A view of the science of life : on the principles established in the Elements of medicine, of the late celebrated John Brown, M.D. : with an attempt to correct some important errors of that work : and cases in illustration, chiefly selected from the records of their practice, at the General Hospital, at Calcutta / by William Yates & Charles Maclean ; to which is subjoined a treatise on the action of mercury upon living bodies, and its application for the cure of diseases of indirect debility ; and a dissertation on the source of epidemic and pestilential diseases ; in which is attempted to prove, by a numerous induction of facts, that they never arise from contagion, but are always produced by certain states, or certain vicissitudes of the atmosphere / by Charles Maclean, of Calcutta.

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Waterville College
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A

VIEW

OF THE

SCIENCE OF LIFE;

ON THE PRINCIPLES ESTABLISHED IN

THE

ELEMENTS of MEDICINE,

OF THE LATE CELEBRATED

JOHN BROWN, M. D.

WITH AN ATTEMPT TO CORRECT SOME IMPORTANT ERRORS OF THAT WORK.

And Cases in illuſtration, chiefly ſelected from the Records of their Practice, at the General Hoſpital, at *Calcutta.*

By *WILLIAM YATES & CHARLES MACLEAN.*

TO WHICH IS SUBJOINED

A TREATISE

On the Action of Mercury upon Living Bodies, and its Application for the Cure of Diſeaſes of Indirect Debility.

AND

A DISSERTATION

ON THE SOURCE OF

EPIDEMIC AND *PESTILENTIAL* DISEASES;

IN WHICH IS ATTEMPTED TO PROVE, BY A NUMEROUS INDUCTION OF FACTS, THAT THEY NEVER ARISE FROM CONTAGION, BUT ARE ALWAYS PRODUCED BY CERTAIN STATES, OR CERTAIN VICISSITUDES OF THE ATMOSPHERE.

By *CHARLES MACLEAN,* of Calcutta.

DOVER, N. H.
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BY

WILLIAM YATES & CHARLES MACLEAN.

"THERE are some modern Practitioners, who declaim against "medical Theory, in general, not considering, that to think "is to theorise; and that no one can direct a Method of "Cure to a Person labouring under Disease, without think-"ing,—that is without theorising; and happy, therefore, "is the Patient, whose Physician possesses the best Theory."

DARWIN'S ZOONOMIA.—PREFACE, P. 2.

DOVER:

1801.

PREFACE.

HAVING applied to practice, in the General Hospital, at Calcutta, those Medical Principles, vulgarly known by the name of Brunonian Doctrine; and being convinced, from the Result, of their Conformity to truth; we think it may be useful to attempt to promulgate the Doctrine in India, where it seems to be almost wholly unknown, and to call forth the attention of medical men, to a subject so worthy of investigation.

SOME Cases are annexed, in illustration of the mode, in which, according to our ideas, the principles of the doctrine should be applied to practice.

To those who cannot be acquainted with the Circumstances, it may be proper to explain, why two Names appear to this Publication. Having carried on our practice together, in the General Hospital at Calcutta, and having by chance discovered, that each of us entertained a design of attempting to promulgate the doctrine of Brown, with some modifications, in India; we thought it might be more conducive to the end in view, to consider the subject conjointly.—The result is now submitted to the public.

WILLIAM YATES,
CHARLES MACLEAN.

ADVERTISEMENT.

HE who abandons principles in deference to popular clamour, and he who perseveres in error in spight of conviction, may indeed obtain a momentary celebrity; but they are equally unqualified for the promotion of Science.

As truth, not an indiscriminate assertion of any doctrine, is the object of this publication, Members of the Profession, and others who may be so inclined, are invited to communicate facts, or observations, whether they may tend to confirm, or refute the principles which it avows.

The Communications thus received, will be published, with comments, with or without the name of the Author, as may be most agreeable to himself.

Papers on this subject, addressed to Mr. MACLEAN, *to Messi'rs* THOMPSON & FERRIS, *Printers,* Calcutta, *or to* WILLIAM YOUNG, *Bookseller,* Philadelphia, *will be attended to.*

INDEX.

INTRODUCTION.

UPON examining the records of medicine, from the earlieſt periods, it appears that phyſicians have never conſidered the living body as ſubject, like all other parts of the univerſe, to regular and immutable laws; but ſeem actually to have drawn an oppoſite concluſion. It is from this circumſtance principally, that the practice of medicine has hitherto acquired ſo ſmall a portion of certainty, as ſtill to merit the appellation beſtowed upon it, more than two thouſand years ago, of a "conjectural art."

THE various doctrines which have been publiſhed to the world, regarding the human body, are in general, nothing more than a mere aſſemblage of words, without the power of conveying any diſtinct ideas. *Hypotheſis has ſucceeded hypotheſis, in the ſame regular manner, that phyſician has ſucceeded phyſician. Opinions have been adopted, according to the chances of education; ſupported by the authority of great names; and religiouſly adhered to as fundamental axioms,

* As truth is but one, and the hypotheſis, which may be formed upon any given ſubject, infinite; ſo the chance of any hypotheſis being true, is as one is to an infinite number; or the certainty of its being erroneous, abſolute. Every juſt deduction of reaſoning, is properly called theory. But theſe terms are, to the great detriment of ſcience, very generally confounded.

into the truth of which it would have been hereſy to enquire.

THE miſchiefs ariſing from this ſource, "greatly extend their influence, and ſpread in every "poſſible direction, when error acquires the patronage of authority, and the protection of dignified names. It then takes its chair in the "ſchools, and aſſumes the pompous titles of "profound, refined, or liberal knowledge. Raiſed to this eminence, the induſtry of a ſingle teacher or author, may corrupt thouſands; "that of a few, whole nations; and the addition of "a proportional number, ruin the education of "a world.

"THIS univerſal diffuſion of error, receives "ſanction and eſtabliſhment from the progreſs of "time. It becomes venerable: and every attempt to detect it, is branded with the name of "profanity or madneſs."* Such has, unhappily, been too long the ſtate of ſcience. But, of late years, every department of human knowledge has undergone a rapid improvement. The dawn of reaſon has, in a particular degree, begun to enlighten the medical world; and the practice to aſſume a conſiſtency, which could only be found on the diſcovery of the laws, by which all living bodies are governed.

THIS diſcovery, one of the grandeſt efforts of the human mind, that ever dignified the page of ſcience, the diſcoveries of the immortal Newton himſelf not excepted, is contained in the Elements

* Vide Introduction to the Outlines, &c. by John Brown, page ii.

of Medicine, of the late celebrated John Brown. This diſcovery, hitherto neglected from ignorance, oppoſed from the ſhame of recantation, and calumniated from intereſt, prejudice, and paſſion, contains ſo many undeniable truths that, to an unbiaſſed mind, it only requires to be known, in order to be admired and adopted. The doctrine, although it has not yet been ſanctioned by the medical ſchools of Britain, has, however, been very generally received, in the other ſchools of Europe, and in America. "In the Univerſity of Pavia," ſays Dr. Raſori, "undoubtedly one of "the firſt in Europe, there is hardly a ſtudent en- "dowed with talents, who is not a Brunonian. "The doctrine begins equally to ſpread in Ger- "many. Many of the periodical publications of "that country have noticed it, and the Elemen- "ta have been lately publiſhed there. A friend "at Genoa aſſures me, that ſeveral ſurgeons to "French men of war have informed him, that "Brown is known and much admired in France. "In the Univerſity of Pavia, Brown is in high "eſteem, even with ſome of the moſt reſpectable "profeſſors; and in other parts of Italy, I can aſ- "ſert, from my own knowledge, that old phyſi- "cians have not refuſed their ſanction to many of "the Brunonian principles."*

One of his Italian critics, ſuppoſed to be Profeſſor Carminati, ſays, "Quaerenti mihi cauſas "incredibilis prope illius commotionis animorum, "atque ingentis ferè plauſus, quibus nuperimè ſin- "gularis illa hypotheſis, cui novum Univerſæ "Medicinæ Syſtema celebriſmus Angliæ Scriptor "et Medicus Bruno ſuperſtruxit, ab iis optimæ

* Vide Bell's life of Brown.

" ſpei adoleſcentibus excepta eſſet, qui in florentiſſi-
" mo Ticinenſi Archigymnaſio ſalutaris artis ſtudiis
" omnibus mecum incumbunt, peraduum ſane,
" non fuit eas **** invenire.

MANY tranſlations and editions of this work, and various criticiſms upon it, have appeared in different parts of Europe, which it is by no means neceſſary to enumerate here. That the knowledge of it has alſo made a conſiderable progreſs, among the medical philoſophers of America, is evident from the frequent alluſions made to it, in a late publication, by Dr. Ruſh, of Philadelphia. " The principle of the gradual application of ſtim-
" uli to the body, in all the diſeaſes of indirect de-
" bility on the one hand, and of direct on the oth-
" er, opens a wide field for the improvement of
" medicine. Perhaps all the diſcoveries of future
" ages, will conſiſt more in a new application of
" eſtabliſhed principle, and in new modes of ex-
" hibiting old medicine, than in the diſcoveries of
" new theories, or of new articles of the Materia
" Medica."*

ANOTHER proof of the excellence of the doctrine, no leſs convincing, is deducible from the frequent plagiariſms of its fundamental principles, by which ſome men, deſirous of paſſing them upon the world as their own diſcoveries, have lately endeavoured to eſtabliſh a reputation for ſuperior genius. Any attempt to detect theſe, in their various and moſt infinite ramifications, would, as Dr. Beddoes† very juſtly remarks, be now un-

* Vide " *An account of the bilious remitting yellow Fever*, "
—page 284.

