death would have been cauſed by an internal diſeaſe, either Apoplexy or Gout in the ſtomach. Mr. Home (Obſervations on Cancer, Caſe xxiv) relates a hiſtory of Cancer of the breaſt, which did not prove fatal, becauſe the patient was cut off by Conſumption. In like manner, in the caſe

Lepra, and *Apoplexy* are all due to the ſame cauſe, and that the diſpoſition to

before us, the diſpoſition was cancerous, or at leaſt (which is quite enough for my purpoſe) it was ſuch, that the powers of the conſtitution were unequal to the cure. Whether, therefore, it would have ever become ſtrictly cancerous, or not, is a matter of very little moment.

Mr. HOME, in his Obſervations, having treated of Cancer as a ſurgical diſeaſe only, I do not think right to examine his opinions, or thoſe adopted by him from Mr. HUNTER, though they ſeem very open to criticiſm. But it is extraordinary, that Mr. HOME ſhould have reſted a point of the firſt practical importance (the advantages of an early operation) rather upon inſinuation than evidence; and ſhould have cited the teſtimony of Mr. NOOTH in its favour, inſtead of giving the reſult of his own experience. NOOTH has ſaid, "that in one hundred and two ſchirrous "caſes, in the early ſtage of the diſeaſe, where I per-"formed the operation by the ſingle inciſion, all remained "free from any return of the complaint." (NOOTH's Obſervations on Cancer, p. 83.) HILL, of Dumfries, too, more than half a century ago, ſtated, that of forty-five ſchirrous tumours extirpated by him, five only had a return of the diſeaſe. But Dr. MONRO, about the ſame time aſſerted, that "of near ſixty Cancers, which he had been "preſent at the extirpation of, only four patients re-"mained free of the diſeaſe for two years." (Edinburgh Medical Eſſays and Obſervations, vol. 5, part 1, p. 346, 4to edit.) Is the authority of NOOTH ſuperior to that of HILL? Is the teſtimony of one, who has gravely given ſuch a hiſtory, as that of his ſixth caſe, in ſupport of his principles, of any weight at all?

them may be eradicated by the ſame method. There is hardly indeed a chronic diſeaſe, with which Gout is not connected as a conſequence, as a concomitant, or as a precurſor.

If we maturely reflect on the authentic hiſtories, which have been delivered of the utility of the milk diet, we muſt be led to the ſame concluſions. For they are not conſumptive caſes only, in which this diet has ſhown its efficacy, or thoſe attended with hectic fever; but in general it has been found to poſſeſs great power in diſeaſes of the moſt oppoſite deſcriptions. The ability of the ſtomach to digeſt it ſeems to form the only limit to its utility. Its uſe in *Phthiſis*, *Hæmoptyſis*, *Empyema*, and all diſeaſes attended with a ſlow fever, and waſting of the fleſh, has been celeberated in all ages. In articular diſeaſes, Gout, Rheumatiſm and Sciatica, it has ſhown ſimilar power. In ſpaſmodic pains of the ſtomach and inteſtines, in hypochondriacal and hyſterical affections, even

in maniacal and melancholic diſeaſes, its virtues have been teſtified by writers of the higheſt reputation. Epilepſies and other convulſive diſeaſes, the train of ſymptoms denominated ſcorbutic, herpetic eruptions, and other defedations of the ſkin have been ſometimes cured, ſometimes and more often palliated by the ſame regimen*. It would ſeem then, that there is ſome connecting link between all theſe different affections; that they all participate of a common nature, and, if to be ſubdued at all, that it muſt be done by a common regimen.

The affinity between Gout and Calculus† is ſo well eſtabliſhed, that there will be little heſitation in admitting, that a regimen, which can eradicate the one, will moſt probably be eminently uſeful in the

* See HOFFMANNI Opera, tom. vi. De mirab. Lact. Afin. Us. for authorities on this ſubject.

† The connection between theſe diſeaſes is much inſiſted upon by DE HAEN, and illuſtrated by ſome ſtriking examples. See DE HAEN, Rat. Medend. vol. ii. p. 75, &c.

other. And yet ſome of the graveſt medical writers have pronounced, that the formation of calculous concretions is wholly unconnected with the qualities of common water. Theſe concretions, ſay they, are almoſt entirely of an animal nature; whereas common water is contaminated only by ſaline and earthy matter. Even the candid and obſervant HEBERDEN has ſupported this deluſive fallacy*. I hope preſently to demonſtrate how unfound the foundation is, on which it is built. The moſt familiar and well known facts ſhould have occaſioned them to ſuſpect their ignorance, and to be leſs confident in their concluſions. Every ſeaman knows, that common water putrifies, nay, that after it has become ſweet and palatable, it will ferment a ſecond or a third time, when tranſported into ſouthern latitudes. This cannot be occaſioned by the ſaline or earthy particles it may contain, but to an impregnation of animal or vegetable matter.

* Medical Tranſactions, vol. i. page 6.

Calculous complaints are far more frequent in ſome ſituations, than in others; and in certain diſtricts they ſeem endemical. Add to this, that the pure natural ſprings have been always celebrated for the relief they have afforded in theſe diſorders, and other complaints of the urinary organs. I happen to know, that a lady has at this preſent time fixed her reſidence at Malvern (greatly againſt her inclination), having found relief there in a complaint of this nature, which was inſupportable in other places. Common water, therefore, increaſes the acrimony of the urine, which may be preſumed to lay the foundation of diſeaſes of the urinary organs. This condition of the urine muſt increaſe the ſecretion of *mucus* from the membranes; which ſecretion, if we may confide in the theory propoſed and ſupported with great ability by Dr. AUSTIN*, is the origin of urinary *calculi*.

* See Dr. AUSTIN's Treatiſe on the Origin and Component Parts of the Stone in the Urinary Bladder.

