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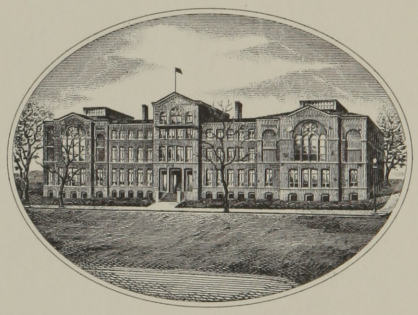

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U. S. Department of Health, Education, and Welfare

Public Health Service

AN

INAUGURAL DISSERTATION

ON THE

BILIOUS MALIGNANT FEVER.

READ AT A

PUBLIC EXAMINATION,

HELD BY THE MEDICAL PROFESSORS, BEFORE THE

REV. JOSEPH WILLARD, *S.T.D.* PRESIDENT,

AND THE

GOVERNORS IN THE UNIVERSITY AT CAMBRIDGE,

FOR THE DEGREE OF BACHELOR IN MEDICINE,

JULY 10, 1797.

BY SAMUEL BROWN, A. M.

"The putrid ſteams, or ſome corroding venom,
In countleſs pores, o'er all the pervious ſkin
Imbib'd, ſoon poiſon the balſamic blood,
And rouſe the heart to every fever's rage."

PRINTED AT *BOSTON*,
BY MANNING & LORING.

1797.

AN

INAUGURAL DISSERTATION.

IN Auguſt, 1796, the town of Boſton was viſited with a contagious diſeaſe of unuſual malignancy, the circumſtances and marks of which were ſuch as threatened great calamity; and the alarm ſpread, and became almoſt univerſal. This ſtill increaſed, on obſerving that in many of its ſymptoms it bore great reſemblance to the fever which had ſo recently raged at Philadelphia and New-York.

IN the preceding fall and winter, inflammatory diſeaſes were frequent in Boſton, and in many of the towns in the country, particularly the ſcarlatina, ſcarlatina anginoſa, and meaſles. And in the months of June, July and Auguſt, or immediately previous to the diſeaſe we have mentioned, a ſpecies of dyſentery was frequent; and now and then

caſes

caſes of cholera morbus occurred. Theſe were in ſome places unuſually mortal, and prevailed more or leſs in different parts of Boſton till the time of the bilious fever; after which they were known no more.

BEFORE entering more particularly on the ſubject of the *fever*, I ſhall introduce ſome obſervations on the effects of *poiſons*, and their laws of operation on the human ſyſtem.

OF POISONS.

THESE are ſubſtances which either inſtantly deſtroy the life of a part or parts of the ſyſtem, or change the natural functions into morbid actions; and thereby, ſuddenly or by degrees, affect the whole conſtitution.

THEY are either *mineral*, *vegetable*, or *animal*.—The damps or mephitic vapours often met with in mines and deep wells, are *mineral poiſons*. Of *vegetable poiſons* we have a remarkable inſtance in the Bohan Upas, which grows on the iſland of Java, belonging to the Dutch. It is ſo deſtructively poiſonous, we are told, as that the ſoil for ſeveral miles in circumference is whitened with the bones of birds and animals, that have been arreſted while attempting to paſs through the atmoſphere of this ſhrub of death. *Animal poiſons* are of two kinds; original,

original, as that ſecreted by the viper; and ſuch as are generated by diſeaſe. The latter are, by Mr. Hunter, and afterwards by others, denominated *morbid poiſons.*

Poisons are communicated either in a gaſſous or vaporous ſtate; or by contact, in the form of pus, or ulcerous matter. Fevers are an example of the former, the venerea of the latter.

The conſtitution is never affected, or never takes on the morbid action of the poiſon, except it be in a ſtate of *prediſpoſition.* Thus, at the time of any raging epidemic, the *miaſma* or putrid effluvia is generally diſperſed, and different ages, ſexes and conſtitutions are alike expoſed; yet comparatively but few will be infected, while the others eſcape. How the ſame conſtitution ſhould poſſeſs different ſuſceptibilities to diſeaſe, is beſt underſtood from Dr. Brown and Dr. Darwin.

Animal exiſtence, according to Dr. Brown, is endowed with a quality which he names *excitability*, and Dr. Darwin *the ſpirit of animation*, or *ſenſorial power*, on which the phenomena of life depend. Every thing which ſupports life, exerts itſelf on this principle; and *vice verſa.* It is capable of different degrees of accumulation and exhauſtion: it is accumulated by the abſtraction of ſtimuli, and is exhauſted by exceſſive ſtimuli, or the long application of others acting more moderately. A due proportion between the exciting powers, ſuch as heat,

heat, food, air, mental exertion, &c. and the excitability or ſenſorial power, conſtitutes health; and every variation from either is diſeaſe.

> " There is, they ſay, and I believe there is,
> A ſpark within us of th' immortal fire,
> That animates and moulds the groſſer frame,
> And when the body ſinks, eſcapes to heaven,
> Its native ſeat.
> Meanwhile this heav'nly particle pervades
> The mortal elements,————————
> And in its ſecret conclave, as it feels
> The body's woes and joys, this ruling pow'r
> Wields at its will the dull material world,
> And is the body's health or malady."

With many diſeaſes of the variolous kind, there is a certain period between the time the infection is received, and the appearance of the diſeaſe; and in this interval ſcarce any alteration in the actions of life can be perceived. Thus, in the caſual ſmall pox, we find a ſpace of about twelve days between the reception of the poiſonous effluvia and the firſt ſymptoms of the diſeaſe. Travellers frequently leave the country where they received the miaſma of ague, long before any ſymptoms of it appear; yet the diſpoſition having been formed, and the poiſon received, the diſeaſe after a certain period makes its appearance.

It ſometimes happens, that after the diſpoſition is given and the poiſon received into the ſyſtem, the period of eruption, or the time when the diſeaſe uſually

uſually appears, is protracted beyond the uſual time, in conſequence of the action of other diſeaſes, as the meaſles, ſcrophula, &c. This is confirmed by various hiſtories of the ſmall pox.

FURTHER—We have great reaſon to believe, that not only the morbid action or ſymptoms of a diſeaſe may be ſuſpended, but alſo that the *ſuſceptibility* may be entirely prevented after the poiſon is applied. There is a ſtriking proof of this afforded us in the effect of the Harmattan wind, as recorded in the Philoſophical Tranſactions of London.——Seventy negroes were inoculated for the *ſmall pox* three days after the Harmattan ſet in: none of them had the ſymptoms of the diſeaſe. In a few weeks afterwards, fifty of the ſame were inoculated, and had the diſeaſe; the reſt had taken it in the natural way. Here, though the infectious matter was applied to ſeventy, all of them (as appeared afterwards) conſtitutionally ſuſceptible of the diſeaſe, yet even the local diſpoſition was ſuperceded, and of courſe the conſtitution was not infected.*

THE immediately preceding propoſitions are in proof of a medical axiom eſtabliſhed by Dr. Hunter, viz. That the conſtitution never ſupports the operation of two diſtinct diſeaſes at the ſame time.

IT is a law with moſt of thoſe poiſons which produce their effects by a *critical fever*, that a conſtitution which has once gone through the action excited by them, is no longer ſuſceptible of it. This is

* Adams on the phagedena, &c.

is accounted for upon the principle, that the poiſon is ſo powerful and active as to deſtroy the ſenſibility or life of the part; or that the conſtitution becomes habituated to the particular ſtimuli of the poiſon, and therefore upon a ſecond application to the part or parts of the ſyſtem, they are undiſturbed by or are inſenſible to it. This will account for the ſudden and ſeemingly miraculous diſappearance of epidemics, as was the caſe at Philadelphia and New-York; for all thoſe who had a ſuſceptibility to the diſeaſe have taken it and are not liable to be again affected by it, and thoſe who have not this ſuſceptibility cannot receive it; of courſe, the prevalence of the diſeaſe muſt ſuddenly ceaſe.

Poisons, miaſma or morbific effluvia are of too ſubtle a nature for chemical analyſis; their conſtituent materials, and the prevailing or diſtinguiſhing principle of each, whether an acid or an alkali, ſepton or nitrous acid gas, or any other gas, is totally unknown.

Venereal and phagedenic poiſons, though in the form of fluid diſcharge and ſubject to obſervation, and even to be experimented upon; yet it is equally unknown what material quality conſtitutes their nature, and renders them capable of their ſpecific effects. Do not moſt poiſons contain a principle of life, which occaſions their activity, and by means of which their deleterious effects are produced, when taken into the human ſyſtem?

Dr.

Dr. Hunter has long ſince diſcovered and demonſtrated that the digeſtive organs have no power over ſubſtances which have within them the principle of life. There are many circumſtances which render probable this opinion reſpecting poiſons, contagious ones in particular. In the *itch*, animalculæ are probably the cauſe of this affection. And why may not the *ſyphilis* be produced in a ſimilar manner, viz. by an accumulated and mixed quantity of ſeminal animalculæ lodged in thoſe reſervoirs and receſſes peculiar to the parts concerned? Lodged in this abundance, they may by their own activity inſinuate into the ſyſtem, and form nidi; or they may become putrid, and thus produce the ſpecific venom of the ſyphilitic diſeaſe. Thus alſo with other animalculæ, introduced by reſpiration or cuticular abſorption.