† It would be injuſtice, upon this occaſion, to paſs over,

neceſſary. Among the moſt conſpicuous, however, in this liſt, we may particulariſe Doctor Gritanner. —There is not a ſingle idea in any of the papers, which he has publiſhed upon that ſubject, that is not borrowed from the Doctrine of Brown, or the different modification of it, diſcuſſed in the Medical Society of Edinburgh, and recorded upon its books. Theſe he has freely uſed, without the ſmalleſt acknowledgment. His doctrine, of the principle of irritability, is taken from a paper, written by a reſpectable member of that Society.

Dr. G. was a ſtudent at Edinburgh, long after the publication of the *Elementa Medicinæ*; and at a time, when the principles of the doctrine, were the ſubject of inveſtigation, in the literary ſocieties of that Univerſity. His plagiariſms muſt therefore have been wilful; and no acknowledgment, ſubſequent to detection, can be conſidered as an atonement. There is ſomething ſo flagitious in the attempt to rob departed genuis of its honours—honours too, in the acquiſition of which friendſhips, emolument, and eaſe, were all ſacrificed,—that it cannot be too ſeverely reprobated.

It is a common and often a true obſervation,

without a tribute of applauſe, the laudable exertions of Dr. Beddoes, in promulgating the knowledge of Brown's doctrine. He is perhaps the only author in Britain, who has dared publickly to aſſert the merits of it. This ingenious conduct, and the liberal manner in which he ſtepped forward, to benefit the unfortunate family of our illuſtrious philoſopher,* equally evince his ſuperior mind, and univerſal philanthropy.

* Vide a new edition of the Elements of Medicine, of John Brown, M. D. with a biographical Preface by Thomas Beddoes, M. D.

that "no man is a prophet in his own country." Accordingly, it appears, that this doctrine was longer neglected, and is ſtill more anxiouſly oppoſed in Britain, than in other nations. Few men at an advanced period of life, have ſufficient courage to relinquiſh errors to which they have been habituated, from their early years; fewer ſtill have candor enough to acknowledge the truth of what they have ſtrenuouſly oppoſed; and young men, although generally open to conviction, ſeldom have ſufficient confidence in themſelves, to ſtem the torrent of general opinion. The riſing generation, however, in order to adopt the new doctrine, will not have many ſacrifices to make. It will neither affect their intereſt nor wound their vanity.

That the force of truth already begins to ſilence the unmeaning clamour, which has hitherto been made againſt this doctrine in Britain, is evinced, by the reception of a late voluminous publication, of which the chief merit conſiſts in, an occaſional and imperfect coincidence with the principles of Brown. It will readily be perceived, that we allude to the Zoonomia of Dr. Darwin, —a work which, from the excellent character and reputed talents of its author, had raiſed conſiderable expectation in the public mind. But diſappointment, on the peruſal, was in proportion to the previous expectation. Inſtead of important and luminous corrections of the doctrine, which might have been looked for, at this time of day, from a man of abilities, purſuing the ſame tract of inveſtigation, a want of argument and correct reaſoning, is found to pervade the whole. It is ſuch a *rudis indigeſtaque moles* that, after wading through

nearly ſix hundred pages,* it ſeems impoſſible to comprehend the ſcientific principles, upon which the author intended to build his doctrine. From theſe ſtrictures, it ought not to be inferred, that we wiſh to detract from the merits of the excellent poet, who has ſo elegantly ſung the "Loves of the plants." But juſtice forbids that, out of reſpect to character or reputation, one man ſhould be allowed to aſſume to himſelf, any portion of that honor, which excluſively belongs to another. Science knows no perſonal diſtinctions. The author of a grand diſcovery, is, at leaſt, entitled to poſthumous fame.

THE ORIGIN of this like every other diſcovery of importance, has been attempted to be traced to hints thrown out by preceding authors. Even the viſionary ſpeculations of Cullen have been mentioned, as the ſource, of ſome of its fundamental principles :—with juſt as much propriety might they be imputed to any ingenious ſuggeſtion in "The life and Opinions of Triſtram Shandy." Upon the whole it may with confidence be aſſerted, that this doctrine is, in all its parts, original, as it is undoubtedly true, and important in its application. And thoſe, who are diſpoſed to deny it this merit, ſhould, in decency, adduce ſomething like argument, inſtead of the ebullitions of vanity, detraction, or jealouſy.

AFTER this eulogy, the reader may perhaps expect, that the following pages contain a mere verbal copy of Brown's *Elements of Medicine ;* but he will ſoon perceive, that this is not the caſe. For, although its fundamental principles are in-

* At the time this was written, the firſt volume only, of Darwin's Zoonomia, appeared in India.

diſputably true, there are ſeveral errors in the detail and ſome of them of very conſiderable importance. His opponents, however, if truth had been their object, ſhould have endeavoured to perfect the doctrine, by a correction of its errors, inſtead of illiberally affecting, on account of partial blemiſhes, to reject the whole. To the candid, liberal and enlightened, it will appear much leſs wonderful, that Brown ſhould have ſometimes erred, than that he ſhould have been ſo pre-eminently ſucceſsful, in firſt pointing out, to the world, the right path of medical inveſtigation.

THE principal deviations, from the original doctrine, to be found in the following "View of the Science of Life," are theſe:

1ſt.—It is demonſtrated, that diſeaſes of exceſſive excitement cannot exiſt; and that all thoſe, which have been ſo called, are diſeaſes of indirect debility.

2dly.—ALMOST the whole of the diſeaſes, which were ranked, by Brown, and his followers among the diſeaſes of direct debility, are ſhewn to be diſeaſes of indirect debility.

3dly.—IN the mode of applying the exciting powers, for the cure of diſeaſes of indirect debility.

FROM this ſtatement, it appears, that the alterations, here made in the doctrine, as they affect the method of cure, in more than one half of the diſeaſes, to which living bodies are ſubject, are of the firſt importance; and therefore deſerve a candid examination.

It may be proper to remark, that ſome perſons have affected to reject this doctrine, upon the very grave and ſolemn ground, of its being favourable to intemperance. To thoſe however, who will take the trouble of making themſelves acquainted with its principles, it will only be neceſſary to obſerve, that ſuch perſons do not underſtand the ſubject.

In climates and countries where the tranſition, from health to diſeaſe, and from diſeaſe to death, is often alarmingly rapid, and health always precarious, the knowledge of a doctrine, which reduces the practice of medicine to a degree of certainty hitherto unknown, cannot but be attended with great and evident advantages. To diffuſe that knowledge in India, where the doctrine ſeems to have been but little cultivated, and to have acquired but a ſmall degree of reputation ſo juſtly due to it, is the deſign of this undertaking. The attempt is made with the greater confidence, from having experienced, in the application of the principles to practice, a degree of ſucceſs, far beyond even the moſt ſanguine expectations, that had previouſly been formed in theory. If, however, this confidence ſhould not, after a fair inveſtigation, be juſtified by the experience of others, the ſubject remains open for free diſcuſſion, by which alone the doctrine muſt, finally, be either confirmed, or refuted.

As it is, for obvious reaſons, deſirable, that a knowlege of medical ſcience, ſhould not be excluſively confined to medical men, we have entirely diveſted our obſervations of the myſterious garb, in which ſuch knowledge is uſually conveyed to the world.

VIEW

OF THE

SCIENCE OF LIFE.

CHAPTER I.

FUNDAMENTAL PROPOSITIONS.

I. ALL living bodies poſſeſs a certain property, capable of being acted upon by external powers, ſo as to produce the phœnomena of life.

THIS property is denominated EXCITABILITY.*

II. THE external powers are all ſuch objects as, applied to the whole, or a part of any living body, are capable of acting upon the excitability.

THEY are denominated STIMULI, or EXCITING POWERS.

III. UPON the application of the exciting powers in a due, deficient, or exceſſive degree, depend the different ſtates of the excitability.

* Some recent modifiers of this doctrine, are of opinion, that the exciting powers act upon the muſcular fibre only; and therefore uſe the term IRRITABILITY. But as the powers which produce, as well as thoſe which remove diſeaſe, evidently affect the whole body, we think it ſafer to retain the more comprehenſive term, adopted by the original author.

IV. Upon the different ſtates of the excitability depend all the phenomena of health, and diſeaſe.

V. There are three ſtates of the excitabilty.

1ſt. The ſtate of ACCUMULATION.—When a portion of the uſual ſtimuli is withheld, the excitability accumulates; and the body becomes ſuſceptible of impreſſion, in the direct ratio of the ſubduction.

This ſtate conſtitutes diſeaſes of ACCUMULATION, or of DIRECT DEBILITY.

2dly. The MIDDLE ſtate. When the excitability is ſuch, that the application of the accuſtomed degree of exciting powers, produces TONE, or HEALTH.

3dly. The ſtate of EXHAUSTION. When the application of ſtimuli, has been greater than that which produces healthy action, the excitability is exhauſted; and the body becomes leſs ſuſceptible of impreſſion, in the direct ratio of the exceſs.

This ſtate conſtitutes diſeaſes of EXHAUSTION or of INDIRECT DEBILITY.

VI. The ſtates of accumulation, and exhauſtion of the excitability, in their different degrees, conſtitute all the diſeaſes, to which living bodies are ſubject.

VII. Diseases differ from each other, only in the degree of accumulation, or exhauſtion of the excitability in the whole, or parts of the body.

VIII. CONSEQUENTLY, as two degrees of the ſame ſtate, or two different ſtates of the excitability, cannot take place at the ſame time, in the whole, or any particular part of the body, two diſeaſes cannot poſſibly co-exiſt, in the whole, or a particular part.

IX. THE cure of all diſeaſes depend upon an application of ſtimuli, in a degree proportionate to the accumulation, or exhauſtion of the excitability.