Before I conclude I cannot avoid making one reflection on the phenomena of diſeaſe; it may ſeem humiliating to profeſsional pride, but if it tend to promote rational indications in practice, truth muſt not be ſacrificed to vain and unwarranted pretenſions. We ſee and acknowledge in Gout, that the cure is really performed by nature, whilſt the diſeaſe is probably a creature of art. What is obviouſly true in this diſeaſe, may it not be equally true in many others? In inflammatory fevers for inſtance, is not the real diſeaſe of the ſyſtem formed previous to the evident attack, and are not the inflammation and fever the proceſſes of reſtoration, as far as reſtoration is poſsible? Further, are not many ſymptoms of chronic diſeaſes, the effects of that wonderful power inherent in the ſyſtem, of accommodating itſelf, as far as poſsible, to the neceſsities of the preſent ſituation?

In ſome of the forms of Scrophula, I

think the truth of this account is extremely obvious. We ſay, that Scrophula attacks principally the ends of the bones. It ſeems inexplicable that a general diſeaſe, be it from a poiſon or from any other ſource, ſhould have this predilection, as it were, for one part of the bone more than another. But let us conſider, that the gravity of the limbs is ſuſtained by two forces, 1ſt, by the tone of the muſcles, and 2dly, by the ſtrength of the ligaments attached to the joints. In a deep Scrophula, the tone of the muſcles is gradually more and more impaired. Hence there is an unnatural tenſion perpetually acting on the joints, and nature (to uſe the ſhorteſt language) attempts to ſtrengthen the joint by enlarging the connecting ſurface. This is the foundation of thoſe thick and gummy joints, which are known to be a ſign of weakneſs, but which are a ſuccedaneum to a healthy tone of the muſcular fibres. But this power of accommodation has neceſſarily its limits; and if carried too far,

degenerates into diſeaſe. In a ſcrophulous joint the intention of nature is evident, but the power of effecting her purpoſe is deſtroyed.

Nature never appears more to contradict her own deſigns, than when ſhe thickens and obfuſcates the cornea of the eye, or deſtroys the tranſparency of the cryſtalline lens. But even in this deviation from the healthy ſtructure, ſome marks of deſign and of accommodation to neceſsity may be diſcerned. For it is curious to remark, that in caſes of total blindneſs, the eyelids often continue cloſed as if to exclude the light; and it has happened, when a membrane of this kind has been artificially removed, that the impreſsion of light upon the nerve has been intolerable. Does not this plainly ſhew, that in ſuch a caſe the original diſeaſe is in the preternatural ſenſibility of the nerve, and that the thickening of the membranes is merely an effect of the morbid condition of the ſenſorium, and an effort of nature

to adapt the quantity of light to the ſenſibility of the ſenſorium? It would ſeem then, that if it be in our power to remove this morbid ſenſibility, the membranes would of themſelves recover their tranſparency.

If it be ſuppoſed, that in aſcribing ſuch multifarious and even oppoſite effects to the agency of one matter, I tranſgreſs the juſt rules of philoſophizing, and attribute conſequences to the production of which no ſingle agent is adequate, I anſwer, that, on the contrary, an apparent variety in effect is quite conſiſtent with uniformity of cauſe. If one ball inpinge upon another, motion either progreſsive or retrograde, or, in ſome caſes, abſolute reſt may be the reſult. Phenomena are the reſult of the relation between the agents and the ſubſtances acted upon. Though the agent therefore be one, the relation may be indefinitely modified. Hence original and intrinſic varieties in the animal ſyſtem will produce correſpondent varieties in

diſeaſes, though the morbific force be ſuppoſed uniform. In the human ſyſtem we ſee united to common and generic reſemblances innumerable differences likewiſe, ſo that every individual has his characteriſtic peculiarities. Thus, there are differences of the digeſtive powers, differences in the oxygenizing powers, differences in the ſecerning powers, differences, infinite in degree and in number, in the multifarious proceſſes, which are perpetually carried on in that moſt complicated and moſt wonderful of machines, an animal body. In health theſe differences lay the foundation of thoſe diverſities, in the form and properties of the ſpecies, which are deſcribed by the doctrine of temperaments; an arrangement, which marks with tolerable preciſion the ſtronger and bolder features, by which the principal varieties of the human race are characteriſed, though hardly an individual coincides entirely with the archetype, or aggregate of ideas affixed to the general term. Theſe differences are ob-

viouſly original and connate; they appear in the earlieſt ſtages of life, but are more ſtriking and palpable in the progreſs of life. Thus we ſee in large families, children brought up preciſely in the ſame manner with different and oppoſite conſtitutional temperaments. As, therefore, in health, the radical varieties of the ſenſorium and important organs produce ſuch marked and unequivocal varieties of temperament, that the forms of diſeaſe ſhould be ſubject to correſponding varieties, ſeems conformable to the analogy of nature, rather than to be a matter of objection or aſtoniſhment.

Much of real and ſerious diſeaſe is not an object of medicine, ſtrictly ſpeaking. Imperfections and irregularities in the growth of parts, defects of the organs of ſenſation, diſproportion between the moving powers of the body and the reſiſtances, are obvious examples of ſuch diſeaſe. But the tendencies of nature are ſo clearly directed to the moſt perfect proportion and

ſymmetry, and in moſt of her proceſſes the means are adapted to the ends with ſuch profound and unfathomable wiſdom, that we cannot but ſuſpect that, where ſhe fails, it muſt be the effect of extrinſic and inſuperable violence. To remove this artificial violence by artificial correctives is, in truth, to re-eſtabliſh the empire of nature. It may be expected that under a ſyſtem of diet, which would be truly preventive (if ſuch a ſyſtem can be completely attained), theſe imperfections would gradually become extinct, and the human form would ſpontaneouſly aſſume the beſt poſsible proportions, would be furniſhed with ſenſes preciſely adapted to the phyſical ſituation, and endowed with powers completely adequate to the neceſsities of the ſpecies.

The branch of medicine, which profeſſes to teach the prevention of diſeaſes (the antients called it *Hygieinè*), though doubtleſs of great intereſt to the phyſician, is of ſtill greater to the philoſopher, to

the philanthropiſt, and to the citizen of the world.