In the tropical regions, where death has almoſt an undiſputed reign, the atmoſphere is generally loaded with myriads of animalculæ; ſo much ſo, at certain times in the rainy ſeaſons, as nearly to ſuffocate the inhabitants. It is then that diſeaſes moſtly prevail. Life is always found where there is a congeniality of matter for its reception; and every object in nature, animate and inanimate, healthy or diſeaſed, has its particular ſphere of exhalation. This exhalation *always* partakes of the nature and life of its ſubject.

However homogenous poiſons are while they form the atmoſphere of the ſubject from whence

 they

they were exhaled; yet being in contact with other ſpheres of exhalation, they are blended with other ſubſtances which form the common atmoſphere; and at length are ſo equilibriated, by entering into new forms and ſtates, as to loſe their activity and power to injure.

It is a univerſal truth, equally applicable to poiſons as to other things, that the more ſimple and homogenous a ſubſtance is, the more powerful and active; and *vice verſa*.

The atmoſphere in which we live is made up of exhalations from every individual ſubſtance in all the three kingdoms of nature—the animal, vegetable, and mineral: theſe ſubſtances form a perpetual intermediation of *leſs* and *more ſubtle*, until they reach the ſun himſelf, the great ſenſorium of material nature, which by them is nouriſhed and fed, in return for the activity which it imparts. Our atmoſphere, in all its extent, becomes blended alſo with the atmoſpheres of other planets, and they, in union, form one common atmoſphere of the whole ſyſtem. This idea might be extended ſo far as to form one general atmoſphere for the univerſe; but this would be filling up Newton's VACUUM, which might expoſe us to the imputation of philoſophical ſcepticiſm.

This blending the common atmoſpheres of each planet, and giving them reciprocal influence on each other, may be of uſe in explaining many of the diſeaſes and affections of the human body, ſubject

ject to periodic returns and regular intervals, viz. intermittent fevers, the various ſpecies of mænorrhagia, epiſtaxis, and hæmorrhois. A late writer has obſerved, that the paroxyſms of fevers ſhew themſelves in a greater degree of violence about the full and change of the moon, that is to ſay, about three days and an half before and after, including at each period a ſpace of about ſeven days, than during the interval between theſe periods. Alſo—That the paroxyſms of fevers occurring during the periods deſcribed, are conſtantly more violent about mid-day and midnight, than during the intervals between theſe ſpaces.—That ſome remarkable abatement in the violence of the paroxyſm never fails to take place, upon the expiration of the full and change of the moon.—That the paroxyſms of fevers, whilſt they abate in violence upon the expiration of the full and change, ſhift alſo their attack to a later hour.—That epilepſy, inſanity, paralytic affections, aſthmas, phthiſical coughs, with a variety of other complaints, often aſſumed an intermittent form, and returned regularly with the full and change of the moon, and diſappeared or diminiſhed during the intervals.

This ſol-lunar influence has been noticed by the ingenious author of Zoonomia; and perhaps better accounted for than by any predeceſſor.

Most of the above obſervations are capable of ſatisfactory proof, and have long been acknowledged by the beſt medical writers; ſo that they may be conſidered

conſidered as ſo many medical axioms. They may be of uſe in conſidering our ſubject—on which I now enter.

I HAVE obſerved, that the fever, when it made its firſt appearance, ſhewed ſtrong marks of malignancy. The patient, after ſome hours of unuſual dullneſs or dead heavy ſenſation in the head, and great reluctance for any voluntary motion, felt great commotion and uneaſineſs at the ſtomach, which conſtantly increaſed till vomiting commenced. At each of the ſeveral vomitings, attended with ſevere wretchings, much bilious matter was thrown up; and there was found, in many inſtances, a porraceous ſubſtance, reſembling the ſettlings of coffee. The ſtomach ſhewed unuſual ſymptoms of irritability, it being almoſt impoſſible to keep down for a moment the mildeſt medicine that could be adminiſtered. In the intervals of vomiting, particularly, a conſtant and greatly exhauſting pain was felt; moſt exquiſite at the ſmall of the back, and extending along the ſpine and its connexions quite up to the occiput. Pain of head continuing, eſpecially over the eyes and under the temporal bones, ſometimes with a ſenſation as if ſome inſtrument had paſſed the head. Reſpiration extremely difficult, often with a feel of ſuffocation. Heat very great, eſpecially in the thorax and region of the *liver*. Pulſe morbidly rapid. Pores cloſed. Skin ſmooth, and apparently diſtend-

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ed with the expanded fluids and heat within; having a tinge, ſomewhat reſembling that of chlorotic patients. The cornea albuginea moſt reſembling, in colour, that of duſky glaſs when held up to the light. The eyes, however, expreſſed much concern, and often moved with a furious rapidity in the early ſtage of the diſeaſe. Theſe all increaſed, if poſſible, in violence till death put an end to the patient's ſufferings; or gradually ſubſided, when the fever vaniſhed, and health was reſtored.

THOUGH theſe were the characteriſtic ſymptoms of the diſeaſe, yet they were generally variant in their commencement, progreſs and termination, according to the difference of temperament; and alſo according to the difference in the prediſpoſing cauſes.

SLIGHT ſymptoms, ſcarcely noticed by the patient or his friends, were ſometimes the harbingers of this fever: Alſo, languor, yawning, dejection of ſpirits, ſleep diſturbed and not refreſhing, appetite impaired, diſagreeable taſte and ſmell, and uncommon ſenſibility to cold, were ſometimes among the early ſymptoms of the diſeaſe. In others the ſymptoms were more rapid and intenſe; perſons ſometimes being rouſed from ſleep by a moſt torturous ſenſation in the ſtomach, near its connexion with the duodenum, reſembling liquid fire ſpreading over this viſcus and extending, in the direction of the arteries, quite through both upper and lower extremities.

SOME

Some were affected with alternations of heat and cold; with others, the heat was continual. The appearance of the tongue was various; ſometimes it was moiſt, as in catarrhal defluxion; at other times was parched and dry. The breath, however, was invariably diſagreeable, and ſometimes ſo offenſive as to be almoſt intolerable to the patient himſelf. Pulſe often various in the ſame perſons; ſometimes having the regularity and force of ſynocha; at other times weak, fluttering, indiſtinct and vibratory; manifeſting very great debility. Coſtiveneſs prevailed with the moſt, eſpecially in the firſt ſtages of the fever; and all the ſecretions and excretions partook of the great diſorder of the ſyſtem. None were in a healthy ſtate; all either in a high degree of exceſs, or greatly diminiſhed.

Other ſymptoms, more particular, might be enumerated; but they would neither direct to a rational *indication*, nor aſſiſt to form a probable

PROGNOSIS.

THE ſymptoms which might be conſidered as the heralds of approaching death, were excruciating pain in the loins, through the ſpine, and in all the larger or principal muſcles. Exceſſive irritability of the ſtomach, ſo much ſo as to refuſe all acceſs to medicine. Great pain over the eyes and in the eyeballs; this pain increaſing to delirium or madneſs.

The

The pupil of the eye dilated, and the patient ſtretched on his back—limbs extended and motionleſs.

On the contrary, if theſe ſymptoms were neither exceſſive nor laſting, the patient's ſtrength retained, and ſpirits ſupported by the exhilarating power of hope, and a confident expectation of recovery, and no deficiency of duty in doctor or nurſe, he was ſeldom diſappointed : the termination was favourable.

PROXIMATE or EXCITING CAUSE.

THIS, in my opinion, is morbid effluvia, firſt lodged in the ſaliva ; thence conveyed and lodged in the ſtomach and inteſtines ; here either perverting or totally deſtroying the digeſtive powers of theſe viſcera : thereby a putrid and highly corroſive maſs is generated, inſtead of a mild and bland ſubſtance to give nouriſhment to animal life. The ſurrounding blood veſſels feel the change and are affected. The myſenteric veins, eſpecially, from contiguity, become loaded with a putrid maſs of indigeſted ſubſtances, which are conveyed through the venæ portarum into the liver. This important viſcus becomes diſordered ; the bile is thrown into the inteſtines and up into the ſtomach in unuſual quantities and in an acrid ſtate. This ſtill increaſes the difficulty ; the ſtomach and bowels are heated and inflamed, and puking enſues. The venæ hæpaticæ empty a heterogeneous maſs of black damaged fluid into the right ventricle, which is immediately thrown

thrown into the lungs. The lungs, in turn, are affected by the diſorder; the patulous mouths of the abſorbing veſſels are cloſed by preſſure on the ſubſtance of the lungs from the fluid within. The blood no longer receives its congenial nouriſhment; but is conveyed by the veins of the lungs into the left ventricle of the heart; and, if this Alpha and Omega of animal life has not loſt its power, is thence diſtributed in a highly putrid ſtate into the ſeveral parts of the body. The whole vaſcular ſyſtem is thrown into irritation and commotion by unuſual ſtimuli; the maſs of blood is deſtroyed, and the patient dies: Or, the powers of life, collected as in a focus, act with accumulated force, ſubdue the offending cauſes, ſeparate and diſcharge the impurities by the ſeveral emunctories, and the patient recovers.