X. THE degree of power, with which the functions of life are performed, is expreſſed by the term EXCITEMENT. Thus, there is a healthy excitement, when the functions of life are juſtly performed. But in proportion as a deviation from health takes place either in direct or indirect debility, ſo the functions of life are performed with leſs power, or the excitement is diminiſhed.

CHAPTER II.

OF STIMULI, OR THE EXCITING POWERS.

XI. ALL objects in nature, capable of producing an effect upon living bodies, are ſtimulant, (11.)

XII. STIMULI, may be divided into ordinary, and extraordinary.

1ſt. ORDINARY ſtimuli, are all ſuch powers as are uſually applied to living bodies, in a ſtate of health.

2dly. EXTRAORDINARY ſtimuli, are ſuch as are occaſionally applied to living bodies, as noxious, or may be uſed, as curative powers. Of this deſcription are all the active ſubſtances that are or may be employed as medicines, whether animal, vegetable, or mineral.

SUBSTANCES uſually called POISONS, as their deleterious operation depends wholly upon their ſuperior degree of ſtimulant power, ought not to be diſtinctly conſidered. Any ſtimulant, when exhibited in ſufficient quantity to exhauſt the excitability, acts as a poiſon.

CONTAGION has been enumerated as a cauſe of peſtilential diſeaſes. But as the exiſtence of ſuch a power is by no means proved, it ought not to be admitted in philoſophical diſquiſitions. The grounds of diſſent, from an opinion ſo univerſally received, will be fully explained in another place.

CHAPTER III.

APPLICATION OF STIMULI, OR THE EXCITING POWERS, FOR THE CURE OF DISEASES.

1. *Diſeaſes of direct Debility, or of Accumulation.*

XIII. As the body becomes ſuſceptible of impreſſion, in the direct ratio of ſubduction of ſtim-

uli (v. 1.) it follows that the force of ſtimulus to be applied, in the cure of diſeaſes, of this ſtate, ſhould be inverſely as the acccumulation of the excitability. Thus in the caſe of perſons who have been expoſed to great degrees of cold, heat ſhould be applied, firſt in a degree not much greater than the loweſt temperature, to which the perſon has been expoſed, and gradually increaſed to the uſual ſtandard. To frozen limbs, the firſt application ſhould be ſnow, then cold water, afterwards water leſs cold, and ſo on, through the various degrees, until motion and ſenſation are fully reſtored. Whereas, by the immediate application of the accuſtomed degree of heat, death would be produced in the whole, or thoſe parts of the body, which had been expoſed.—To perſons who may have remained long without food, nouriſhment ſhould be exhibited in the ſame gradual manner. The quantity uſually taken at a meal would, in ſuch a caſe, inſtantly extinguiſh life,—a fact of which there are many inſtances upon record. The eyes of perſons, who have been long kept in darkneſs, become exceedingly ſenſible to the ſmalleſt degree of light. Thoſe unfortunate beings, whom the miſtaken and perverſe policy of man has doomed to long confinement in dungeons, become, in the courſe of time, capable of diſtinguiſhing all the corners of their gloomy abode ; where, upon their firſt entrance, they could diſtinguiſh nothing. The impreſſion of the full glare of a meridian light, upon organs in ſuch a ſtate of ſuſceptibility, would occaſion inſtant and irrecoverable blindneſs. A perſon, ſuddenly awoke in the night, can ſcarcely bear even the ſmall degree of light, emitted from a common candle. It is only by the gradual approach of day, that the eye is enabled to bear the full force of the mid-day ſun.

Scurvy ſeems to be a diſeaſe of direct debility, occaſioned by the abſence of ſome of the uſual exciting powers, particularly nutritive food, heat and the mental ſtimuli. Theſe powers muſt be gradually applied, in order to re-produce health. Upon this principle it is, that vegetables and vegetable acids, as being leſs ſtimulant than freſh animal food, are found ſo uſeful in the cure of ſcurvy. An immediate indulgence in the latter, after a long abſtinence, would produce dangerous conſequences. In advanced ſtages of this diſeaſe, a very ſmall quantity of ſtimulus, ſuch as a glaſs of ardent ſpirits, or a ſtrong mental impulſe, has been frequently known to extinguiſh life. That diminution of heat has a ſhare in the production of ſcurvy, is evident from its more frequent occurrence in cold, than in hot climates. And that the abſence of the mental ſtimuli, is often a ſource of this diſeaſe, is obvious from this,—that every circumſtance that can occur, during a long voyage, calculated to rouſe the mind to moderate exertion, will produce an alleviation of the ſymptons; —the ſight of an enemy—the ſight of land—approach to the deſtined port—the anticipation of the pleaſures of the ſhore, &c. This is farther corroborated by the frequency of ſcurvy among the enſlaved Africans, in their paſſage to the Weſt-Indies, where all the mental ſtimuli are as completely abſtracted, as can be ſuppoſed to happen in almoſt any poſſible ſituation. The diſeaſe in this caſe affects the men, more than the women and children. The reaſon is evident. With men, the tranſition from liberty to ſlavery, is greater than with women and children, accuſtomed, in their moſt free ſtate, to look up to them as their ſuperiors. The minds of the latter too, from being leſs exerciſed, are the leſs capable of reflec-

tion, and become more eaſily reconciled to their new ſituation; which is alſo rendered leſs irkſome, by the indulgence uſually granted to them even on board of ſhips, employed in the vile traffic of ſlaves.

THE abſence of thoſe objects, which were wont to excite pleaſurable ſenſation in the mind, produce diſeaſes of this ſtate.—Such is the deſpondence of a lover, in the abſence of the object beloved: and that melancholy, with which ſome perſons are affected, when abſent from their native country.

XIV. As the ſituations, in which the ordinary ſtimuli can be with-held, in any conſiderable degree, are rare, the diſeaſes of this ſtate are conſequently few in number; and ſeldom become objects of medical treatment.

XV. IN all of them, the cure conſiſts in a gradual re-application of thoſe exciting powers, the abſtraction of which occaſioned the diſeaſe; or, in ſituations where that is impracticable, by a ſimilar application of other powers equivalent in force.

2. *Diſeaſes of indirect Debility, or of Exhauſtion.*

XVI. As the body becomes leſs ſuſceptible of impreſſion, in the direct ratio of the exceſſive application of ſtimuli (v. iii), it follows that the force of ſtimulus to be applied, in the cure of diſeaſes of this ſtate, ſhould be directly as the exhauſtion of the excitability.

XVII. As all diſeaſes ariſe, either from accumulation or exhauſtion of the excitability, (vi.) and as the diſeaſes of accumulation have been ſhewn to be extremely few (xiv), diſeaſes of indirect will probably be to thoſe of direct debility, in ſome ſuch proportion, as nine hundred and ninety-nine to one. The diſeaſes of warm climates may be conſidered, without exception, as diſeaſes of exhauſtion or of indirect debility.

XVIII. As the higheſt excitement is the greateſt degree of health, it is evident that, in diſeaſe, health is to be reproduced, by the application of ſuch a degree of ſtimulant power, as is calculated to ſupport the higheſt ſtate of excitement, of which the body, at the time, is capable. Let the middle ſtate of the excitability for inſtance, be repreſented by 20, and the appropriate degree of ſtimulus, producing healthy excitement, by 20 alſo (vide Table); let the diminiſhing or increaſing ſum of ſtimulus, in proportion to the accumulation or exhauſtion of the excitability, be repreſented by numbers, as in the annexed table. If the excitability is exhauſted to 10, the ſum of ſtimulus to be applied, in order to produce the greateſt excitement, which the ſtate of the body will allow, will be as 30. Every degree of ſtimulus, beyond that, will exhauſt the body ſtill farther, and every degree, below it, will retard the cure. Thus 35 degrees of ſtimulus, will be too much, 25 too little.

XIX. As the production of the healthy ſtate is always gradual and progreſſive, and is effected by the powers of life; it follows that, in proportion to the degree, in which theſe powers can be maintained, the cure will be accelerated. There is no

other mode of ſupporting them, but by an application of ſtimuli, proportionate to the ſuſceptibility of impreſſion.

XX. As the ſum of the powers, producing diſeaſe, cannot poſſibly be aſcertained, the degree of ſtimulus to be applied, for the reproduction of health, muſt be entirely regulated by obſervation of the effects, ariſing from the application of medicines.

XXI. As the varieties of diſeaſes that occur, from the higheſt degree of accumulation, to the loweſt degree of exhauſtion, of excitability; ſo is the variety, in the degree of ſtimulus, neceſſary to be applied, for the cure.

XXII. This variety is of very great extent. The uſual mode, therefore, of preſcribing certain fixed doſes of medicines, in every diſeaſe, whatever may be the degree of it, is and muſt be nugatory and inefficacious; excepting when theſe doſes happen, by mere chance, to correſpond with the ſtate of excitability.—In aſcertaining theſe degrees, and proportioning the ſtimuli, conſiſt the judgment of the phyſician.

XXIII. If, for example, opium, æther, volatile alkali, the preparations of mercury, wine, bark, &c. exhibited in the uſual doſes, do not produce effects, which indicate an approximation to health,—ſuch as a diminution of frequency,* and an increaſe of ſtrength, in the pulſe, a coolneſs of the ſkin, moiſture of the tongue, refreſhing ſleep, and

* There is ſometimes a peculiar ſlowneſs, which is equally a ſign of debility, with a quickneſs of pulſe. Vide Caſe 8th.

the other familiar ſigns of increaſing excitement, —it is evident that the doſes are inſufficient, and ſhould be increaed, until theſe effects are produced.