To improve the phyſical man, is to improve alſo the intellectual and the moral man. Under our preſent ſyſtem, man being morbid in his organization, he becomes, by the laws of an eternal neceſsity, morbid in his underſtanding and in his will. Hence, from the very frame of his nature, the germs of his vices, as well as of his virtues, are implanted in the firſt rudiments of his exiſtence, and are developed by the inevitable force of circumſtances. Laws, religion, political inſtitutions, and, above all, moral education, may cultivate his virtuous tendencies and correct his perverſe propenſities; but the experience of all ages, and of all countries, has too clearly proved, that they can do this but very imperfectly. All communities have, therefore, been eſſentially immoral, and muſt ever be ſo, whilſt the habits of the individuals compoſing them remain unaltered. To eradicate moral evil, the

very nature of man muſt be changed. He muſt be rendered ſuperior to artificial wants, or rather the objects of them muſt ceaſe entirely to excite deſire. But I wander far from my object. The hint, which I have given, will be readily taken, and its conſequences purſued, by thoſe truly good and zealous parents, who think no trouble thrown away, which may ſecure to their offspring the only true bleſſings of life, a healthy body, a ſound underſtanding, and pure morals.

EXPERIMENTS.

1. *PROPERTIES of ARSENICATED MANGANESE.*

I BELIEVE that Arſenicated Manganeſe has been very ſlightly examined by the chemiſts. A very few experiments have been made upon it by the celebrated SCHEELE; who, in his experiments upon Arſenic, has ſaid, that the compound may be reſolved into its conſtituent principles by fuſion with charcoal. He precipitated neutral arſenical ſalts, by adding to them ſolutions of Manganeſe in the mineral acids. Theſe precipitates, which are Arſeniat of Manganeſe, were diſtilled in ſuch a heat that the retort at laſt melted, but no Arſenic was ſublimed, nor would they enter into fuſion, but retained their white colour; however, he adds, when

mixed with charcoal powder in a crucible they flowed, and regulus of Arſenic aroſe in the form of vapour, while the Manganeſe remained behind.*

I have not been able to verify this experiment: on the contrary, I have made very numerous trials to ſeparate the Arſenic from this compound, but hitherto to no purpoſe. I believe this admirable chemiſt was deceived by the Manganeſe he employed being contaminated by iron.

I.

I have uſed Manganeſe diſſolved in ſulphuric acid and cryſtallized arſeniat of potaſh; a ſalt in which the arſénic acid predominates. When theſe ſolutions are mixed together, a gelatinous precipitate is formed; but if the arſénic acid is completely ſaturated by the addition of potaſh, the precipitate is no longer gelatinous, and

* Scheele's Eſſays, p. 185.

is much more abundant. This precipitate (A) thoroughly edulcorated with diſtilled water, is the matter I have operated upon. (B) For ſublimation I have uſed glaſs tubes, with a bulb at one extremity, and bent a little above the bulb, ſo as to form a ſmall retort; ſuch a retort, by a coating of clay and ſand, may be readily made to ſuſtain a ſtrong heat.

I muſt add, that the experiments, I am about to relate, are in a degree expoſed to the ſame objection as thoſe of SCHEELE; namely, that the Manganeſe was not free from iron. I attempted to purify it, by precipitating the ſulphat of Manganeſe by carbonat of potaſh, and diſſolving the edulcorated precipitate in diſtilled vinegar. But though I evaporated the ſolution nearly to dryneſs twice, I found that ſome iron ſtill adhered to the Manganeſe. I ſuſpect alſo, that the arſeniat of potaſh was contaminated by iron, which is a ſecond ſource of error. For theſe reaſons I have hardly mentioned the appearances

with precipitants, thinking they cannot be fully depended upon.

II.

(A) The precipitate (I. A) diſſolves in acids like phoſphat of lime, and may be ſeparated from them, undecompoſed, by ſaturating the acid. (B) If heated to redneſs and then diſſolved in muriatic acid, the acid becomes oxygenated, and of the red colour imparted by Manganeſe, if iron be abundant; but if there be little iron, the ſolution is hardly coloured, and if the Manganeſe be pure, I believe the ſolution would be quite colourleſs*. Hence the union of Manganeſe with arſénic acid, does not prevent the oxygenation of the Manganeſe by heat.

III.

Into a coated tube (I. B) I introduced a little of the precipitate (I. A) mixed with

* See the note to p. 238.

charcoal powder. When red hot, not the ſmalleſt arſenical odour could be perceived, but (A) a matter of a metallic appearance was found ſublimed in the tube. It retains its metallic ſplendor permanently, is inſoluble in muriatic acid, and therefore is not arſenic, nor have I preciſely aſcertained its nature. This ſublimate certainly contains ſulphur, but from whence it is derived I cannot conjecture. The neck of the tube had received a blue ſtain*, as far as it had ſuſtained a red heat, which is indelible by acids.

IV.

(A) I mixed arſeniat of Manganeſe (I. A) with charcoal powder, and made it red hot in a crucible. (B) After all the charcoal had been burnt off, I mixed the

* Sometimes this ſtain is of an aſh colour, but at the extremity, the fartheſt from the bulb, it is always blue. SCHEELE uniformly obſerved indelible ſtains of various colours in his experiments with arſénic acid, and the different metals.

reſiduum* in the crucible with ſome more charcoal powder, and treated a little of it in a tube as in (III). Some metallic ſublimate roſe into the tube, but without any arſenical odour, and the neck of the tube had a blue ſtain. (C) I therefore mixed the reſiduum (B) again with charcoal, heated it ſtrongly, and again burnt off the charcoal. (D) Now a little of the reſiduum, treated as in (III), yielded no metallic ſublimate, but ſtill the neck of the tube received a deep blue tinge.

V.