That the miaſma is firſt lodged in the ſaliva, and thence carried into the ſtomach and bowels is probable from this circumſtance; we often hear perſons complain, after being over an infected ſubject, that they not only *ſmelt* the putrid exhalations, but *taſted* them for a long time afterwards; and that nothing would remove the diſagreeable taſte. Probably, however, a part of the contagion finds a direct way into the maſs of blood through the abſorbents of the lungs.

That the morbid miaſma, when thrown into the body, in the manner we have mentioned, are capable of the effects we have aſcribed to them, is not difficult

difficult to conceive, eſpecially if they contain a principle of ſpecific life. Life acting againſt life, is like the meeting of two oppoſite powers in nature, in which caſe the one will deſtroy the other; and where life is deſtroyed putrefaction will take place, whence a contagion may ariſe too great for the remaining power of life to reject or remove, which of courſe will in its turn be either impaired or deſtroyed. Beſides, we know that perſons are often thrown into the moſt diſtreſſing diſorders by worms and animalculæ lodged in the ſtomach and bowels in an oviform ſtate, in conſequence of eating raw fruit and other uncooked ſubſtances. Theſe alſo may and often do concur to make human contagion more fatal.

THAT the ſtomach and bowels are the *firſt* affected, is evident from the ſevere pain that is early felt in the loins, and from the early tendency to puking.

THAT the liver is affected is evident from the large diſcharges of bilious matter by the ſtomach and ſtool; and that the lungs are, is plain from the difficult reſpiration, which was always an attendant ſymptom of the diſeaſe. In all the ſubjects dead of the yellow fever, that have been diſſected, the liver and the lungs had almoſt univerſally a morbid appearance. The lungs were inflamed, and the liver either greatly ſwollen or very much ſhrunk.

THAT the heart is greatly affected, is plainly manifeſt from the rapidity of the pulſe.

That the life of the blood is either greatly impaired or totally deſtroyed, is manifeſt from the pains in the muſcles and in the head; from delirium and coma; from vibices, petechiæ and yellowneſs of the ſkin, &c.

Dr. Anthony Fothergill, however, ſays, in oppoſition to Drs. Harvey, Willis, Hunter, and others, that "the blood is not alive, but is a mere paſſive inorganic maſs." Thus he proves it: "Life, he ſays, is allowed on all hands to be the attribute of an organized body alone, and if blood be an organized body, then it is an animal; and if ſo, here is a living animal deſtined to circulate within the veſſels of another living animal!" This is an attempt by a few words to diſſipate a numerous train of facts and arguments, and to render illegitimate an opinion which I *did* think was the reſult of cloſe obſervation and ſkilful experiment.

If, however, life *is* the attribute of an organized body *alone;* yet this organized body is compoſed of parts, of which the blood is one; and therefore has its ſhare of life. But,

Further on, Dr. Fothergill, in his ingenious treatiſe, (for ſuch we eſteem it in general) denies his major propoſition. He ſays, "The nervous influence, ſenſibility, or as Dr. Darwin elegantly expreſſes it, *the ſpirit of animation*, cannot be a ſecreted fluid, ſince the brain is no longer allowed by anatomiſts to be a ſecretory organ. Neither

can

can its origin be proved to be coeval with the unformed rudiments of the embryo* when the "*dim*

ſpeck

* Dr. Darwin is fully of the opinion that the rudiments or living ens of the future embryo is derived wholly from the male parent; that this ens or rudiment conſiſts of a living filament or ſtamen, and that this filament, of whatever form it may be, is endued with the *capability* of being excited into action by certain kinds of ſtimulus. Rouſed into activity by the ſtimulus of the nutritive and congenial fluid in which it is received from the male parent, it receives new adaptations or accretions of ſubſtances, and thus becomes organized. With every new change of organic form or addition of organic parts, a new kind of irritability or of ſenſibility [which is only a more general ſenſation] is produced; theſe varieties of irritability or of ſenſibility exiſt in our adult ſtate in the glands; [perhaps in all the parts of diſtinct functions] every one of which is furniſhed with an irritability, or a taſte, or appetency, and a conſequent mode of action peculiar to itſelf. Theſe changes increaſe, and additions of parts with their peculiar irritabilities or appetences and conſequent modes of action, continue in progreſſive order till the embryo is complete in form. The parts moſt eſſential to life are firſt produced. Thus, the brain to diſpenſe the powers of life, next the heart, then the lungs, and from theſe all the parts of the ſyſtem, according to the importance of their functions in the animal economy. Sec. 39, Vol. I.

Thus then it ſeems to be the opinion of Dr. Darwin that the *eſſe* or eſſence of the embryo is from the male parent, and that the *exiſtere*, or exiſtence, is from the female parent; of this there is no want of proof convincing. This *eſſe*, or as Dr. Darwin names it, *living ens*, always poſſeſſes the *conatus* or *endeavour* to aſſume a form ſimilar to the male parent or progenitor, which it always will do when lodged in the proper matrix or mould, and ſupplied with the congenial nouriſhment; this, with animals, is always from the female. Perhaps Dr. Darwin means the ſame thing by "the *capability of being excited into action by certain ſtimuli.*" This conatus or endeavour of the *ſeminal germ* to produce or aſſume the form of its progenitor exiſts not only with every order, genera, ſpecies and creature of the animal kingdom, but alſo with every order, genera, ſpecies and thing of the vegetable kingdom. Thus every creature and thing is preſerved in its order and diſtinction. This preſervation by generation and prolification, production and reproduction, and conſequent increaſe and multiplication, ſuggeſts and impreſſes moſt ſtrongly the idea of *infinity* and *eternity*, and clearly evinces the wiſdom and goodneſs of the "Cause of all causes! Parent of parents! Ens entium!"

ſpeck of entity" firſt becomes viſible, for then no veſtige of brain or nerves can be diſcovered." *Nervous influence* before any *nerves* or *brain* can be diſcovered!!—But he aſks, Muſt it not be referred then to vital air or ſpirit of the atmoſphere, emphatically termed in the ſacred page, the *breath of life*, and by ancient philoſophers, "*divinæ particulæ auræ*," drawn into the lungs at the firſt effort of reſpiration?" Here the Doctor takes the life from the organized body, of which he before aſſerted it is the attribute alone, and transfers it to *vital air* or ſpirit of the atmoſphere, which is not proved to be more an organized body than the blood.*

We might here interrogate the Doctor how it is that the fœtus moves itſelf and makes various exertions in utero, if it is without the ſpirit of animation before the firſt effort of reſpiration?

Some medical gentlemen object to our method of accounting for the introduction of contagious miaſma

* It is not to be denied that the paſſages in the ſacred writings referred to by Dr. Fothergill may indeed admit of the conſtruction he puts upon them, it being cuſtomary in thoſe writings to aſſume the cauſe inſtrumental for the cauſe principal; and the air is the medium by which reſpiration exiſts, and the active life of the body. But then this cannot be all that is ſignified by thoſe words, as is evident from the text being in the plural number, and hence they have been more properly conſidered by divines, as having relation to the life of the ſoul, from which the life of the body is derived, and which conſiſts in the perception of what is good and what is true, or the will of good, and the perception of truth; thus, a *ſoul of lives*. The expreſſion of this *ſoul of lives* being breathed into Adam by the Almighty, ſeems alſo fully to denote, that man is only an organ of life, and not life itſelf; for life and light are not creatable, but man was created a form receptive of life, as the eye is a form receptive of light.

miaſma into the ſyſtem, and ſay that it is more probably applied immediately to the *powers of life* or *nervous influence.* What is the nervous influence? whence is it derived? and through what medium do we reach it? Theſe are queſtions I never have yet ſeen ſatisfactorily anſwered by any medical writer that has made the attempt.

We have ſeen, above, the reaſoning of an ingenious and learned phyſician on this ſubject. He aſſerts that the *nervous influence* exiſts before any *veſtige* of *brain* or *nerves* can be traced, and therefore concludes that it muſt be derived from oxygen, or ſpirit of the atmoſphere!

Dr. Cullen ſays, "the nervous power ſeems different from every thing elſe in our body, and ſeems not peculiar to it, but a general principle in nature particularly *modified* in our ſyſtem." What produces this particular modification? the nervous power? for he acknowledges none higher; if ſo, nervous power modifies nervous power!

He again ſays—"The vital power is intimately connected with the *ſenſorium commune*, and this with the ſoul, which certainly is of uſe in the medical ſyſtem, though by no means a rational conductor." Here I cannot comprehend the Doctor's meaning; but I ſuſpect his thoughts at this time were electrified; and if by his *ſoul*, I agree that it is not always a *rational* conductor.