XXIV. The doſes ſhould be repeated in ſuch a manner, as to maintain the higheſt degree of excitement, of which the body, at the ſame time is capable. But in proportion as the excitability accumulates, or the body approaches to the ſtate of health, the doſes ſhould be gradually and proportionally diminiſhed, until at length, health being eſtabliſhed, nothing more than the action of the ordinary exciting powers is required.

XXV. All the diſeaſes enumerated by Brown, as diſeaſes of accumulation or direct debility, with perhaps the ſingle exception of ſcurvy, are diſeaſes of exhauſtion. Typhus, Intermittents, Dyſentery, and ſome other diſeaſes, as they appear to be occaſioned by expoſure to cold, and moiſture, a deficiency of nutriment and of other ſtimuli, have been ranked, by him, in the claſs of diſeaſes of accumulation. But as the ſum of the powers, which are concerned in the production of any particular diſeaſe, cannot be aſcertained, the nature of it can only be determined by the effects of the ſtimulant powers, applied for the cure. And, as the cure of theſe diſeaſes depends upon the application of the moſt powerful ſtimuli, it neceſſarily follows that, they are diſeaſes of indirect debility.

This error ſeems to have ariſen from an opinion, that upon the abſtraction of ſtimuli from (or in the words of Brown, the application of direct debilitating powers to) a body in a ſtate of exhauſ-

tion, the irritability would accumulate; or that direct would be superinduced on indirect debility. But this opinion is evidently erroneous. If from a person labouring under plague, malignant fever, or gangrenous sore throat, all the usual remedies are with-held, and only cold water given, no accumulation of the excitability will take place; but on the contrary, the exhaustion will rapidly proceed, to the extinction of life. If a person, previously exhausted by exposure to excessive heat, drinks largely of, or plunges himself into cold water, the exhaustion will not be removed; but on the contrary, those greater degrees of it produced, constituting Tetanus, Spasms of the stomach, &c. And that these are all diseases of indirect debility, the mode of cure, which consists in the application of a very high degree of stimulant power, is a sufficient proof. Gout is a familiar instance in point. The state of body liable to this disease, is produced by a long continued application of food and drink, stimulant in too high a degree. Let a gouty person be exposed to cold and moisture, and a paroxism will readily be produced. Let him suddenly refrain from his usual quantity of food and drink, his stomach or head will be affected; and the most powerful stimuli, as Æther, Brandy, &c. will be requisite to relieve him.

XXVI. Hence it follows that, in diseases of exhaustion, the irritability does not accumulate upon the abstraction of stimuli; but on the contrary, the state of exhaustion is thereby, increased.

XXVII. It follows also that, in the production of Typhus, Intermittents, Dysentery, and such other diseases as have appeared to arise from exposure to cold, moisture, &c. and have there-

fore been ranked by Brown, among the diſeaſes of direct debility, the body muſt have previouſly been in a ſtate exhauſtion. By a ſubduction of exciting powers, from a body in ſuch a ſtate, the previous degree of exhauſtion muſt be increaſed, and the diſeaſes of that ſtate conſequently induced.

XXVIII. Most of the diſeaſes of exhauſtion appear to be produced in this manner.

CHAPTER IV.

OF DISEASES DENOMINATED BY BROWN, DISEASES OF EXCESSIVE EXCITEMENT.*

XXIX. As there are three ſtates of the excitability, (v. 1, 2, 3,) ſo there are three correſponding ſtates of excitement.

1ſt. The ſtate of diminiſhed excitement, from a *deficient* application of ſtimuli, correſponding with the ſtate of accumulation, or direct debility.

2dly. The ſtate of high excitement, from a *due* application of ſtimuli, correſponding with the middle ſtate of the excitability or health.

* Vide Lynch's Table, prefixed to Beddoes' edition of Brown's Elements of Medicine.

3dly. The ſtate of diminiſhed excitement, from an *exceſſive* application of ſtimuli, coreſponding with the ſtate of exhauſtion, or indirect debility.

XXX. Although the ſtimulant powers may be applied, in an exceſſive degree, to the middle or healthy ſtate of the excitability, it is evident that excitement never can be exceſſive; for every degree of ſtimulant power, greater than is neceſſary to produce health, muſt occaſion a degree of exhauſtion proportionate to the exceſs, (v. 3); and every degree of ſtimulant power, leſs than is neceſſary to produce health, muſt occaſion a degree of accumulation, proportionte to the deficiency. (v. 1.)

XXXI. There are, therefore, no diſeaſes of exceſſive excitement. From whence it follows thoſe, which have been ſo denominated by Brown, muſt be diſeaſes, either of direct, or indirect debility. (vi.)

XXXII. That they are all diſeaſes of indirect debility, ſeldom conſtituting a very high degree of exhauſtion, is proved, both by the powers that are known to induce them, and the remedies that are found moſt ſucceſsful in their cure.

Catarrh, pneumonia, acute rheumatiſm, and other diſeaſes of this claſs, are occaſioned by the application of a conſiderable degree of heat, after the body has been previouſly expoſed to cold;—or *vice verſa*. The temperature of warm rooms is, in general, greater than is ſufficient to ſupport healthy excitement. If the body therefore has been previouſly expoſed to a conſiderable degree

of cold, the irritability muſt be accumulated (v. 1); and the application of a high degree of heat, to a body in that ſtate muſt inevitably produce exhauſtion.

If, on the contrary, a perſon has been previouſly expoſed to a degree of heat, beyond what is neceſſary to ſupport healthy excitement and cold be ſuddenly applied, the ſame effects will be produced (xxv.)—In moſt of theſe diſeaſes, a local affection takes place, which evidently ariſes, from ſome parts being more expoſed to the exciting powers, than other parts of the body;—as the mucous membrane of the noſe and fauces, in catarrh; the bronchiæ and lungs, in pneumonia; and the extremities, in rheumatiſm. The mode in which the cure of theſe diſeaſes is effected, viz. by warmth, ſmall quantities of opium, wine, &c. and the application of fomentations, rubefacients, and bliſters to the local affection, is a proof that they are diſeaſes of indirect debility.

The langour, inability to motion, want of appetite, nauſea, coſtiveneſs, &c. which occur in theſe diſeaſes, are evidently incompatible with ſuch a ſtate, as that of exceſſive excitement. Could ſuch a ſtate poſſibly exiſt, the functions of the body would be invigorated, in the exact degree of the exceſs.

In convaleſcence from theſe diſeaſes, it is well known, that a greater degree of nutritious food, wine, and other ſtimuli, are neceſſary, than in a ſtate of health. But if they depended upon a ſtate of exceſſive excitement, the cure could not otherwiſe be effected, than by perſevering in an abſtraction of ſtimuli, until health was re-eſtabliſhed. The

exhibition of ſtimulant powers would produce an increaſe of diſeaſe.

SMALL-POX and meazles are of this kind, and to be cured only by ſtimulant powers.

THE mode in which Brown fell into error, in conſidering ſome diſeaſes as depending upon a ſtate of exceſſive excitement, was probably this. Having ſtill, (although contrary to one of his own fundamental principles "that all powers applied to living bodies are ſtimulant,"—in other words "that there is not a ſedative in nature,") retained an idea, that thoſe medicines, called evacuants, are debilitating; and having found that, under a moderate application of them, together with the other parts of the uſual treatment, patients generally recovered from theſe diſeaſes, he was led to conclude, that they depended upon a ſtate of exceſſive excitement.

THE mode of action, however, of thoſe medicines, ſeems to have been univerſally miſunderſtood. As all objects, capable of producing an effect upon living bodies, are ſtimulant (x), thoſe which produce evacuations muſt neceſſarily be included. If a certain quantity of calomel, infuſion of ſenna, ſalts, or any other cathartic medicine, be taken, its immediate effect, like that of opium, camphor, or any other acknowledged ſtimulus, will be an increaſed ſtrength of pulſe, a ſenſe of general invigoration, and all the uſual ſymptoms of increaſed excitement, in proportion to its degree. And this will continue as long as the operation of the medicine. If the doſe is ſufficient to produce a high degree of excitement, a diſ-

charge of natural fœces, when theſe have previouſly been long retained, will be the conſequence. Is there any other mode, by which the inteſtines may be made to perform their functions, and to expel their contents, but by increaſing their excitement? Certainly not—But if a greater quantity be given than is neceſſary, to enable the inteſtines to expel, with facility, their contents, a new diſeaſe is produced;—indirect debility is eſtabliſhed; and a diſcharge of mucus, and ſometimes of blood, accompanied by diſagreeable ſenſations, follows; ſymptoms which are only to be removed by opium, and other ſtimuli.—It is not therefore with an intention of evacuating, that thoſe medicines ſhould be given. In diarrhœas, and incipient dyſentery, where the inteſtines are evidently in a ſtate of indirect debility, calomel, caſtor oil, and all the other medicines called cathartics, inſtead of increaſing, invariably diminiſh the number of evacuations; and, by a judicious repetition of the doſes, cure the diſeaſe. Thoſe medicines, therefore, do not effect cure, by their EVACUANT, but by their STIMULANT POWERS.

As opium, æther, volatile alkali, wine, &c. when given in an improper manner, diminiſh; ſo the medicines, uſually denominated evacuants, when given in a proper manner increaſe the excitement.

CHAPTER V.

LOCAL DISEASES.

XXXIII. THE principles laid down in the preceding pages, reſpecting diſeaſes, which affect

the whole body, equally apply to thoſe, which effect only a part.

XXXIV. As diſeaſes, which affect the whole of the body, depend upon, either accumulation or exhauſtion of the excitability (vi.) ; the ſame law muſt apply, with equal force, to any of its parts, ſeparately conſidered.