(A) I digeſted arſeniat of Manganeſe in a ſolution of potaſh for many days. The alcaline ſolution was evaporated to dryneſs, mixed with charcoal powder, and made

* This reſiduum in my experiments was yellow. But I have ſeen an arſeniat of Manganeſe, which, after being heated with charcoal, continued perfectly white. I attempted to form a ſimilar arſeniat, by uſing the ſame Manganeſe even purified, but failed, I ſuppoſe by the imperfection of my arſeniat of potaſh. I believe there is alſo an arſeniat of Manganeſe, which is ſoluble in water.

red hot in a tube. The neck of the tube firſt received a deep blue ſtain; in a ſtronger heat a ſhining ſubſtance ſublimed; it was not arſenic, but the compound matter deſcribed (III. A.) No arſenical odour was emitted. We ſee therefore, that potaſh will not ſeparate the arſénic acid from Manganeſe; but diſſolves a little of the compound. (B) Common carbonat of potaſh, likewiſe, does not decompound the precipitate (I. A.) when ſtrongly heated with it, but diſſolves it plentifully.

VI.

(A) Arſeniat of Manganeſe was mixed with an equal weight of muriat of ammonia, and expoſed to a ſtrong red heat. Ammonia eſcaped (as was evident, when the experiment was made in a tube) and the arſeniat was in part converted into a matter which, where the air had not acted upon it, was of a ſhining metallic appearance. (B) When the experiment is made in a tube, this matter riſes

into the tube in the form of a black powder lining the tube, mixed with muriat of ammonia.

(C) A deliqueſcent ſalt was alſo formed, which had the properties of muriat of Manganeſe mixed with ſome arſénic acid. 1. Pruſsiat of potaſh precipitated this ſalt white. 2. Tincture of galls and ſulphurated hydrogen had little or no effect. 3. Cuprat of ammonia was alſo precipitated, which is occaſioned by the arſénic acid.

VII.

The reſiduum (IV. B) treated in the ſame way with muriat of ammonia, ſhows the ſame appearances. A part of the reſiduum undergoes a ſpecies of reduction*, and another part is converted into a ſaline matter.

* In one example (where the experiment was very well done in a tube, by a ſtrong heat being ſuddenly applied) the black powder (VI. D) roſe in the tube, and there was, beſides, a complete reduction of metal, in grains, in the bulb, mixed with the deliqueſcent ſalt.

It is not difficult to ſee the cauſe of this ſort of reduction. Both arſénic acid and Manganeſe (if in the condition of black oxyd) decompound ammonia. The arſénic acid being changed into arſenious acid, or perhaps into an oxyd, fuſes with the Manganeſe, and gives this ſhining metallic appearance. The muriatic acid unites with another portion of the Manganeſe, and makes the deliqueſcent ſalts.

This experiment gives a ready method of diſtinguiſhing phoſphat of lime from arſeniat of Manganeſe. If phoſphat of lime be heated with muriat of ammonia, the muriat ſublimes, and the phoſphat is left unchanged.

VIII.

If this reſiduum (IV. C) be heated to redneſs with potaſh, the matter aſſumes a green colour; but when the potaſh is diſſolved in water, it forms a colourleſs ſolution, nor is any thing depoſited by keep-

ing the liquor expoſed to the atmoſphere. But by the uſe of due reagents, it may be proved that ſome metallic matter is retained in the alcaline ſolution.

Potaſh heated with phoſphat of Manganeſe alſo becomes blue, and does not impart its blue colour to water.

IX.

(A) If a little of the reſiduum (IV. B), mixed with charcoal powder, be put between two plates of copper, and the plates be made of a low red heat, the copper receives a permanent ſtain. The internal parts of this ſtain are partly of an orange, and partly of a crimſon colour*; the external are of a whitiſh yellow, like that cauſed by pure arſenic, except that the tinge is more yellow.

(B) The reſiduum (IV. C) was treated in

* Theſe colours are chiefly from the oxidation of the copper.

theſame manner. In this caſe, a crimſon ſpot was formed in the middle of the ſtain: the internal part was dark, but the external had the ſame whitiſh yellow colour as in the laſt experiment.

X.

From theſe experiments it is proved, 1. That Manganeſe and Arſenic cannot be ſeparated by the action of inflammable matter (III); nor by alcali (V)*; that an arſenicated Manganeſe may be made, from which nothing can be ſublimed (IV. D); that this compound may be diſtinguiſhed by the ſmall quantity of ſemi-volatile matter, which makes an indelible blue ſtain on glaſs (ib.); by the blue colour, imparted to potaſh by heat, not being communicated to water (VIII); by the oxygenation of the muriatic acid (II. B); by the arſenical ſtain impreſſed

* I have made a great many other attempts to decompound arſenicated Manganeſe; but as they were uniformly unſucceſsful, I think it needleſs to relate them.

upon copper (IX. A and B); by the ſpecies of reduction produced, and by the ſalts formed by heating it with muriat of ammonia (VI. and VII).

I proceed now to ſhow, that all theſe phenomena may be imitated by the aſhes left after the combuſtion of animal matter.

2. *PROPERTIES of the ASHES of ANIMAL MATTER.*

The matter which I have principally examined is the aſhes of gelatine. Theſe are ſaid by FOURCROY,* to conſiſt merely of phoſphat of lime, muriat of ſoda, and muriat of potaſh. But I hope to prove that they are of a far more complicated compoſition, and that in addition to theſe ſubſtances, they contain ſoda, iron, manganeſe, and arſénic acid.

XI.

(A) I burned ſome common glue to aſhes. (B) Diſtilled water, in which theſe aſhes had been macerated, changed the colour of paper tinged by turmeric. (C) I diſſolved the aſhes in muriatic acid, which was done with much effervescence, and nothing remained undiſſolved. The ſolution contained muriat of lime.

* Syſtème des Connaiſſances Chimiques. Tom. ix. p. 233.

(D) Pruſsiat of potaſh yielded pruſsian blue copiouſly. Theſe aſhes, therefore, contain an alcali, which muſt be ſoda, carbonat of lime, and iron.

XII.