Dr.

Dr. Cullen thinks alſo, that "the ſoul influences the body not as a *prime mover*, but as a modifier of external ſenſes." What higher power than the modifier of external ſenſes, which all exiſt from interior life? But again—

The Doctor is of opinion that "all our functions are governed by certain laws, that we may obſerve and diſtinctly mark, ſo as to know their conſequences; ſo that the *conſideration* of the ſoul, in a medical view, is of no weight." And why not? By what power are thoſe *laws eſtabliſhed*, which govern all our functions?

Once more—"*Medicamentum non agit in cadaver*," ſays the Doctor; which is, in Engliſh phraſeology, Medicine operates only on life; and yet he agrees with Dr. Boerhaave, that "when a problem is traced up to the connexion between ſoul and body, there we ought to ſtop, and conſider it as reſolved." Some of the above problems cannot be either ſolved or reſolved, even by this connexion. But I think this is the very point from which we ought to ſet out, if we ever expect rightly to inveſtigate the phenomena of life.

What is the ſoul but life? and again, what is life? "*Cogito, ergo ſum*," ſaid Des Cartes—We can only know it by its operations, *principally* within ourſelves. It is the ſoul or life which ſees, feels, hears, taſtes, is ſenſible of pleaſure or pain, determines our limbs to motion, &c. wills, thinks and knows.

knows. If it be aſked how and whence it is derived to the body? I can at preſent only reply by pointing to ſome of its more interior effects. Obſerve, then, the dominion and influence the mind has over all the moſt important functions, which ſupport the economy of life. It actuates the body in all its parts at pleaſure. The mind directs the ear to hear, diſpoſes the eyes to ſee, moves the tongue and lips to ſpeak, and the hands to do whatever it pleaſes. Thus the body is nothing but obedience to the mind; but can it be thus unleſs there were a moſt intimate connexion between the mind and the body? not ſuch a connexion as is between what is above and what is below, as oil on water, but ſuch a connexion as exiſts between cauſe and effect, the one produced from the other. Every one, the leaſt ſkilled in anatomy, muſt have learnt how entirely every part and function of the human ſyſtem is actuated and lives by the cardiac and pulmonic motions. But theſe two motions are entirely ſubject to the two conſtituent principles or powers of the mind, viz. the will and the underſtanding. The will is immediately operative in all the ſeries of catenated motions denominated involuntary; but the heart exhibits moſt diſtinctly the will's influence in the ſyſtem. Its motions are ſlow or rapid, calm or tumultuous, according to the various affections of the will; of this we have ſenſible proof by means of the pulſe.

EVERY one who has ſeen the force of *love*, (which reſides wholly in the will, and, as a general principle comprehending

comprehending every kind of affection, is in fact its life) knows how it actuates the body by its power over the heart's motions; producing, when intenſe, delirium, phrenzy, apoplexy, and ſometimes death. When the love glows, the body is warm, the variations of the heat of the body always tallying with the variations of love or affection, whatever be its object, from the *freezing point*, or the extinction of love, to any indefinite degree of intenſeneſs.

The underſtanding or thinking principle of the mind influences mainly the pulmonic motions. Thus, if we think tacitly, we breathe tacitly; if we think deeply, we breathe deeply; we draw in and relax, compreſs and elevate our lungs either ſlowly, eagerly, mildly or attentively, in perfect conformity to the different ſtates of the thoughts. Now it is a maxim of true philoſophy, that what is ſuperior in power is prior in exiſtence, and that the controlling force does not originate from the thing controlled: This is alſo agreeable to every rule of juſt concluſion. Where the reſidence of the mind is fixed, we have no other way of inveſtigating, but to trace the nerves to where they begin and end; for all our ſenſation is tranſmitted by means of thoſe nerves called ſenſory nerves, to the inward ſenſorium, and ſo to the underſtanding. Thus the ſenſations go by the optic nerves from the eyes; and from the noſtrils by the olfactory nerves, or proceſſus mamillaris; from the ears by the auditory nerves, and ſo on. Therefore, that the beginning and ending may be found, we muſt examine all the brain, and

not

not desist till we find the ends and beginnings of the nerves. Having, therefore, dissected the brain, we meet with little spheres, round, or fully wrapped inward and outward, commonly called the cortical glands, where the nerves begin and end, and where the mind in its principles resides, and acts from the beginnings of all the nerves; for to these spheres, as to their ultimate ends, all the nerves are centered. Thence the mind deduces and collects all the modes of appearance and operation transmitted by the senses, and thence distributes them round to the interior perception and understanding. All the nerves, whatever be their office, are formed and produced from these glands; wherefore this is our common sensorium: from hence also proceeds our intimate sense, or understanding, which perceives by its senses, thinks on what it perceives; and judging on what it thinks, chooses what is judged best; from what it chooses, desires; and lastly, from the will of its desire, acts. That the mind or spirit thus resides in its principles in the brain, and in its principiates in the body, is manifest from experience; for the glands being affected, the whole appendix of the brain and body languish in proportion, the power of imagination is stupefied; the cogitations languish; the memory fails; the determinations of the will hesitate; the desires fail, and the senses are dulled. But notwithstanding this defect in the operations of the mind in consequence of defect in the organization of the brain, it is not to be thence inferred that the mind itself is nothing more than ma-

terial organization, however highly ſublimated; for we hold the ſoul or mind, though giving life to the body, to be perfectly diſtinct from it in degree, bearing the ſame relation to it as what is prior to what is poſterior, or, as cauſe and effect; ſo that one is in the other not in continuous but in diſcrete order. Hence it follows, that though the latter can have no exiſtence without the former, yet the former can exiſt without the latter, as is the caſe when the body is entirely rejected at death. But till then the mind is ſo far dependent on the body, that it cannot manifeſt its operation in outward nature, unleſs by rightly diſpoſed organs; and if there be impediments in the corporeal organs, the perfection of the mind will alſo be impeded during its connexion with them, through a want of afflux and re-agency; for it is a received law, that influx is proportioned to afflux, agency to re-agency, &c.

The powers of life then which manifeſt themſelves in the body, we have juſt reaſon to conclude are derived wholly from the mind, and flow ſolely from a ſpiritual origin, the mind itſelf or ſoul being probably an organized form, but ſpiritual, perfectly diſtinct from the natural, though in it in every part throughout, and communicating life thereto; which life the ſoul itſelf receives by continual influx from Deity, "in whom we live and move and have our being." Thus much on the queſtion, What is life, and whence derived?*

Life

* If the above obſervations be true, how evidently does the fallacy of that reaſoning appear, which, not diſtinguiſhing the diſcrete degrees of

LIFE then is in all and every part of the body; but ſome parts are endowed with a much greater ſhare than others. In the brain it is as it were drawn to a focus. Indeed it is here, as we have juſt obſerved, that fibre begins and circulation ends; conſequently here alſo is the connexion between fibre and blood. No doubt, when the blood arrives at the brain it becomes highly refined, and imparts a ſublimate matter, which becomes the immediate recipient of life, whence it is diſtributed by the nerves to all the parts in the curious mechaniſm of man down to the ultimates of life. Now we have already obſerved, the leſs ſimple and homogeneous any ſubſtance is, the more liable it is to injury and perverſion. Dr. Hunter has ſhown that the ſerum of the blood is a maſs of heterogeneous ſubſtances, and is the loweſt form of animal life; therefore is the moſt liable to be affected by diſeaſe. The ſerum is derived immediately from the alimentary canal. There it is that contagion firſt plants itſelf, and

of the operation of life, but ſtopping at proximate cauſes from the inductions of analyſis only, makes no diſtinction betwixt the life of a man and that of a brute. For if it be admitted, (and nothing can be more eaſily admitted, nor more fully confirmed from the united teſtimony of revelation, reaſon, and experience) that man is diſtinguiſhed from the brutes by the faculty of thinking, not only analytically but ſynthetically, and thereby of living not only the ſenſual and natural, but alſo the moral and ſpiritual life, it may be rationally concluded, that the ſame diſtinction prevails in regard to the faculty of living eternally. For it muſt, on the ſame ground, be inferred, that he poſſeſſes a ſuperior degree of life or a form receptive of life more immediately from the Deity, whence he derives the capacity of being conjoined with the Deity by acknowledgment and affection, thus, by re-agency on his part; whence he conſequently alſo poſſeſſes the faculty of retaining the influent life, and in this retention conſiſts the ground of his eternal exiſtence.

and therefore the alimentary canal may well be called the ſtore-houſe of contagion. Here, like the ſkilful but cautious enemy, it commences its operations by progreſſively invading the weaker parts, until the inner fortreſſes of life are endangered.

THERE are many directly and indirectly debilitating powers, which prepare the conſtitution for the reception of diſeaſe, and are therefore called

REMOTE OR PREDISPOSING CAUSES.

AMONG the directly debilitating powers, we reckon cold or the abſence of heat, the greateſt; its fects, however, are always proportionate to the degree of intenſity, and the ſtate of the conſtitution on which it acts.