XXXV. If that propoſition (vi.) be true (as it undoubtedly is) it follows, that local diſeaſes never depend upon a ſtate of exceſſive excitement. Inflammation, therefore, a local diſeaſe of the moſt frequent occurrence, does not, as has been generally ſuppoſed, depend on ſuch a ſtate ; but, like the diſeaſes of the whole body, which have been denominated by Brown, diſeaſes of exceſſive excitement, and by others inflammatory, is, on the contrary a diſeaſe of diminiſhed excitement, from indirect debility ; excepting in the ſingle caſe of inflammation, produced by the expoſure of any particular part of the body to a high degree of cold. As this propoſition is of conſiderable importance, it may be neceſſary to enlarge upon it. The ſymptoms of local inflammation are heat, pain, redneſs, ſwelling ; and, in ſecreting ſurfaces, an increaſed ſecretion. It is evident that, in inflammation, an enlargement of the veſſels takes place without a proportionate degree of contraction ; and that an increaſed quantity of blood flows into them.—As the effect of ſtimuli, upon the muſcular fibre, is to produce contraction ; and as the blood is the appropriate ſtimulus of the arteries ; it is evident that, if theſe were diſeaſes of exceſſive excitement, an increaſed contraction of the veſſels, or a diminution of their diameters, in

proportion to the increaſed quantity of the blood, would take place. If the vigour of a muſcle is aſcertained, by the force of its contraction, it is clear that every increaſe of vigour ſhould be attended with an increaſed force of contraction. If local inflammation, therefore, was a diſeaſe of exceſſive excitement, there would be a diminution, inſtead of an increaſe, of the quantity of blood, in the veſſels of the part. But that there is actually an encreaſed quantity of blood, in the veſſels of the parts inflamed, is evident in opthalmia, and thoſe inflammations, which are produced, in the courſe of experiments, upon the tranſparent membranes of animals. The ſame idea too is farther confirmed, by the mode of cure, which is univerſally adopted, and found ſucceſsful, in thoſe diſeaſes. The application of bliſters, and inhalation of warm ſteam, in pneumonia, catarrh, and inflammatory ſore throat; of vinegar, and ardent ſpirits, in burns, and ſcalds; warm fermentations, and poultices, in plegmon; ſolution of volatile alkali, tincture of cantharides, and the different preparations of camphor, in the inflammation of the joints, in acute rheumatiſm; tincture of opium, and ſolutions of corroſive ſublimate in opthalmia;—are all ſo many proofs of the truth of this propoſition.

XXXVI. In catarrh, pneumonia, acute rheumatiſm, phrenitis, and thoſe other diſeaſes of indirect debility, which have been called diſeaſes of exceſſive excitement, the local affection, which ariſes from the parts being more expoſed to the action of the exciting powers, differs from the general, only in being greater in degree.

XXXVII. In local, therefore, as well as general diſeaſe, the cauſes which produce, and the

powers which cure them, tend equally to prove, that a ſtate of exceſſive excitement cannot poſſibly take place, either in the whole, or any part of the body; and that the diſeaſes uſually conſidered as dependent upon ſuch a ſtate, are almoſt, without exception, diſeaſes of indirect debility.

XXXVIII. LOCAL diſeaſes, like thoſe of the whole body, are to be cured by an application of ſtimulant powers, in a degree proportioned to the ſtate of excitability.

TABLE

OF PROPORTIONS TO BE OBSERVED IN THE APPLICATION OF *STIMULI* TO THE *EXCITABILITY*.

	40 or Death		
	39	1	
	38	2	
	37	3	
	36	4	
	35	5	
Diſeaſes of accumulation in their various degrees.	34	6	Degrees of ſtimulus to be applied, to produce the greateſt poſſible excitement.
	33	7	
	32	8	
	31	9	
	30	10	
	29	11	
	28	12	
	27	13	
	26	14	
	25	15	
Small degrees of accumulation, not conſtituting what is commonly called diſeaſe.	24	16	Appropriate degrees of ſtimulus.
	23	17	
	22	18	
	21	19	
Middle ſtate of the excitability.	20	20	Appropriate degrees of ſtimulus, producing healthy excitement.
Small degrees of exhauſtion, not conſtituting what is commonly called diſeaſe.	19	21	Appropriate degrees of ſtimulus.
	18	22	
	17	23	
	16	24	
	15	25	
	14	26	
	13	27	
	12	28	
	11	29	
	10	30	
	9	31	Degrees of ſtimulus to be applied, to produce the greateſt poſſible excitement.
Diſeaſes of exhauſtion, in their various degrees.	8	32	
	7	33	
	6	34	
	5	35	
	4	36	
	3	37	
	2	38	
	1	39	
	0 or Death.		

☞ EXPLANATION *of the* TABLE.

THIS Table is meant merely to convey a general idea of the manner, in which ſtimuli ſhould be increaſed, or diminiſhed, in proportion to the exhauſtion, or accumulation of the excitability. It is not ſuppoſed, that the degree of the excitability, or the proportion of ſtimulus repreſented by the figures in the table, can be aſcertained in any other manner, than by obſervation of the effects produced by their application. The range of figures, is by no means ſufficient to expreſs the various degrees of accumulation and exhauſtion of the excitability, that can take place, between the middle ſtate and death. It will however, be ſufficient to give a general idea of the mode of cure, deducible from the principles laid down in the preceding pages.

CASES,

By Dr. YATES.

CASE I.

FRANCIS LOTE, aged 35, was admitted into the General Hoſpital, at Calcutta, on the 1ſt of May, 1796.—At that time, he complained of general pains over his body, with all thoſe ſymptoms which indicate an exhauſted conſtitution. On the 15th of May, he came under my care. At that time I found his mouth ſore, from the uſe of Mercury; and he was much purged and griped. On the 3d of June, when I diſcontinued attending him, his complaints were conſiderably relieved, by the uſe of Opium. On the 21ſt of Auguſt, he again came under my care, in a ſtate of extreme debility, with exceſſive purging and bloody ſtools. During the whole of this time, he had remained in the Hoſpital; but, from neceſſary arrangements, had fallen during intervals, under the care of other gentlemen. During the laſt of theſe intervals he was ſo extremely weak that, in the act of vomiting, the right clavicle was fractured, which occaſioned much pain. On that and the two ſucceſſive days, I gave him eighty drops of Tincture of Opium, morning, and evening. On the 24th, in the morning, as no effect ſeemed to

be produced by the medicine, it was ordered to be given three times a day. At one o'clock P. M. the ſame day, I was called to him; and found him complaining of violent pain in the bowels, with inceſſant purging. He had taken the 2d draught about an hour before. The draught was ordered to be immediately repeated. At 9 P. M. he was not relieved; upon which 150 drops of Tincture of Opium was preſcribed immediately and ordered to be repeated at 12 o'clock. A glyſter, with 200 drops of Tincture of Opium was alſo given. On the 25th he was eaſier. The glyſters, with 200 drops of Tincture of Opium, were continued every three hours, and the draught, with 150 drops, was repeated in the evening. On the 26th, in the morning, he was nearly in the ſame ſtate; the glyſters were continued, and the draughts ordered 3 times in the day. At 9 P. M. I found that the relief from the glyſters, was merely temporary, that he had ſtools every hour, and no inclination to ſleep. Four hundred drops of Tincture of Opium were ordered in glyſter, every two hours, and a fourth draught of 200 drops to be taken at 12 o'clock. On the 26th he was eaſier; he had ſix or ſeven ſtools in the night, with leſs griping. Slept better than he had done, ſince he came to the Hoſpital. His pulſe beat about 90 ſtrokes in the minute; previous to this his pulſe had been very quick and ſmall, but the ſtate of it was not particularly noted; he had 150 drops of Tincture of opium in the morning, and 200 at 12 o'clock. Four hundred drops were ordered in glyſter, every three hours. One P. M. He had 5 ſtools ſince morning; the glyſters were continued; and a draught of 200 drops ordered to be taken at 4 o'clock. At 8 P. M.

he had thirteen ſtools ſince the laſt viſit with a good deal of pain in his bowels. He had not ſlept; was ordered a draught of four hundred drops of Tincture of opium at ten o'clock. Auguſt the 28th, he had ſlept a little the preceding night; bowels were eaſier; pulſe 80; had draughts of 200 drops every two hours, with the glyſters occaſionally. At 2 P. M. his pulſe was 90; he was in other reſpects as before: had taken three draughts. The draughts of 200 drops were repeated every hour. At 9 P. M. his pulſe was ſtill 90; he had doſed much, but had no ſound ſleep; he had taken 4 draughts. A draught of 400 drops was ordered to be given at 12 o'clock. On the 29th, his pulſe was 80, and ſtrong; he had 3 ſtools, with leſs pain; but ſlept little; the draughts of 200 drops were continued every hour.—2. P. M. had inceſſant ſtools ſince morning, with violent pain of the bowels; glyſters of 400 drops were ordered every hour. 8 P. M. had four ſtools ſince 2 o'clock; had taken only one draught; his bowels were eaſier after the glyſters; pulſe 112.—Eight draughts, with 200 drops each, were ordered to be placed at his bed-ſide, of which he was directed to take one every hour, during the night, with glyſters of 500 drops every hour, in the intervals between the draughts.—30th, had ſix ſtools during the night. He was free from pain, and his pulſe 80 and full; the draughts were continued every two hours, and the glyſters occaſionally. 9 o'clock P. M. he had eight or ten ſtools ſince morning, with ſome griping; pulſe 90. The draughts were increaſed to 300 droops every two hours; and the glyſters continued.—31ſt, had paſſed a good night; his pulſe was 90; he had five ſtools; his medicines were continued as the day before. In the evening, he was nearly