To determine whether theſe ſubſtances might not be accidental, I made ſome gelatine, taking every precaution to avoid accidental impurity. I uſed for the purpoſe the fleſh of veal, ſteeping it in cold water as long as it tinged the water, and making the jelly with diſtilled water. I reduced this jelly to aſhes, but found this ſpecies of gelatine conſiderably different from common glue. The coal was more difficult of incineration, ſo that, though a ſtrong and long continued heat had been employed, the aſhes were not throughout perfectly white: the quantity alſo was much ſmaller than that obtained from the ſame quantity of glue*. (A) Theſe aſhes

* This, however, is owing in part to the impurities of common glue.

ſhewed the ſame ſigns of ſoda, as the aſhes of glue (XI. B). (B) They diſſolved in muriatic acid without effervescence. The carbonat of lime is therefore accidental. (C) I added ammonia to the muriatic ſolution, till a white cloud appeared. Pruſsiat of potaſh now cauſed a ſlight diſcolouration, and a very minute green precipitate fell in twenty-four hours. Whether this trace of iron might have been from ſome blood, which had eſcaped the action of the cold water, I cannot determine. But, doubtleſs, the precipitate (XI. D) was principally from accidental impurity. (D) Paper ſtained by litmus put into the ſolution, after the addition of the ammonia, was not reddened, but the colour was deſtroyed.

XIII.

(A) To get rid therefore of theſe impurities, I diſſolved ſome aſhes of glue in muriatic acid, precipitated the iron by pruſsiat of potaſh, and ſaturated the ſu-

perfluous acid with ammonia. A precipitate (B) was now formed of a gelatinous conſiſtence, and ſubſiding very ſlowly to the bottom of the glaſs. It was collected on a filter, edulcorated and dried. (C) A little diſſolved in muriatic acid, like phoſphat of lime. (D) Pruſsiat of potaſh had no effect on the ſolution when diluted; but after it had been reduced by evaporation, pruſsiat of potaſh made a white precipitate.

XIV.

(A) The precipitate (XIII. B) was mixed with an equal weight of muriat of ammonia, and expoſed to a ſtrong heat in a tube (I. B). There was ſublimed (B) a matter nearly of the colour of orpiment, mixed with muriat of ammonia. In the bulb of the tube was found a ſubſtance (C) which ſeemed to have undergone fuſion, light, and of a ſhining metallic appearance. (D) There was alſo a powder, mixed (E) with a deliqueſcent ſalt.

XV.

(A) The ſame ſort of matter of the colour of orpiment (XIV. B) may be more readily obtained by ſubliming equal parts of the aſhes of glue and muriat of ammonia, taking care that the proceſs be conducted ſo, that the air ſhall not enter the veſſel. In this caſe, the aſhes undergo a ſort of reduction, being blackened throughout. If the air have acceſs, the yellow colour is deſtroyed, and there is a ſmell of ſulphurous acid. The aſhes too are no longer black, but of their original colour. (B) This matter (XIV. B) contains ſulphur, as is readily ſhown by heating it and a ſubſtance acidifiable by nitric acid; which, however, is not arſénic acid, for it does not deliqueſce, and no arſenic could be obtained from it.

XVI.

(A) The powder (XIV. D) was inſoluble in water and in muriatic acid; but the acid took up a little iron from it. (B) The

deliqueſcent ſalt was muriat of lime, mixed with ſome metallic ſalt, but which was too minute to be properly examined.

We ſee clearly by theſe experiments, that though the aſhes of gelatine contain lime, they reſemble phoſphat of lime only in this reſpect, and in the property of diſſolving without efferveſcence in muriatic acid. By the following proceſs an aſh may be prepared from the coal of gelatine, which is even without this property, and which contains not a particle of phoſphat of lime, unleſs it be in a ſtate of combination hitherto unobſerved.

XVII.

(A) Some common glue was expoſed to heat in an open crucible, till all its volatile parts were expelled, and it was reduced to a light, voluminous, and porous coal. This was pulveriſed, covered to the depth of an inch or two with ſulphuric acid (undiluted) and kept for ſome time heated

nearly to the boiling point. A large quantity of ſulphurous acid was diſengaged, and the ſulphuric acid became black and opaque. By affuſion of water, a black ſediment was formed, which was collected on a filter. (B) This ſediment requires a ſtrong heat for its calcination, burns with a purple flame, and is reduced to white aſh, which (1) is inſoluble in muriatic acid; but (2) ſulphuric acid (undiluted) diſſolves it even when cold, and more readily by heat. It cannot then be phoſphat of lime.

XVIII.

(A) This aſh (XVII. B) was heated to redneſs in a ſilver crucible, with ſome pure potaſh. (B) The potaſh became blue, but by diſſolving it in water, the colour was deſtroyed, and the ſolution was limpid. (C) The ſolution (B) depoſited cryſtals by ſtanding, which were ſoluble in muriatic acid. (D) By ſaturating the potaſh with muriatic acid, a precipitate was formed, which an exceſs of acid rediſſolved.

XIX.

(A) A white powder remained, which eſcaped the action of potaſh. (B) This powder diſſolved readily in muriatic acid, with a very ſlight effervescence. (C) Heated to redneſs, it ſuffered no change in its appearance; but if muriatic acid be now added to it, the acid becomes oxygenated, as is evident by the ſmell it acquires, and the powder is diſſolved, as before. (D) If either of the ſolutions (B and C) are diluted with water, they become immediately turbid, and a ſmall quantity of precipitate is gradually depoſited.

XX.

Some of the powder (XIX. A) was heated with charcoal in a tube. No metal ſublimed, and nothing was found in the bulb of the tube, but a black powder. But the neck of the tube had received an indelible blue ſtain, as far as it had ſuſtained a red heat.

XXI.

(A) Some of the powder (XIX. A) was heated ſtrongly with an equal weight of muriat of ammonia in a little open crucible. (B) Some metallic ſalts are produced, for pruſsiat of potaſh cauſed a precipitate of a fine pink colour, but the far greater part underwent a ſpecies of reduction; being changed into a matter (C) black and ſhining, where not expoſed to the air. (D) Muriatic acid did not diſſolve this matter, but extracted from it a little iron.

XXII.