A LARGE variety of injecta are of a ſedative or debilitating nature; plants in particular; all kinds of raw ſallads, except thoſe of a ſpicy or aromatic nature. Vegetable food, when too dilute; drinks in large quantities, that are not ſpirituous; an impure atmoſphere; ſloth, ennui, a habit of inactivity, a mind unemployed, &c. &c.

EVACUATIONS, when immoderate or unnatural, are greatly debilitating; ſuch as the various ſpecies of epiſtaxis, menorrhagia, hemorrhois; alſo from the excretory organs and alimentary canal.

SLEEP, that is not forced, is occaſioned by the abſtraction of ſtimuli, and therefore, when too much

much indulged, produces weakneſs. There are alſo a variety of mental qualities, which operate as ſedatives on the body. Fear is the greateſt: It has been known totally to unhinge the mind's fabric, ſuſpend all motion, and in fact every animal faculty, inſomuch as to produce ſyncope or ſwoons, and even death; diſappointments, of whatever kind; alſo deſpondency, with many others. Theſe are the moſt common among this claſs of directly weakening powers.

The indirectly debilitating powers are—Firſt, of the mind. Immoderate deſires of whatever kind; great mental exertion; a fixed attention to one train of thought; anger in exceſs. Unlimited indulgence of ſenſual appetites is highly pernicious to the body, and certainly deſtructive of the mind's happineſs. An exceſs in eating, or, as it is better expreſſed, gormandizing, eſpecially upon food that is loaded with the richeſt ſpices and moſt powerful ſtimulants, is certainly injurious to the conſtitution, and prepares it for the invaſion of almoſt every ſpecies of diſeaſe.

What a maſs of heterogeneous ſubſtances are thrown into the ſtomach at even a *common meal!* The conſequences are—Bellum internum; "the war of elements and the cruſh of" life at leaſt.

"For other ills the ambiguous feaſt purſue,
Beſides provoking the laſcivious taſte.
Such various foods, though harmleſs each alone,
Each other violate; and oft we ſee
What ſtrife is brew'd, and what pernicious bane,
From combinations of innoxious things."

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THE powers of life, by this mode of living, are ſtrained to the higheſt pitch, and when expoſed to diſeaſe, the conſtitution has no new or unemployed force to repel the enemy. The ſtrength collapſes, debility or exhauſtion, with all its ſad conſequences, enſue. It is to this circumſtance, mainly, we are to aſcribe the unuſual mortality of contagious diſeaſes which have of late prevailed in ſeveral capitals of the United States.

HEAT, in exceſs, is the greateſt ſtimulus that operates on life; indeed it is the moſt powerful agent in nature; by it "rocks fall to duſt, and mountains melt away." When above 80° of Farenheit, it always injures.

ALL ſpirituous liquors, if uſed with frequency; alſo labour, when it induces fatigue; and indeed great bodily exertion, of whatever kind, impairs the ſtrength and gives ſuſceptibility to diſeaſe.

BUT we paſs to the

TREATMENT, OR METHOD OF CURE.

THE ſymptoms of the fever which we have deſcribed certainly manifeſt a very high degree of vaſcular irritability and excitement; the firſt and leading indication, therefore, is depletion by powerful evacuations, even to bleeding; and this with all poſſible ſpeed. Jalap and calomel were early uſed for this purpoſe by the moſt celebrated practitioners of Boſton, who

who I believe can give freſh teſtimony of the propriety and benefit of the uſe of this medicine, firſt recommended by Dr. Ruſh, of Philadelphia. Myſelf have witneſſed the moſt happy effects of this cathartic, when uſed agreeably to the judicious directions of my preceptor.

It is now generally thought that mercury, as uſed in this diſorder, produces its ſalutary effects chiefly by operating as a quick and powerful cathartic, when combined with jalap; thereby cauſing a large and ſudden depletion of the inteſtines and the excretories that here empty themſelves. It is moreover certain that mercury in all its operations, always affects the liver more or leſs. I believe that in the bilious fever it has almoſt a ſpecific effect upon this viſcus by changing its morbid actions and reſtoring its healthy functions, which, it cannot be doubted, are greatly deranged.

Dr. Ruſh enumerates the effects of the uſe of jalap and calomel in this fever as follows. 1. It raiſed the pulſe when low, and reduced it when it was preternaturally tenſe or full. 2. It revived and ſtrengthened the patient. 3. It abated the paroxyſm of the fever. 4. It frequently produced ſweats when given on the firſt and ſecond day of the fever. 5. It ſometimes checked that vomiting which occurs in the beginning of the diſorder; and it always aſſiſted in preventing the more alarming occurrence of this ſymptom about the 4th and 5th day. 6. It removed obſtructions in the lymphatic ſyſtem.

ſyſtem. 7. It prevented in moſt caſes a yellowneſs of the ſkin, by diſcharging the bile through the bowels as ſoon and as faſt as it was ſecreted.

The uſual doſe, and I believe the beſt proportioned for an adult, was jalap 25gr. calomel 10gr. The intention for which this was given was not anſwered unleſs it produced four or five diſcharges.

No other regard is to be paid to time in the adminiſtration of this medicine than that it be given as early in the diſeaſe as poſſible. If it ſhould be rejected, or is ſlow in the operation, opening injections ſhould be adminiſtered every one or two hours. One doſe was ſometimes ſufficient to open the bowels; ſeveral, however, were more frequently neceſſary, as the doſe was often thrown up by puking. In bilious fevers, there ſeems to be a conſtant reproduction of morbid bile; once cleanſing the bowels, therefore, is not ſufficient; it will be proper to give a purge once a day as long as the fever laſts. After one or two effectual doſes of jalap and calomel, as circumſtances require, other cathartics may be uſed; ſuch as Glauber's ſalt, cremor tartar, rheubarb, ſena, manna, &c. either ſeparate or combined.

To aſſuage the great heat of this fever, cloths dipped in cold vinegar, or vinegar and water, applied to the ſurface of the body have been found to do great ſervice.

Some have recommended flannel ſhirts wet in this manner to be kept conſtantly applied. And

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it has been practiſed by many phyſicians, particularly Dr. Trotter, of England with manifeſt advantage. It certainly has a tendency to extract the heat from the body, which always, in proportion to its intenſity, expands the teguments, thereby cloſes the pores by increaſing the denſity; of courſe perſpiration ceaſes.

The pain of the head, very diſtreſſing in this complaint, was greatly moderated by ſimilar applications of cold water, or vinegar and water, to the pained part, neck and back.

Drinks ſhould be freely uſed during the inflammatory ſtate of the diſorder, to aſſiſt the operation of the phyſic, and to leſſen the heat within. Almoſt any kind of tea is proper, ſuch as marſh mallows, balm, &c. lemonade, tamarind water, toaſt in water, apple in water, may be drank with ſafety and advantage.

Food of all kinds is extremely improper until the criſis, unleſs it is unuſually protracted; and even then it ſhould be of the moſt innocent kind, and very cautiouſly adminiſtered.

The utmoſt pains ſhould be taken with the patient in reſpect to cleanlineſs. Stools ſhould be immediately removed; the linen well aired and ſhifted as often as once a day. The chamber ſhould be as large as can be had, and conſtantly ventilated.

Bleeding in the firſt ſtage of the fever is ſtrongly recommended by Dr. Ruſh and others. It was

practiſed by them with much apparent ſucceſs. But in Boſton, the laſt ſummer, it was not ſo much relied on as a neceſſary part of the cure: I believe becauſe the fever was leſs inflammatory. The jalap and calomel in large doſes was found, in moſt caſes, ſufficiently depleting to take off the excitement and irritability of the vaſcular ſyſtem.

Dr. Chiſholm, in his treatment of the fever at Grenada, found that bleeding was by no means admiſſible, and different antiphlogiſtics were ineffectual. His whole dependence was upon mercury, which he gave in pills, compoſed of five grains of calomel, two of antimonial powder, and one of opium. This was repeated to the ſame extent, eight times in twenty-four hours. The propriety of this practice was juſtified by the ſucceſs, for if ſalivation was ſpeedily raiſed, the danger was removed and the patient recovered.

Next to calomel in this form Dr. C. reckons vitriolic æther the moſt beneficial. He gave it in the following manner: a teaſpoonful in half a wine glaſs full of cold water. After this the patient was kept undiſturbed for two hours, when the doſe was repeated; and, in this manner, it was continued every two or three hours, till the ſpaſm of the ſtomach was entirely overcome. Given as above, he found it extremely grateful to the patient, and that thirſt, nauſea, and oppreſſion often fled before it.