the ſame; no alteration was made in his medicines.—September the 1ſt, he had ſix ſtools during the night, with griping: did not ſleep; had no blood in his ſtools; for two days; the draughts of three hundred drops were given every hour, and the glyſters of five hundred drops were continued as before, and repeated according to his own diſcretion, as the teneſmus and griping might indicate.—8 P. M. he was much worſe; had eight ſtools during the day, and no ſleep; his pulſe was 120, and he was ſo extremely weak, that I conſidered him as approaching to diſſolution. Draughts of 500 drops each, were ordered to be given every hour, and the glyſters of 500 drops, to be continued as before.—2d, he had not ſlept, but felt himſelf better; pulſe 104; his medicines were continued, in the ſame manner during the whole of that day. On the 3d, his pulſe was 100; he had ſlept well the preceding night; his medicines were continued. On the 4th, he was muſt better, had doſed much and had only two ſtools; the draughts were directed to be taken occaſionally, as circumſtances might indicate.—This plan was continued until the 14th, at which time his mouth became ſore, and the flow of ſalivia was increaſed, as if he had been uſing mercury. The draughts and glyſters were from that period, ordered to be repeated occaſionally, according to his own diſcretion. On the 22d, the diſcharge of ſaliva continued in the ſame ſtate.—On the 26th, he was better; and his bowels eaſy.—29th, he continued without pain, with two or three ſtools in the day, and his ſtrength increaſing. On the 30th, when I diſcontinued attending him, he had only two ſtools in the day, without pain; and felt a returning appetite. Being a ſenſible and ſteady man, he was, at that time, allowed to proportion the ſtrength and frequency

of the draughts and glyſters according to his own judgment.—During the whole of the time that he was under my care, he had an allowance of wine from one to two or three bottles in the 24 hours, according to exigency.—From his good ſenſe and punctuality, I have a perfect reliance upon his having conformed to my orders, in every particular, as far as it is poſſible for patients, in an hoſpital, to do.

THE treatment of this caſe may give ſome idea of the manner in which ſtimuli ſhould be increaſed, in diſeaſes of great exhauſtion, until the quantity is aſcertained, which is capable of producing the higheſt degree ofexcitement. It will ſhew the very great quantity of the moſt powerful ſtimuli that may be neeeſſary, in ſome diſeaſes of that ſtate in order to effect a cure; and is alſo an examle of the mode in which the doſes ought to be repeated. The ſoreneſs of the mouth, and the increaſed flow of ſaliva, evince that there is a greater ſimilitude between the action of opium & mercury, than has yet been acknowledged. The ſoreneſs of the mouth and ſpitting commenced, after the quantity of opium was diminiſhed. Upon reſuming the draughts, the mouth became leſs ſore, and the flow of ſaliva decreaſed; and upon leaving them off, the ſoreneſs and ſpitting increaſed. This was repeatedly remarked by the patient himſelf. It ſhould be obſerved, in order to prevent a raſh imitation, where the circumſtances are not alike, that the tincture of opium employed; upon this occaſion, was much weaker than what is uſually made in Europe; that a very great degree of exhauſtion had taken place; and that the doſes were gradually increaſed, from eight drops to five hundred.

CASE II.

DE HAES, aged 40, was admitted into the General Hospital, at Calcutta, on the evening of the 26th of August, 1796, with dysentery of eight days standing. He had about 30 stools in the day, containing slime, mixed with blood; and complained of much pain in his bowels. His pulse was 90 in the minute. At 9 o'clock P. M. he was ordered to rub in, half an ounce of Mercurial Ointment, with half a drachm of Calomel, and to take a hundred drops of Tincture of Opium, to be repeated at 12 o'clock--27th, the Ointment was omitted by neglect. He continued in the same state. Half an ounce of Mercurial Ointment, with a drachm of Calomel, was ordered to be rubbed in immediately and, and repeated at 12 o'clock. A hundred drops of Tincture of Opium was desired to be given every two hours.—1 o'clock P. M. he had ten stools since morning, with blood and slime. Had taken only two draughts. The Ointment was ordered to be repeated at 4 o'clock, a glyster with two hundred drops of tincture of opium to be given every two hours, and one bottle of wine to be taken in the course of the evening—8 P. M. pulse 100. He had six stools with less pain. The ointment was rubbed in, and glysters were regularly administered. The ointment was ordered to be again repeated at 9 o'clock, the glysters to be continued, a draught of a hundred and fifty drops of tincture of opium to be given immediately, and to be repeated at 12 o'clock; and a bottle of Madeira to be given during the night.--28th, he had vomited several times during the night, but had only one stool;

pulſe 75. The ointment was ordered to be repeated, the glyſters to be omitted, a draught with one hundred drops of tincture of opium to be given and the wine to be continued.—2 P. M. pulſe 72; vomited twice ſince morning; he had only two ſtools, and the pain was leſs; he ſlept a little. The ointment draught and wine were repeated.—9 P. M. pulſe 84, had vomited twice, and had ſix ſtools. He complained of virtigo; the ointment was repeated, a draught of two hundred drops of tincture of opium was ordered to be given at 12 o'clock, and the wine to be continued.—29th, his pulſe was 80 and full. He had ten ſtools, conſiſting of ſlime and blood. The ointment and wine were continued, and a draught, with 100, drops of tincture of opium, ordered every two hours.—9 P. M. his pulſe was at 80, he had ſix ſtools and frequent vomiting, particularly after taking the Madeira wine. The ointment was repeated, two hundred drops of tincture of opium ordered every two hours, and port wine to be given in lieu of the Madeira.—30th, pulſe 74. He had two ſtools, vomited only once, and ſlept a little. The ointment and wine were repeated, and the draughts with two hundred drops, continued every third hour.—9 P. M. he had ſeveral ſtools in the courſe of the day, with much pain. No return of vomiting; pulſe 100. The ointment was repeated with two drachms of calomel. Draughts of two hundred drops each were ordered every two hours. The port wine became diſagreeable to him, and Madeira was again given—31ſt, pulſe 84; had only two ſtools, and ſlept well. His mouth was a little ſore. The ointment was repeated with one drachm of calomel, and the draughts were continued every third hour.—9 P. M. pulſe 80. he had eight ſtools. His ſkin and tongue were moiſt,

and he began to ſpit a little. He had ſlept ſome during the day. The ointment, draughts, and wine were continued. September, the 1ſt, pulſe 76, he had only one ſtool, ſlept well, and was better in every reſpect. The ointment was repeated, with half a drachm of calomel; and the draughts and wine were continued.—8 P. M. continued better. He had no pains excepting in going to ſtool. The diſcharge of ſaliva was conſiderable. He had ſlept during the day. The ointment was omitted. A draught of two hundred droops of tincture of opium was ordered at 12 o'clock; and the wine was continued.—2d, he had only one ſtool during the night; pulſe 68; the ointment was repeated without the calomel; and the wine continued—8 P. M. he had ſlept during the day, and ſpit conſiderably; the draught of two hundred drops was repeated at 12 o'clock, and the wine continued.—3d, he had ſlept well, and had no ſtool; the ointment was entirely omitted; and the evening draught and wine were continued.—From that period the wine, and draughts occaſionally, were continued until the 30th of September, at which time I left him in an advanced ſtate of convaleſcence.

The great quantity of mercury that was uſed, in this caſe, in conjunction with opium and wine, ſhew what a high degree of ſtimulant power may ſometimes be required to effect a cure, in the ſtate of exhauſtion, which conſtitutes dyſentery.

CASE III.

Jacob Meyer, aged 35, was admitted into the General Hoſpital, at Calcutta, on the 23d

of Auguſt, 1796, with pain of bowels and frequent ſtools. Theſe complaints appeared at firſt to be ſlight; and ſeemed for ſometime, to give way to ordinary doſes of calomel and opium. On the 29th he became worſe; and the ſame treatment was perſevered in, but without effect. On the 1ſt September, calomel and opium, of each two grains, every ſecond hour, and a draught of tincture of opium, twice a day, were preſcribed. The ſymptoms ſtill increaſed in force. On the 3d, he had very frequent ſtools with violent pain in the bowels; and could not bear the leaſt preſſure on the caput coli. His pulſe was 132, thirſt extreme, tongue furred; and he had no ſleep. Half an ounce of mercurial ointment, and one drachm of calomel were rubbed in. The calomel and opium were given every hour. On the 4th his pulſe was 120, he had vomited through the night, tongue brown and furred. The ointment was rubbed in, and to be repeated at 12 o'clock; the pills of calomel and opium were continued.—9 P. M. pulſe 130; he had ſeveral ſtools during the day; tongue dry; he thought that he ſpit more than uſual, but his mouth did not ſeem affected; one ounce of ointment and two drachms calomel were rubbed in, and the pills were contiued.---On the 5th his pulſe was 120, he complained of violent pain in his bowels; the medicines were continued as the day before.---6th, his pulſe was 100; he complained of violent pain on preſſing the arch of the colon, had frequent ſtools with profuſe perſpiration, and appeared to be much alarmed and dejected; no increaſe of the quaintity of ſaliva; the ointment and pills were continued in the ſame manner.---7. P. M. his pulſe was 124; in other reſpects as before; he was immerſed in the warm bath, and afterwards had one ounce of ointment, with half an ounce of calomel

rubbed in; the pills were continued.—7th, pulſe 112; complaints were nearly as the day before. He had an eruption upon the ſkin, ſuch as uſually appears, when ſalivation cannot be produced, after having uſed a large quantity of mercury. The warm bath, with the ointment and calomel, were repeated; and the calomel in the pills was increaſed to four grains—8 P. M. pulſe 128, he had inceſſant ſtools, accompanied by violent pains of the abdomen; his tongue was brown and furred, and ſkin covered with profuſe moiſture. The bath was ordered to be repeated, and an ounce of ointment, with two ounces of calomel, to be rubbed in immediately after the bath. A ſcruple of calomel and ſix grains of opium were ordered to be given every ſecond hour—8th, pulſe 112; he had inceſſant ſtools, with violent pain. He felt eaſe from the warm bath; had taken five doſes of the calomel and opium. The warm bath was ordered to be repeated three times in the day, the ointment and calomel to be again rubbed in, and the pills to be continued.---8 P. M. pulſe 120, there was no increaſe in the quantity of ſaliva from the mercury, he had inceſſant ſtools with blood, and was extremely debilitated. Had taken ſix doſes of the calomel and opium in the courſe of the day. Could not bear the leaſt preſſure upon the colon. The warm bath was ordered to be repeated, and afterwards two ounces of ointment, with four ounces of calomel, to be rubbed in. The calomel and opium to be given every hour---9th, pulſe 112 and ſmall. He had ſtools innumerable. The medicines were continued. 9 P. M. his pulſe was almoſt imperceptible, and extremities cold. The medicines were continued as far as circumſtances would admit. 10th at one o'clock, A. M. he expired.