A little of the ſame powder, mixed with charcoal, was heated between two plates of copper. The copper received a ſtain entirely ſimilar to that produced by arſenicated manganeſe, treated in the ſame way. Internally the ſtain was dark mixed with crimſon ſpots. Externally it in no reſpect differs from thoſe deſcribed

(IX. A and B), being ſimilar to that produced by pure arſenic, except that it is of a yellower colour. The only difference in the effect is, that the compoſition of the animal aſh defends the copper, where it is in contact with the metal; ſo that theſe ſtains appear only round this point of contact, a part of the aſh being ſemi-volatilized by the heat.

XXIII.

An aſh with ſimilar properties may be made from other ſorts of animal matter. (A) Some fibrine, prepared from muſcular fleſh, had been burnt to a coal, which was expoſed to a ſtrong heat for ſeveral days. Part of it was reduced to a white aſh, but a great deal of it retained the blackneſs of the coal. I therefore treated it with ſulphuric acid, as the coal of gelatine. (B) A ſmall quantity of ſulphurous acid was produced, the white aſhes were diſſolved, and a quantity of black matter was collected. (C) This

matter could not be whitened by heat; but (D) treated it with potaſh, it was converted into two portions: 1ſt, a powder ſoluble in muriatic acid, which by dilution with water yielded a precipitate, and which ſeemed to be preciſely the ſame as the powder (XIX. A); 2dly, a black inſoluble powder. I have treated this with muriat of ammonia (as at XXI). The muriat was ſublimed, and the black powder remained unchanged.

XXIV.

From theſe experiments it is obvious, that the aſhes of gelatine contain ſoda (XII. A), iron (XVI. A, and XXI. D), and manganeſe (XII. D, XIII. D, and XVIII. B). That the manganeſe is united with arſénic acid, is proved by theſe aſhes poſſeſsing every property of that compound. They form an indelible blue ſtain on the glaſs tube (XX.); they impart a blue colour to potaſh, which is not communicated to the watery ſolution (XVIII.

B); they oxygenate muriatic acid (XII. D. and XIX. C); they impart true arſenical ſtains to plates of copper (XXII); heated ſtrongly with muriat of ammonia, they undergo a ſpecies of reduction (XIV. A, XV. A, and XXI. C); and ſome metallic ſalts are produced by the ſame proceſs (XVI. B, and XXI. B).

But, doubtleſs, a number of experiments, both analytical and ſynthetical, are requiſite to enable us to underſtand thoroughly the compoſition of theſe ſubſtances. What is the lime combined with, which forms an eſſential part of their compoſition? What is the iron combined with? What is the inſoluble powder (XVI. A)? To what is the precipitation (XIX. D) owing? What is the acid formed in experiment (XV. B)?

The ſolution of theſe queſtions, and perhaps of many others, which may have eſcaped my obſervation, muſt be left as ſubjects of future inquiry.

3. *On the* PROPERTIES *of* WATER.

Having proved, as I believe, inconteſtably, that arſenical matter is an eſſential ingredient of animal ſubſtances, and conſequently of vegetable ſubſtances alſo, from which the animal are derived, it can be readily conceived that in certain ſtages of decompoſition, or by certain modifications of the conſtituent principles of theſe ſubſtances, matter may be formed, which ſhall prove poiſonous to the human ſyſtem. What are theſe modifications is a queſtion to be determined rather by medical obſervation, than by chemical experiment. Taking for granted, that the water in common uſe is contaminated by matter of this kind, we ſee how it is poſſible, that the uſe of ſuch water may become the ſource of diſeaſe: this poſsibility, I think, is converted into certainty

by the facts related in the preceding Inquiry. It only remains to ſhew, that common water is, in fact, tainted by ſuch an impregnation. It can hardly be doubted that, if this taint be found in the ſpecimens, which are ſubmitted to particular examination, the ſame will be found almoſt univerſally. The cauſes of ſuch a contamination are nearly univerſal. And, in truth, all common water putrifies and becomes fetid; all common water receives the ſame empyreumatic taſte by diſtillation; all common water has the ſame nauſeous and offenſive taſte when warm, acting on the ſtomach as an emetic. To prove the fact more correctly, can only be done by an examination of particular ſpecimens. That to which I have paid the moſt attention is the water of the New River. A variety of experiments ſhew that this water is loaded with matter of the nature of animal matter, and, therefore, derived probably from putrefaction. It may be proved 1. by diſtillation; 2. by

the uſe of precipitants; 3. by an examination of the reſiduum, left after evaporation.

XXV. *Diſtillation.*

(A) By ſimple diſtillation, ammonia (united probably with carbonic acid) may be ſeparated from New River water. For the water, which firſt riſes by diſtillation, becomes cloudy by adding a clear ſolution of acetite of lead; this cloud is diſſolved by diſtilled vinegar, or pure nitric acid, whereas, the depoſit made by acetite of lead in common water is inſoluble by acids. I need hardly add, that ammonia is a product only of animal and vegetable matter.

XXVI. *Precipitants.*

(A) I added a ſolution of acetite of lead to ſome New River water, and collected the precipitate. (B) This I mixed with carbonat of potaſh, and expoſed to

a heat ſtrong enough to melt the potaſh. By this proceſs a great quantity of lead was reduced.

This precipitate (A) is commonly deemed to be ſulphat of lead, and the acetite is uſed as a teſt of ſulphuric acid. Were this the caſe, no lead would be reduced by mere fuſion with potaſh. This precipitate muſt contain then ſome inflammable matter, and may take place, though there is not a particle of ſulphuric acid in the water.

I have tried the ſame experiment with a ſimilar precipitate from many other common waters, with the ſame reſult; and believe it will be found univerſally true, when the precipitate has been recently made. I have met with one which, having been kept a year and an half, yielded no reduced lead; but I ſuſpect this to have been owing to a change produced in it by the atmoſphere.

XXVII.

If the potaſh uſed in the laſt experiment (XXVI. B) be ſaturated with muriatic acid, ſome prufsian blue is ſeparated. Therefore, the precipitate (XXVI. A) contains iron and prufsic acid; the laſt which is almoſt peculiar to animal matter.