Should

Should the fever change, in conſequence of the exceſſive ſtimulus of the morbid miaſma, from the inflammatory or ſynochus type, and become typhoid, then the tonic and ſtimulating plan muſt be purſued. The ſigns of this change are the loſs of voice; tremulous motion of the tongue, or putting it out; the patient muttering to himſelf; catching at the bed-clothes, ſighing, weeping, and ſometimes laughing; difficult deglutition; paralyſis of the ſphincter muſcles; tremors; convulſions; ſyncope on being raiſed upright; gangrene of bliſtered parts; profuſe diarrhœa; dark coloured urine; eye-balls fixed and ſunk; the countenance ſhrunk, lengthened, ghaſtly, and diſcoloured; inſide of the mouth and tongue black and parched; deafneſs, or hearing very acute; the jaw fallen; immobility of the joints; watchfulneſs or conſtant ſleep; heaving of the breaſt; rattling of the throat; pulſe felt only at intervals.

I would, however, interpoſe a caution againſt the uſe of the diffuſible ſtimuli, unleſs an immediately favourable turn of the diſeaſe can be gained by them.

This ſubduing one ſtimulus, (eſpecially if it has gained aſcendency even over life, which is always the caſe when an inflammatory fever changes to a typhus) by the ſuperior force of another ſtimulus, is like placing a perſon in time of battle between the two fires. It is much ſafer to let the powers of the conſtitution become quieſcent for a time, until

til they recover force to withſtand the diſeaſe: Or, let the ſtimulus of the diſeaſe act till the conſtitution, from the power of habit, can adapt itſelf to the peculiar nature of the ſtimulus, and thereby eſcape deſtruction.

Brandy and water, or porter and water, when agreeable to the ſtomach, ſnake-root tea, now and then a cup of chicken, veal, or mutton broth, may be uſed in reſtoring the tone of the ſyſtem.

In moſt caſes of debility it is proper to wrap the limbs in flannel dipped in warm ſpirits; alſo to apply cataplaſms of bruiſed garlick or onion with muſtard ſeed to the feet. But the principal dependence, next to the uſe of mercurial medicines, for exciting a healthy action in the arterial ſyſtem, ſhould be on mild and gently ſtimulating food.

"——— While the vital fire
Burns feebly, heap not the green fuel on;
But prudently foment the wand'ring ſpark
With what the *ſooneſt* feeds its kindred touch:
Be frugal even of that; a little give
At firſt; that kindled, add a little more;
Till, by delib'rate nouriſhing, the flame
Reviv'd with all its wonted vigor, glows."

To allay the puking, always greatly exhauſting to the patient in the bilious fever, a bliſter applied to the pit of the ſtomach often had the deſired effect. Liquid laudanum with ſweet oil applied to the

the ſame place, gives relief where the ſtomach is affected by pain only.

THAT I may be ſure of ſomething *valuable* on the diſeaſe of which I am treating, I inſert the following caſes taken from Medical Obſervations by Dr. JOHN WARREN, my preceptor, whoſe medical abilities are deſervedly in high public eſtimation; communicated firſt to the American Academy of Arts and Sciences, and by their order to the public. July 1ſt, 1797.

CASE I.

THE firſt appearance of the diſeaſe was on the 25th of Auguſt, 1796, in a family at the eaſterly part of the town of *Boſton*, near a conſiderable extent of flats, which are daily expoſed for ſome hours to the action of the ſun.

A LADY of this family was the firſt victim to the diſeaſe. She was ſeized with rigors, a general diſtreſs throughout the whole ſyſtem, with a white and moiſt tongue, dry ſkin, frequent and weak pulſe; but without any very alarming appearance until the third day, when the pains, which now became more ſevere, with laborious reſpiration, a ſlight redneſs of the eyes, a ſleepineſs and inſenſibility, followed at night by a ſudden ſinking, and intermiſſion of the pulſe, announced the extreme hazard of her ſituation. Active cathartics were

preſcribed

preſcribed in the beginning, and a bliſter was applied over the whole anterior part of the thorax, but no benefit was derived from either, and ſhe died at the end of the fourth day.

Case II.

The next perſon attacked was a female of the ſame family. She was taken ſick within twelve hours of the firſt, with pains in the head, back, and lower extremities; a vomiting, which continued inceſſant through every ſtage of her illneſs, great oppreſſion at the breaſt, a weak and quick pulſe, moiſt ſkin, and yellow tongue. Opium and calomel, with other purgative medicines, were adminiſtered, without having been a moment retained in the ſtomach. Her pulſe became intermittent on the third day; and on the fourth, a fatal termination enſued.

Various Cases.

On the 2d September a ſon-in-law of the above mentioned lady, was ſeized with a fever of the ſame kind; and within three days from that time, his wife, and her two brothers, all of whom had been cloſely attentive on their deceaſed mother. Three of theſe were treated with large and repeated doſes of jalap and calomel; two of the three took emetics; one of them was bathed with cold water, daſhed over the whole body on the third day from the attack, and having been kept cool,

they

they all recovered. The fourth was in a ſituation peculiarly unfavourable when attacked; ſhe took ſuch doſes of jalap and calomel, as were thought beſt adapted to her ſtate; and on the fourth day ſhe died.

The caſe of Mr. Newell, who was taken with the diſeaſe, 18th September excited much aprehenſions in town. On the fourth day the ſkin became yellow; on the ſixth petechiæ were diſcovered over all parts of his body; and a moſt obſtinate dyſentery followed by colliquative diarrhœa proved fatal on the 8th day.

With many patients, after ſlight rigors, and obtuſe pain in the head, for the firſt twenty-four hours, together with a ſenſe of heat or burning at the ſtomach—a hæmorrhage from the noſe often took place, and continued to be a troubleſome circumſtance for ſeveral days, without any remarkable mitigation of the ſymptoms. In theſe caſes, ſpontaneous vomitings rarely occurred—but when they did, large quantities of bile were thrown up from the ſtomach. In two caſes only, what is called the black vomit, took place.

PROPHYLAXIS.

TO prevent infection, all thoſe things which are reckoned prediſpoſing ſhould be carefully avoided. Some of theſe I have enumerated, under the head of *prediſpoſing cauſes*.

Diet.

DIET.—All groſs food, eſpecially meats, when prepared with ſpices and pepper ſtimuli, which greatly inflame the blood, and fit it for diſeaſe, are to be avoided. Food ſhould be chiefly vegetables, cooked in a ſimple manner.

DRINKS ſhould be moſtly of the acid kind. Porter is good; tamarind water; cream of tartar in water; apple in water, &c. But the drink which moſt effectually allays thirſt, and perhaps is as ſafe and healthful as any, becauſe both nutritive and diluting, is ſimply milk and water, equal parts. Theſe drinks will ſerve to keep the body in a regular order, neither too lax, nor too coſtive, a point which ſhould be cloſely attended to. Should either of theſe ſtates of the body prevail, it muſt be remedied by the proper medicines.

THE exhalations of putrid or putrifying matter, alſo pools and puddles of ſtagnant water, muſt be carefully ſhunned.

ALL poſſible attention muſt be paid to cleanlineſs of body, by frequently ſhifting the linen, and waſhing off perſpiration by frequent bathings in water of a middle temperature, or the temperature of the ſurrounding air.

THE purity of the common atmoſphere ſhould be preſerved with all poſſible diligence, by emptying and cleanſing the cellars, ſtreets, drains, ditches, vaults, &c. &c.

THE chambers of the ſick *muſt* be viſited as much as humanity and the convenience of the ſick require, and no more. When the ſick are viſited, all the windows and doors ſhould be opened.

DR. Chiſholm, who has written a treatiſe on the yellow fever, as it appeared in the iſland of Grenada, 1795, thinks that the effluvia of infectious diſeaſes do not extend themſelves beyond a limited diſtance from the perſon or thing from which they are emitted, ſo as to produce diſeaſe: This diſtance he thinks may be fixed at the utmoſt from ſix to ten feet.

HE obſerved, 1*ſtly*, That when the diſeaſe had entered a dwelling, avoiding the chamber of the ſick, prevented the infection. 2*dly*, That merely entering the chamber of the ſick, without approaching near to the diſeaſed perſon, never communicated infection. 3*dly*, That approaching ſo near the diſeaſed perſon as to be ſenſible of the fœtor of his breath, or of the peculiar ſmell which is always emitted from the bodies of the ſick, or touching the bed clothes on which he lays, generally occaſioned nauſea, ſlight rigors, and often head-ach, at the moment, and ſome hours afterwards, produced the diſeaſe itſelf. 4*thly*, That actual contact, ſo that the perſpired fluid of the ſick perſon might adhere to the hands, &c. of the healthy perſon, more certainly produced the diſeaſe. 5*thly*, That touching the wearing apparel of a perſon actually diſeaſed, or who had juſt recovered from the diſeaſe,

communicated infection as certainly as actual contact of the skin. *6thly*, That the merely passing an infected person, or one who wore the clothes he had on, when labouring under the disease, if the effluvia proceeding from them were blown upon him, produced the disease.

From the united testimony of Dr. Warren, Dr. Rush, and Dr. Chisholm, it appears, that the contagion always acts within four days after its application to the body.

Whether the MIASMA or CONTAGIOUS MATTER of the BILIOUS MALIGNANT FEVER, of which we have treated, is an IMPORTED or a HOME Production?