THE body of this patient was either not opened, or the appearances upon diſſection were neglected to be noted down, at the time; and were conſequently forgotten. But from the analogy between this caſe and all the others, in which the mouth could not be affected, in the uſual manner, by mercury, there can ſcarcely be a doubt that the colon and rectum, if not the whole of the abdominal viſcera were in a ſtate of local diſeaſe. The caſes of diſſection, deſcribed by Mr. Maclean, will explain this point more fully. Of many caſes of dyſentery, and other diſeaſes, that were opened by us, in which ſalivation could not be produced by mercury, there was not one without confirmed local diſeaſe of the viſcera, either of the thorax or abdomen, or both.

THOSE, who may look upon the quantity of medicine here preſcribed as extraordinary, ſhould conſider, that when a patient is evidently incurable, by the common practice, it becomes the duty of the practitioner to depart from it. An oppoſite conduct is dictated, much more by a ſly regard to reputation, than an earneſt and conſcientious deſire of ſaving the lives of patients. Nothing can be more eaſy than to take ſhelter under cuſtomary forms.

CASES,

By Mr. MACLEAN.

CASE IV.

EXTRACTED FROM THE JOURNAL OF THE ENGLISH EAST-INDIA COMPANY'S SHIP NORHUMBERLAND.

MR. ———, Cadet, aged 17,—tall, of a ſlender make, and conſumptive habit; June 13th, 1791, he had, ſince the commencement of the voyage, in April 1791, been much indiſpoſed with ſea-ſickneſs; for the laſt ten days, had feveriſh ſymptoms, and for two days a diarrhœa; his ſkin was hot and dry, tongue foul and parched, pulſe quick and ſmall.—He was ordered to take two table ſpoonsful every hour of a mixture, conſiſting of a hundred drops of tincture of opium, and one pint of water, with an ounce of cinnamon water. ---In the evening, there was a remiſſion of the diarrhœa; but it returned on the 14th, the mixture having been diſcontinued in the night.* One grain of opium was ordered to be taken every hour.—15th, after having taken five pills, his ſkin became moiſt, his pulſe full, he fell aſleep (about

* This ſubduction was improper. In every caſe, as well as in this, it will be found detrimental.

8 o'clock P. M.), and continued free from diarrhœa all night. He had perſpired profuſely, and his tongue and lips were leſs parched;—having complained of thirſt, he was ordered wine and water for drink.---16th, the opium having been injudiciouſly diſcontinued on the 15th, all his ſymptoms returned; his tongue was foul and parched, his pulſe quick and ſmall, his ſkin hot and dry; he was conſiderably purged, and had much thirſt; one grain of opium was ordered to be taken every hour.---On the 17th, the pills having been again imprudently diſcontinued in the night, he appeared rather confuſed, his ſtrength was much exhauſted and his complaints remained the ſame. The pills were ordered to be repeated, and continued through the night.* He was allowed mutton or chicken broth, and ſago alternately, as his fancy directed; and wine and water for drink.---18th, the pills were regularly taken, day and night, excepting in the intervals of ſleep; his pulſe was ſlower and more full: and he was in other reſpects better, but weak, his ſkin was covered with a healthy moiſture; he complained of ſome ſoreneſs of his mouth and throat; he had eat ſome biſcuit, ſoaked in tea, for breakfaſt, and was ordered ſago for dinner and ſupper, the pills were continued.---

* The confuſion of head, and other bad ſymptoms, which frequently follow the exhibition of opium, are, as I have uniformly obſerved, owing to the medicine not being repeated at proper intervals. In every caſe, which requires ſo high a ſtimulant power as that of opium, the exhibition of the doſes ſhould be regulated by principle.—They ought to be repeated in the night as well as in the day.—But the difficulty of doing this, which may ariſe from the ignorance or careleſſneſs of practitioners, the prejudices or obſtinacy of patients, or the negligence of attendants, has often occaſioned bad conſequences, which have been erroneouſly imputed to the opium.

19th, his pulſe was ſtronger, an erruption appeared on his face, ſuch as often happens after taking opium or mercury.—He complained that his mouth was very ſore, and was ordered to have a gargle; the pills, &c. were continued as before.—20th, he was better, the pills, ſago, &c. were regularly taken, and he drank plentifully of wine and water; his thirſt was diminiſhed; the pills and regimen were ordered to be continued as before.---21th, he was ſtronger, and declared himſelf in every reſpect better; the only complaints that remained were a ſoreneſs of the mouth and fauces, and ſome ſwelling of the face; the pills, &c. were continued.---22d, ſoreneſs of the mouth and throat were troubleſome; he ſpit more freely than uſual, the increaſed flow of ſaliva ſomewhat reſembling that which takes place after the uſe of mercury.* He appeared in other reſpects ſo much better, that the pills were diſcontinued.† 23d, he had ſlept tolerably; but his ſkin was hot, and he complained of debility. No medicines were preſcribed.---24th, ſlept ill, and was much harraſſed with a cough and ſpitting; his pulſe was quick and irregular, and he was oppreſſed with clammy ſweats, —half a grain of opium was preſcribed every half hour, and bark in wine was given in the intervals. Regimen as before. From that period the 27th, his medicines were punctually adminiſtered; his cough, ſpitting, and clammy ſweats were diminiſh-

* I cannot ſay, at this diſtance of time, whether there was any ulceration of the gums, having omitted to notice it in the Journal.

† This is the third error that was committed in the treatment of this caſe, in ſuddenly withdrawing a ſtimulus, to which the patient had been for ſome time accuſtomed, and before health was completely re-eſtabliſhed.

ed; his pulſe, ſkin, and tongue were nearly in a healthy ſtate; and the diarrhœa entirely ſtopped. ---28th, he was ſtronger, had a good appetite, and could ſit up; his medicines, &c. were continued. After this, it was thought unneceſſary to make daily reports in the Journal. His medicines were continued for ſome days, and gradually left off as he approached the healthy ſtate.

In the above caſe, the medicines were regularly given, either by a friend of the patient's, who took a particular intereſt in his welfare, by Mr. Ridges, then ſurgeon's mate of the Northumberland, or by myſelf.---The relapſes which always took place, upon ſuddenly laying the medicines aſide, or with holding them even for a night, ſhew the neceſſity of repeating the doſes, with the utmoſt regularity and care. The ſoreneſs of the mouth, together with the increaſed flow of ſaliva, after the uſe of opium, was not a peculiar circumſtance. Upon that ſubject, the following remark appears in my Journal;—"In many caſes, in which opium was freely given, for a length of time, a conſiderable increaſe in the flow of ſaliva, was obſerved to take place, and to continue long after the medicine was laid aſide. But in caſes, where a conſiderable ſpitting had before exiſted, opium as well as mercury had the effect of leſſening it." Theſe facts, with the explanation of them, will be conſidered in another place.

CASE V.

EXTRACTTD FROM THE JOURNAL OF THE ENGLISH EAST-INDIA COMPANY'S SHIP NORTHUMBERLAND.

Ensign G——, 36th regiment, a ſtout healthy man, about 25 years of age, went up, in a fit of playfulneſs, to the main-top-maſt-head, on the evening of the 10th of June, 1791. After having remained there a ſhort time, he fell aſleep upon the croſs-trees, and about midnight fell down upon the quarter-deck. In the fall, he firſt ſtruck with his hip, as was ſuppoſed, againſt an iron ſtauncheon in the main-top, which bent; he then came upon the mizen-ſtay, which took him, as far as could be collected from the confuſed intelligence of ſome people upon deck, about the middle of the abdomen, and from the ſtay he fell upon the quarter-deck. He was, as may well be ſuppoſed, entirely inſenſible; much blood was diſcharged from his mouth, noſe, ears, and even from his eyes; in this ſtate he was carried down to his cabin; upon examination, no fracture was found; the whole conſequences of the fall ſeemed to conſiſt of contuſions or concuſſion, the marks of which were very general over his body. His pulſe was ſmall, but regular. There happened to be in the ſhip four profeſſional gentlemen, beſides myſelf. They all ſeemed of opinion, that Mr. G. ſhould immediately loſe blood. Some of them inſiſted upon that with much earneſtneſs; and the by-ſtanders, knowing it to be a common practice, joined in urging a compliance. I replied, that however the common practice might

be, I was convinced of its being entirely wrong; and that I would not, even with the ſanction of a majority, do what I was certain muſt endanger the life of my patient. But that if any of the gentlemen preſent choſe to take charge of Mr. G. they might have an opportunity of bleeding him, with propriety, if convinced in their conſcience that it was right; and I would give them my opinion when aſked. This offer was not accepted. Mr. G. was not bled. In the courſe of two hours from the accident, he became ſenſible; was ſick at ſtomach, and vomited. This, as a ſymptom of concuſſion uſually enumerated, would farther indicate, according to the hypotheſes of the ſchools, and the practice of hoſpitals, copious blood-letting. That, however, did not alter my plan. I was aware indeed that, if the patient died, his death would be attributed to the non-obſervance of cuſtomary forms. But I was alſo perſuaded that, if he lived, after having been copiouſly bled, it would be in ſpite of the blood-letting. He was my friend, as well as my patient; and in defiance of obloquy, I determined to do what appeared to me beſt, in order to ſave his life. Externally the moſt powerful ſtimulating ſubſtances were applied, in concourſe or ſucceſſion. For four days he could not move in bed, without excruciating pain. He had ſmall opiates occaſionally, wine, and nouriſhing food; and once half an ounce of ſal cathartic-us amarus, ſo as to produce one ſtool. Nothing more was done. He had not an unfavorable ſymptom. The pains gradually abated; and on the eighth day, from the fall, he was carried upon deck in a chair.