XXVIII.

Other metallic ſalts yield precipitates from New River water. (A) Sulphat of copper makes a very copious green precipitate. (B) This precipitate diſſolves in muriatic acid, and may be ſeparated by an alcali, before the muriatic acid is ſaturated. The calx of copper is, therefore, united with ſome matter contained in the water. Salts of copper are known to precipitate ſome kinds of animal matter.

XXIX.

Solution of tan alſo acts upon this

water. If ſome New River water be evaporated nearly to dryneſs, a ſolution of tan makes the reſiduary water turbid, and ſome white matter gradually ſubſides. The liquor aſſumes a dark and bluiſh colour. Tan, as far as has been hitherto obſerved, precipitates nothing but ſubſtances produced from animal matter.

XXX. *Examination of the Reſiduum.*

By the reſiduum I underſtand the matter depoſited by evaporating the water. (A) Heat a little of this reſiduum of New River water between two plates of copper, till the plates are red. A white ſtain, reſembling that cauſed by arſenic, will be found on the plates. (B) I boiled ſome of the ſame reſiduum with a little pure potaſh. By this proceſs it gave a ſmell of ammonia, and the ſame was made evident by expoſing the liquor to the vapour of muriatic acid. (C) I mixed ſome of the reſiduum, collected from the water of a pump, with liquid phoſphoric acid,

dried it by heat in an open veſſel, and then introduced it into a coated glaſs tube. After a red heat had been applied, a tranſparent, colourleſs and glutinous matter was found ſticking in drops to the inſide of the tube. The tube had the ſmell of the oil, ariſing from animal ſubſtances by diſtillation. I think it not improbable, that this glutinous matter is the ſubſtance which gives the hardneſs to pump water.

XXXI.

(A) I expoſed a quantity of the reſiduum of New River water to a red heat, in a ſmall coated glaſs retort. There firſt aroſe a little liquid ammonia; afterwards, a large quantity of gaz was produced, and as ſoon as the gaz appeared, there was no more ammonia. The gaz was a mixture of carbonated hydrogen and azote; for, towards the end of the proceſs, it was hardly inflammable, but it ſtill inſtantly extinguiſhed the flame of a candle. I could perceive no veſtige of carbonic acid.

(B) When no more gaz was produced, the colour of the reſiduum, which was an aſh, was changed to black, if the external air has had no acceſs to it. Here again we find a reſemblance between a portion of this reſiduum and animal ſubſtances; as they yield ſimilar gazes by diſtillation, and are changed by this proceſs into a ſpecies of coal. (C) I have ſubmitted reſiduary matter, left by other waters, to deſtructive diſtillation, and have found the ſame ſigns of a matter reſembling in its products animal matter, though the water was from country ſituations. They yielded large quantities of fetid gaz, ammonia, ſome a little muriat of ammonia, and ſmall quantities of matter with the ſmell of fetid oil. In one inſtance an acid roſe, which deliqueſced. The reſiduum was blackened, and I have once ſeen, when uſing an open crucible, corruſcations of light, as if from the production and inflammation of phoſphorus.

XXXII.

(A) The blackened reſiduum (XXXI. B) was digeſted in muriatic acid, which diſſolved a large quantity of carbonat of lime, and took up alſo a good deal of iron. (B) There remained a very fine, ſmooth, and inſoluble black ſediment.

XXXIII.

(A) The ſediment (XXXII. B) was expoſed to a red heat in an open crucible. By this proceſs it was changed into a matter appearing like earth. (B) This earth was digeſted and boiled in muriatic acid, but the acid did not diſſolve it, but only ſeparated from it a little iron. (C) After the earthy matter had been freed from the acid, I expoſed it to a red heat with potaſh in a ſilver crucible. The potaſh diſſolved a large quantity of the compound; by ſaturating it with an acid, the matter diſſolved was precipitated, and proved to be ſilica. Some other matter perhaps

was taken up by the potaſh, which could not be ſeparated by this proceſs; but I have not aſcertained the truth of this ſuſpicion.

XXXIV.

(A) A part of this compound (XXXIII. A) was not acted upon by the potaſh. A matter was left untouched, which proved to be the ſame as that obtained from gelatine, which has been before particularly deſcribed. (B) Mixed with charcoal and heated between plates of copper, it ſtains the plates, nor is it poſsible to diſtinguiſh this ſtain from that cauſed by pure white arſenic, treated in the ſame manner. (C) It diſſolves in muriatic acid with a ſlight effervescence, the ſolution becomes turbid by diluting it with water, and a white precipitate gradually falls. Sulphuric acid has no effect on this matter. Nitric acid diſſolves it; this ſolution is not precipitated by the addition of water*.

* This treatment of the reſiduum of water, is by far the eaſieſt method of obtaining this arſenical ſubſtance.

XXXV.

(A) The retort in which the reſiduum had been heated, received a deep blue ſtain, indelible by acids, where it had undergone a red heat. The ſame ſtain is formed by any animal ſubſtance, expoſed to deſtructive diſtillation. All animal matter, by this proceſs, gives out a black fetid oil. (B) I introduced a little of this oil into a tube, which I ſoftened by the fire, juſt ſo much as to be able to ſeal it hermetically. Thus the oil was driven from that part of the tube which had been heated, and left behind it a fine blue ſtain, which ſeems to be exactly the ſame as that cauſed by the reſiduum, and that made by arſeniat of manganeſe (IV. D). Though

(which enters probably into the compoſition of all animal matter) in ſufficient abundance for a thorough examination of all its habitudes. An ounce or two of the reſiduum will yield enough. What I got was from a very ſmall quantity of the black ſediment (XXXII. B), the greater part having been conſumed, before I underſtood its nature; and the time for publication not admitting the delay of procuring more.

acids do not deſtroy this ſtain, they have ſome effect upon it. (C) Muriatic acid takes up a little, as may be readily ſhown by proper precipitants. If the ſtained glaſs be kept in contact with oxymuriatic acid, ſmell of the acid is deſtroyed. Cuprat of ammonia, added to the liquor, occaſions a copious green precipitate.