A NEW doctrine has lately been broached by Dr. Mitchel, of New-York, respecting the cause of malignant diseases, making it septon, or septous acid.*

An inaugural dissertation by Dr. William Bay, citizen of New-York, has just come to hand, and is declaredly a branch of this doctrine. His subject is the Dysentery. The work is worthy attentive perusal. But we are not convinced, as the author seems

* In Dr. Mitchel's nomenclature, we find *septon* substituted for *azote* or *nitrogene*; *septous gas* for *azotic gaz* or *atmospherical mephitis*; *gaseous oxyd of septon*, for *dephlogisticated nitrous air*; *septic gas*, for *nitrous gas*; *septous acid* for *nitrous acid*; *septic acid*, for *nitric acid*; *septate*, *septite*, for *nitrate*, *nitrite*, &c.

ſeems to be, that the diſeaſes ariſing from the exhalations of dead animal and ſome vegetable ſubſtances are not putrid; nor that the *principle* of putrefaction is *not putrefactive;* nor again, that ſepton is antiſeptic. See pages 9 and 10 of the introduction.

THESE notions, however, Profeſſor Mitchill himſelf advances and endeavours to ſupport, as may be ſeen from the following paragraph, taken from the above treatiſe, page 99. appendix, A.

He ſays,—"I reject altogether the notion of *putridity*, as it is *very generally ſuppoſed* to be going on in the blood veſſels; I have no faith in the introduction of *putrid ferments* into the maſs of fluids. A putrefactive proceſs taking place in the contained parts of the living body except among the contents of the alimentary canal, is incompatible with life more than a few minutes. Putrefaction is a reſolution of an organic body into its elementary atoms or into new compounds. Now many of theſe are gaſſes whoſe extrication in the blood-veſſels would extinguiſh life in a very ſhort time. Beſides, the fluids produced by putrefaction having already undergone that operation, cannot be any more ſuſceptible of it. They not only do not putrefy the muſcles, but, in the common acceptation of the term, they retard putrefaction in other ſubſtances. Thus, *fixed air*, *nitrous acid*, and volatile alkali, which are reckoned among the moſt active *products of putrefaction*, are known to be the moſt powerful oppoſers of

of it. And it may be laid down as a pretty broad fact, that ſuch ſubſtances as are *ſeptic in their origin*, are antiſeptic in their effects; and this from the nature of things."

I AM not ſatisfied with this reaſoning, neither do I think it concluſive. "A putrefactive proceſs taking place in the contained parts of the living body is incompatible with life for more than a few minutes." The duration of life, while the putrefactive proceſs is going on in the body, is wholly according to the violence or rapidity of the proceſs. But if the putrefactive proceſs *is* ſo incompatible with life, why reject the idea of *putrid ferments* in the maſs of fluids? and why not call thoſe diſeaſes ſo ſuddenly deſtructive to life, *putrid?* and why ſay, that the very principle or cauſe of theſe diſeaſes, which, from its ſuppoſed effects, is called ſepton, is antiſeptic?

WE grant that putrefaction is incompatible with life; and if it becomes general, the whole life is extinguiſhed. But it may exiſt in a *part* of the body without a total and immediate extinction of the *whole* life. If this were not the caſe, how came the idea of ulcerous putrefaction? It is allowed by all, that putrefaction may exiſt in the alimentary canal; perhaps always, in ſome degree. It is here, however, that thoſe ſubſtances are ſelected and taken up, which afterwards receive and retain life, and become a part of the body. This lacteal fluid, when there is a high degree of putrefaction in the *prima via*,

via, may in all probability become putrid, as it comes from the ſource of putrefaction: next the ſerum; and ſo on, till the whole maſs of fluids becomes corrupted, and life eſcapes. Or, in the Doctor's own words, "Can it poſſibly happen that peſtilential fluids ſhall come in contact with the lungs, ſkin and inteſtines, whoſe ſurfaces are thickly beſet with abſorbent veſſels; and that their noxious matters ſhall remain around the orifices of thoſe inhaling tubes for a very long time, and yet no atom or particle of them be taken in? Will not a portion of them be ſucked up by the lacteals from the inteſtines, and by the lymphatics from the other expoſed ſurfaces of the body, and through their channels be conveyed into the *maſs of blood?* will not the *blood*, on receiving theſe *foreign materials*, aſſume *new qualities*, and, as it travels the round of circulation, carry with it miſchief and venom to the nervous ſyſtem." p. 92. More than this I conceive was never underſtood by *putrid ferments* in the maſs of fluids.

In page 98, the Doctor ſeems to admit the ſame idea (if poſſible more fully, perhaps too much ſo) for he there gives it as his opinion that "the ſeptic gas does not produce death by its inflammatory action on the ſuperficial muſcles, but by its being mixed in a certain quantity with the *blood;* and after converſion to ſeptous or ſeptic acid, by conjunction with oxygen in circulating through the lungs, STIMULATING THE HEART TO DEATH, and utterly deſtroying *all* the irritability of that muſcle." Greater

er phenomena were never expected or known from the moſt rapid putrefaction in its moſt violent ſtage; and all this the Doctor allows is done within the veſſels of the circulating fluid. Firſt the ſeptic gas is converted into ſeptous or ſeptic acid, and then the deletereous effect is not by an inflammatory action on the ſuperficial muſcles, but by STIMULATING THE HEART'S MUSCLES TO DEATH! This, it is obſerved in the ſame page, can be done in the courſe of half a minute!

He obſerves further, "that it muſt not be imagined, that, after peſtilential venom is inhaled into the *blood-veſſels*, death will in all caſes be the conſequence. The offending matter may be carried from the body through the *excretory* outlets; or it may circulate a long time with the other *fluids*, and ſo *ſeaſon* both the *veſſels and the heart* to its action, that after a while, *they*, like the *external parts*, *will grow inſenſible to its ſtimulus*, *and no longer have their motions diſturbed by it*."—How can Dr. Mitchill deny the exiſtence of putrid ferments in the maſs of fluids, after ſaying all this?

But I do not fully underſtand, how it is that the offending matter *ſeaſons* both the veſſels and the heart to its actions, when juſt before it killed them both!

We grant that the life of a part, which has been deſtroyed by deleterious ſtimuli or putrefaction, may be reſtored or renewed by the application of congenial matter, and abſtracting the offending cauſe; but

but otherwiſe the interior organization will be deranged, and the whole life deſtroyed.

I HOLD it as a truth that there is no life but in ſome form;* and the animal life of man has its *peculiar*

* AN eminent Swediſh author, to whoſe writings I acknowledge myſelf indebted for the ground of ſome other obſervations made in this work, reaſons thus: Not only animal and vegetable life have their peculiar forms, but alſo ſpiritual exiſtences; even thoughts and affections have their appropriate and diſtinctive forms. Theſe latter, viz. thoughts and affections, are commonly but unintelligibly denominated abſtract things, when in fact they are no more abſtracted from their appropriate, ſpiritual, or ſubſtantial forms, than viſion is abſtracted from its organ the eye, or hearing from its organ the ear. But theſe forms, however, have nothing of groſs materiality in them, therefore are not diſcerned by bodily ſight. But it may be aſked, what is affection and what is thought, in their ſubſtantiate forms or ſubjects. A ſatisfactory anſwer may be deduced from all and every thing in the body, where there are many viſcera, each fixed in its particular ſituation, and which operate their functions by changes and variations of their ſtate and form. That the viſcera are ſeverally employed in their reſpective operations, is well known; the ſtomach in operating its functions, and ſo the inteſtines, the kidneys, the liver, the pancreas, and ſpleen in theirs; and likewiſe the heart and lungs, each in its reſpective office: and all theſe motions are operated only intrinſically or within themſelves, and to be moved intrinſically is to operate by variations of ſtate and form. Hence it may appear, that the purely organic forms or ſubſtances of the mind are of a ſimilar nature, only with this difference, that the operations of the organic ſubſtances of the body are natural, and thoſe of the organic forms of the mind ſpiritual, and that both of theſe act as one by correſpondences. There can be no ocular demonſtration of the changes and variations of ſtate and form in the organic ſubſtances of the mind, which are affections, but yet they may be ſeen as it were in a glaſs, by the changes and variations of the ſtate of the lungs in ſpeaking and ſinging, there being a correſpondence, inaſmuch as the ſound of the voice in ſpeaking and ſinging, and alſo the articulations of ſound, which are words in ſpeech, and the modulations of the voice in ſinging, are effected by the lungs; ſound correſponds to affection, and ſpeech to thought; they are alſo produced thereby, and this is done by changes and variations of the ſtate and form of the organic ſubſtances of the lungs,

culiar form; this form conſiſts of almoſt an infinitude of parts, all poſſeſſing a *vita propria*, or a life peculiar to their functions, which is derived from the *common* life which reſides in the *ſenſorium* or brain; for the life of all the parts is *one*, as much as all the parts are one body. Now let any venomous ſubſtance be applied to any one of theſe parts, and the *whole life* is affected from the injury done to the part; and this, becauſe the *whole* is connected with every part,

lungs, and from the lungs by the trachea or wind-pipe in the larynx and glottis, and afterwards in the tongue, and laſtly in the mouth and lips. The firſt changes and variations of the ſtate and form of ſound are produced in the lungs, the ſecond in the trachea and larynx, the third in the glottis by various openings of its orifice, the fourth in the tongue by its various applications to the palate and teeth, the fifth in the lips by diſpoſing them in various forms: Hence it may appear, that the mere changes and variations of the ſtate of organic forms, ſucceſſively continued, produce ſounds and the articulations thereof, which are ſpeech and ſinging. Now, foraſmuch as ſound and ſpeech are produced from no other ſource than from the affections and thoughts of the mind (for from the latter the former exiſt, and never without them) it is evident that the affections of the will are changes and variations of the purely organic ſubſtances of the mind, and that the thoughts of the underſtanding are changes and variations of the form of their ſubſtances; ſimilar to what hath juſt been inſtanced in the lungs.

Forasmuch as affections and thoughts are mere changes of the ſtate of the forms of the mind, it follows, that the memory is nothing elſe but the permanent ſtate thereof; for all changes and variations of ſtate in organic ſubſtances are of ſuch a nature, that when once they become habitual they are permanent; thus the lungs are habituated to produce various ſounds in the trachea and to vary them in the glottis, to articulate them in the tongue, and to modify them in the mouth, and when thoſe organs are once habituated to them, they are in them and can be reproduced. See treatiſe on Divine Providence, No. 279. Publiſhed by Thomas and Andrews at Boſton, 1796.

To me the above reaſoning is ſatisfactory. Something, in a degree ſimilar, may be ſeen in Dr. Darwin's Zoonomia, vol. 1ſt. ſect. 4 to 12. His ideas, however, are not *new*; but his experiments are original and ingenious, and his proofs more in detail.

part, and every part with the *whole*. This, however, is greater or leſs in proportion as the part is connected either remotely or nearly with interior or central life. Thus, poiſons applied directly to the heart, ſoon deſtroy its motions, and produce death; applied to the brain, the effect is ſtill more ſudden. But poiſons, however active, never can affect theſe organs, except through fluid media: I doubt whether there is any perception by the nerves, but in this way. Now,

DEATH never happens, or in other words animal life never leaves its material form, until this form is impaired by having its more ſubtle and animate principles or materials perverted or corrupted; eſpecially thoſe which reſide in the brain and are derived from the *blood* or through this medium. This certainly is the caſe with all malignant diſeaſes. Nor does this idea differ widely from Dr. Mitchill's notion of *putrid ferments* or *putrefaction*, which he defines, "a reſolution of an organic body into its elementary atoms."

WHETHER *ſepton* or *ſeptic acid* really is the cauſe of malignant diſeaſes, is problematical; experiments and future obſervations have yet to decide. Neither the affirmative nor negative is yet clearly or ſatisfactorily proved.

I SUSPECT Dr. Mitchill has been led to adopt his opinion of the cauſe of peſtilential diſeaſes moſtly from *appearances*: Thus it is found that all thoſe

 ſpots

ſpots and ſoils, where nitre is produced in greateſt abundance, are unhealthy, viz. Egypt, Perſia, and the Eaſt-Indies. But it does not follow, that becauſe diſeaſes are connected with the ſoil in which nitre is found, that it is, in any ſhape or form, the cauſe of theſe diſeaſes. Nitre is commonly thought to be the *reſult* or *reſiduum* of putrefactions, and is very ſeldom found in a vaporous or unſaturated ſtate, in which it *muſt be* when taken into the ſyſtem by cuticular abſorbents, or inhaled by the lungs in reſpiration. But I ſhall be anſwered, that ſepton or the radical of nitre is ſaturated by *oxygen* or *vital air*, which is taken from the atmoſphere, and thereby made unhealthy. But this would make hydrogen (inflammable air) the cauſe of theſe diſeaſes; for then this gas would be in undue proportion.

Some probable reaſon might be brought in ſupport of the opinion that oxygen or vital air, whatever be the ſubſtance with which it is combined, may be highly injurious, if not the cauſe proximate of many diſeaſes, when in over proportion; although it is in other circumſtances undeniably the great ſupporter of life and health. It is certain that it gives cauſticity to every preparation that acts as ſuch on the human ſyſtem. Without oxygen there is no putrefaction, no change or waſte of ſubſtance; no corroſion, ruſt, or decay of metals or minerals.

Green peas, green corn, &c. when gluttonouſly eaten, have been known to produce a moſt diſtreſſing

ing *diarrhœa;* and not unfrequently a *cholera morbus*. Theſe ſubſtances are ſaid to contain much oxygen.

Which, therefore, of the above principles has the greateſt ſhare in the production of diſeaſes, will not be decided, until ſome ſtandard, or *Gaſmetre*, ſhall be invented, by which it can be known what is the peculiar ſtate of the atmoſphere when they prevail.

It is ſomewhat ſingular that the ſame principles, which by phyſicians in America is conſidered as the cauſe of peſtilential diſeaſes, in Europe is extolled as a ſovereign remedy for their cure and prevention.

But more directly to the point in queſtion.—By ſome phyſicians it has been ſtrenuouſly contended, and with much ingenuity of reaſoning, that the fever of Philadelphia, New-York and Boſton had its *origin* in thoſe places. Others ſay that it originated from *fomes* of foreign import.

The ſame cauſes muſt every where produce the ſame effects; and the ſame noxious ſubſtances in one place will produce the ſame diſorders as in another, all other circumſtances being the ſame.

That there may be, in either of the above mentioned capitals, ſuch a peculiar ſtate of the atmoſphere, or ſuch a combination of noxious ſubſtances as will give riſe to contagious diſeaſes, cannot be diſputed.

diſputed. But it is within the ſouthern or middle latitudes that theſe diſeaſes moſt commonly have their origin. It is here that we find material qualities in a more naked and uncombined ſtate, conſequently more powerfully active. Here putrefaction is ſudden, and vegetation rapid. Here alſo is the region of elementary contention and violence; hurricanes, tornadoes, ſulphureous exploſions, volcanoes, and earthquakes. Every ſpecies of tropical wind has its peculiar diſeaſes, the Monſoons, Harmattan, Samiel, &c. The winds of theſe regions vary their terrors; ſometimes involving all things in a ſuffocating heat; ſometimes mixing all the elements of fire, air, water, earth together; ſometimes with a momentary ſwiftneſs paſſing over the face of the country, and deſtroying all things in their paſſage.

At Minorca and Gibraltar the winds which at times blow there from the interior of the country are very deſtructive, and at the Falkland Iſlands an extraordinary wind is felt, occaſionally, ſo blaſting as to cut the herbage down, equal to the raging of fire; the leaves are parched and crumbled to duſt. So at Goree, on the river Senegal, there is an eaſterly wind from the inland parts, with which thoſe who are ſuddenly met by it in the face are ſcorched, as by a blaſt from a furnace.

But beyond all others in its dreadful effects, is the *Samiel*, or mortifying wind, of the deſerts near Bagdad. The camels, either by inſtinct or experience,

ence, have notice of its approach, and are ſo well aware of it, that they are ſaid to make an unuſual noiſe, and cover up their noſes in the ſand. To eſcape its effects, travellers throw themſelves as cloſe as poſſible to the ground, and wait till it has paſſed by, which is commonly in a few minutes. As ſoon as they, who have life, dare to riſe again, they examine how it fares with their companions, by plucking at their arms or legs; for if they are deſtroyed by the wind, their limbs are abſolutely mortified, and will come aſunder. See Adams's Philoſophical Lectures.

In northern latitudes the atmoſphere is uniformly temperate and neutral; and if there are malignant diſeaſes, here originated, it muſt be more in conſequence of idleneſs, neglect of cleanlineſs, internal and external, or ſome moral default, than of ſituation.

All this being agreeable to fact, the opinion that the miaſma of malignant diſeaſes, more eſpecially the one of which we have treated, is imported from ſome ſultry climate, ſeems moſt probable.

Few capitals, perhaps none, are more heathfully ſituated than Boſton. It is on a peninſula, and conſtantly ventilated on all ſides by water breezes. The ſtreets almoſt all are ſo much inclined as to be waſhed and cleanſed by every ſhower. None—or very few places where filth can collect and ſtagnate without great neglect of ſcavenger duty. On the weſt

weſt ſide is a large common of 20 acres or more extent covered with verdure, with a mall adjoining: A ſpot more beautiful and recreative is not found in any country. A walk here may well be called a healthful luxury.

An elegant State-houſe, and other rich buildings; the ſurrounding back country, with its hills and vales; the intervening waters, and other agreeable objects which diverſify the proſpect, all unite to render this place extremely delightful.

Thus favourably circumſtanced, to what muſt it be owing, ſhould Boſton be again viſited with contagious malady? No doubt to ſtreet filth and other impurities which adulterate and deſtroy the healthy qualities of the air, and render it a fit vehicle for the circulation and extenſion of the peſts of diſeaſes, here originated, or, introduced from ſouthern climates.

FINIS.