Thus we have an accumulation of evidence, that the water of the New River, unqueſtionably, and, probably, almoſt all that is applied to domeſtic uſes in populous and cultivated countries, is tainted by a matter partaking of the properties of animal matter, and, in particular, by that peculiar ſubſtance, which being of an arſenical nature, may be readily ſuppoſed to act as a poiſon on the human frame. I am ſenſible that every branch of this inveſtigation is exceedingly defective; for this, I truſt, the very complicated nature of the ſubſtances to be examined, and the abſence of guides to direct my ſteps in this intricate path, will be accepted as a ſufficient apology.

APPENDIX.

THIS Inquiry has been delayed beyond the time at which I had hoped to give it to the public, partly by the unſettled ſtate of the printing buſineſs, and partly by my own wiſh to diminiſh its imperfections. But I hardly regret this circumſtance, ſince it enables me to give a more ſatisfactory account of the caſe of Mrs. J——s, the patient labouring under Cancer of the breaſt. It will appear, from the following letter, (written by a profeſſional gentleman, very competent to form a correct judgment of her ſituation,) that all apprehenſion for her immediate ſafety is removed; and that I am ſtill further warranted in the opinion I have ventured to deliver, that it is in our power to eradicate this diſeaſe. The ulcer, however,

it will be obvious, is ſtill a cancerous ulcer, and ſo I doubt not it will continue to be, till the conſtitution has undergone a thorough change.

Worceſter, March 3d, 1805.

Agreeably to your deſire I viſited Mrs. J——s, when I was in her neighbourhood, a few days ago, and think you will have reaſon to be ſatisfied with the progreſs ſhe has made. The ulcer under the ſchirrous breaſt is ſtationary: ſhe thinks it does not ſpread, nor does it heal; but the edges are not quite ſo hard or elevated as they were. The whole breaſt is ſtill very hard, and the glands in the axilla are much as formerly, but certainly not worſe. As to the local complaint then, it may be ſafely ſaid, that if it does not yield to the plan purſued, its progreſs is checked by it. But what ſhe is moſt delighted at, is a very great amendment in the condition of her general health. She has had, I find, for ſome time paſt, frequent convulſive attacks. Lately, to her ſurprize, the intervals be-

tween theſe attacks have become much longer, and they have been, upon the whole, ſlighter. She has more appetite, ſleeps better, and the ſtrength is improved. Since there is no doubt, that in Cancer a ſtate of the conſtitution and of the local diſeaſe go hand in hand, the former having improved beyond expectation, it may be preſumed that the latter has received likewiſe a proportional amendment.

I am, &c.

DAVID LAMBE.

I am enabled, likewiſe, to give the following additional teſtimony of the efficacy of this regimen.

Dear Sir,

Agreeably to your requeſt, I will endeavour to deſcribe, as accurately as I can, the effect of the diſtilled water upon Mrs. Bodenham. You know that, for many years, ſhe has been a great invalid, without yet having any particular complaint, on

which the faculty could exert their ſkill: her malady has been, in fact, nothing more than a great deficiency of ſtrength, and an aſtoniſhing relaxation of the whole ſyſtem. Her digeſtion has always been bad, whence, I preſume, aroſe almoſt conſtant headachs and other bilious feels. Her ſkin was often tinged with a deep yellow hue, as though ſhe had had the jaundice, and if, by opening medicines, ſhe wiſhed to procure relief, a great, and, ſometimes, alarming debility enſued; then, if to endeavour to regain ſtrength, ſhe took any thing calculated to brace and invigorate, coſtiveneſs, headach, and fever, were the never failing conſequences. She has repeatedly tried Bath, Cheltenham, and ſea-bathing, &c. &c. She has followed every reaſonable plan, that has, at any time, been laid down to her for her conduct, and has conſulted almoſt every man of eminence that came in her way, but with little or no ſucceſs.

On the 31ſt of laſt October ſhe began

to drink diſtilled water: with the exception of one or two glaſſes of port wine, it forms her only beverage, and it has certainly done her great ſervice. That her ſtrength has increaſed I infer from this circumſtance, that an airing to Hereford in the carriage on a morning, (a diſtance, as you know, of ſcarcely three miles,) would ſo far fatigue her, as to render her incapable of doing any thing in the evening; that exertion, at preſent, does not at all overpower her; ſhe is not, however, yet capable of much walking exerciſe. The digeſtion is much improved, and the bilious ſymptoms have conſiderably diminiſhed. Her ſkin has been, for ſome months, extremely clear from any yellow tinge, and when ſhe awakes in the morning, ſhe has no longer that wretched lowneſs and depreſsion of ſpirits, (which ſhe uſed to call the horrors,) accompanied with a little low fever, which ſhe could never get rid of, but by immediately quitting her bed. Her ſleep is more comfortable and more refreſhing: her ſpirits are improved, and ſhe has cer-

tainly, in ſome degree, recovered her *embonpoint*.

I am, Dear Sir,

Your faithful humble ſervant,

CHARLES BODENHAM.

Rotherwas, 7th March, 1805.

Another member of this family has likewiſe received as much benefit from the regimen as the lady, whoſe caſe forms the ſubject of the foregoing letter. I might add many other inſtances of its utility, ſome of which have fallen under my own obſervation, and others which have come to my knowledge. In particular, two patients, in the worſt ſtages of *phthiſis pulmonalis*, have been kept upon it the whole of the winter, and the progreſs has been quite ſatisfactory. But ſtill their amendment has not, as yet, received that degree of ſtability, as to juſtify me in detailing the caſes.

ERRATA.

Page 23, line 1, dele *compoſition.*
35, 8, inſert *we* after *But.*
63, 8, for *wards*, read *afterwards.*
91, 11, for *acquiriverunt* read *acquiſiverunt.*
115, 23, (note) for *exterioſorum* read *arterioſorum.*
203, 2, for *ædematous* read *edematous.*

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