THAT there was abſolutely a conſiderable degree of concuſſion in this caſe appears, from his

having wholly loſt the ſight of one eye, although, when the marks of contuſion had diſappeared from that ſide of his face, the eye looked almoſt as well as the other. He complained at times of headach, which was always relieved by wrapping up his head in warm cloths.

THE iſſue of this, as well as of every other caſe of contuſion or concuſſion, which I have ſeen treated, either in or out of hoſpitals, convinced me, that blood-letting is not only unneceſſary but pernicious. In private practice, I fear, a mean and criminal compliance with vulgar prejudice, in order to conciliate vulgar favour, too often influences practitioners, whoſe better judgments would lead them to reject intirely ſo deplorable a remedy—of which the uſe is not only contrary to all principle; but which ſo far as I know, cannot adduce a ſingle uncontrovertible fact, in proof of its utility.

CASE VI.

WILLIAM HOLLOWAY, aged 22, was admitted into the General Hoſpital, at Calcutta, on the 3d of September, 1796, with ſymptoms of typhus fever, of ſeveral days ſtanding. At bed time, he took two grains of opium, and ſix grains of calomel.---4th, he had ſlept a little; his tongue was parched and black; pulſe 96, he had two ſtools on the 3d. Six grains of calomel, and ſix grains of powder of jallap, were ordered to be

given every four hours.—5th, in addition to his former ſymptoms, he complained of cough and pain of breaſt. He had only one ſtool, ſince he began to take the powders. The powders were ordered to be repeated, and a draught, with ſixty drops of tincture of opium to be given at bed time. —9 o'clock, P. M. he had not yet taken the draught preſcribed for him in the morning; the pain of his breaſt was more ſevere; he had no ſtool for twenty four hours; was ordered a glyſter with one ounce of caſtor oil, and one ounce of Glauber's ſalts; and afterwards to take the draught.—6th, he had no ſtool from the glyſter. His pulſe was 116; his tongue furred and black, and his mouth exceedingly parched; he was a little confuſed, and had a ſlight degree of ſubſultus tendinum. Two ounces of the common infuſion of ſenna was ordered every hour, and a glyſter, double the ſtrength of the former, every ſecond hour until he ſhould have a ſtool or two.---7 o'clock P. M. he had one copious ſtool, after having taken ſeveral doſes of the infuſion, and two or three glyſters. Four grains of opium and four grains of calomel were ordered to be taken at 8 o'clock, and to be repeated at 12. On the 7th, he conceived himſelf better; pulſe 108; his tongue was ſtill furred and ſkin hot. He was allowed twelve glaſſes of wine in the day. Ten grains of calomel, and fifteen grains of powder of jallap, were preſcribed every four hours.---9 o'clock, P. M. his ſkin was very hot, pulſe only 100; he had taken three of the powders, and had 3 ſtools; he complained that his tongue was ſore. It was ſtill furred and black in the middle. He was ordered a draught, with a hundred drops of tincture of opium, at 8 o'clock, and again at twelve. 8th, his pulſe was 100, and heat of ſkin more moderate;

but his tongue remained foul; he expreſſed a wiſh for porter.* A bottle of porter was allowed him; —and the wine was continued. The powders and draughts were repeated.—9th, he remained nearly in the ſame ſtate; but complained of a ſevere cough. He had two ſtools. All his medicines were continued as the day before.—10th, he had no cough, and reſted well; his pulſe was 112; he had no ſtool; two ounces of infuſion of ſenna were ordered to be taken every hour through the day, and the draughts to be repeated at night.---11th, his pulſe was 116, tongue very foul, and mouth parched; he had ſlept but little; and had no ſtool ſince the 9th.---A glyſter, with two ounces of caſtor oil, and two ounces of Glauber's ſalts, was ordered to be given immediately, and to be repeated according to circumſtances. The powders were given as before.---7 o'clock, P. M. his pulſe was only 100; tongue cleaner, and moiſt.---He had one ſtool after having taken two glyſters. He remarked that he had, for the firſt time, a diſtinct paroxiſm of fever in the afternoon. The draughts were given as uſual.—12th, his pulſe was 92, and his ſkin nearly of a healthy temperature; his tongue remained a little furred; he had no ſtool. The glyſters, powders & draughts, were directed to be given in the ſame manner as the day before.—13th, when I viſited him, he was found aſleep, ſeemed eaſy, and his ſkin cool. The medicines were ordered to be continued.—7 o'clock P. M. his pulſe was 76; ſkin moiſt and cool; he had two ſtools, and was inclined to ſleep. The draughts were continued.—14th, he was not

* The deſire for beer or porter, is a ſymptom that frequently occurs, when the mouth begins to be affected, after having uſed mercury.

ſo well as the day before; his pulſe was 96 in the morning, and 92 in the evening, and his tongue rather foul. The medicines were continued. On the 15th, his ſkin, tongue, and pulſe, approached nearly to the healthy ſtandard. He expreſſed a deſire to eat, and was ordered to have chicken broth. The powders and draughts were continued. On the 16th, he had no feveriſh ſymptom, his tongue was ſore at the edges, and there was an increaſed flow of ſaliva. The powders were omitted, and the draughts continued. From that period, he was convaleſcent, and only took one draught occaſionally at night. On the 23d, he was free from complaint, and diſcharged from the Hoſpital.—During the whole of the time, he was allowed wine and porter, as at firſt preſcribed.

THIS caſe is not given as an uncommon one, either in reſpect to the violence of the diſeaſe, or the quantity of medicines that were preſcribed. The hiſtory of it ſhews, that the ſum of ſtimulant power firſt applied, was inadequate to effect a cure, even in a caſe of ſlight diſeaſe; for the ſymptoms by no means approach to the ſeverity of typhus gravior. In every fever, whatever be its noſological deſcription, the ſame plan would have been purſued, increaſing or diminiſhing the force of the exciting powers, in proportion to the degree of indirect debility. If ſuch a quantity, as was uſed here, be neceſſary for the cure of mild typhus, what powerful ſtimuli muſt often be required in typhus gravior, dyſentery, or plague?

THE intervals, I think, at which the medicines were repeated, are too long. The duration of the action of each doſe of mercury or jallap is not, perhaps near ſo much as four hours--probably not

more than one. But whatever it be, ſuch is the period exactly, at which doſes ought to be repeated.

In this, as well as in many caſes, both of dyſentery and fever, I have given caſtor oil, jallap, and other cathartics, with a view ſimply to increaſe the excitement. In ſo far as they effect that, and thereby invigorate the functions of life, they are proportionally as uſeful as opium, æther, mercury, brandy, wine, or bark. But the purging I conceive to be proportionally as injurious a conſequence, and as much a mark of indirect debility, as the headach, ſickneſs, and vomiting, which follow an exceſſive or irregular uſe of theſe ſubſtances. This ſubject is conſidered at greater length elſewhere.

CASE VII.

John Brown, aged 28, was admitted into the General Hoſpital, at Calcutta, on the 10th of July, 1796, with typhus fever—He had beſides a ſore leg, and chancres. His fever, although apparently ſlight, was very obſtinate. In the courſe of two months, he was ſeveral times almoſt cured, by ſmall and frequently repeated quantities of opium, mercury, wine, and bark, varied according to circumſtances. But, ſeemingly in conſequence of internal local affection, he as often relapſed, without any apparent cauſe. His fever, from continued became remittent, and from remittent in-

termittent. On the 24th of September, ſuſpecting the exiſtence of local diſeaſe, I repreſented to him the neceſſity of undergoing ſuch a courſe of mercury as to affect his mouth, to which he had hitherto expreſſed an inſuperable averſion. He had, for ſome days previouſly, taken calomel in ſmall doſes; and had latterly two emetics, at his own requeſt.* On that day, he was ordered to take ten grains of calomel, and fifteen grains of jallap every four hours.—25th, he had taken three powders in the courſe of the day, and was exceſſively purged and griped through the night.† He had no fever. Two grains of opium, and four grains

* That tartar emetic is a ſtimulant of a very high power is evident from the ſmall quantity of it, which produces the ſtate of indirect debility, that occaſions vomiting. It ſhould be given in ſuch a manner, as to increaſe and to ſupport the excitement. But this will be found difficult, as the duration of its action ſeems to be even ſhorter than that of opium. If its action does not continue more than a quarter of an hour, might it not be repeated at ſuch ſhort intervals, and the doſes ſo gradually reduced, as not to allow the eſtabliſhment of indirect debility? If, when given at ſuch a random rate, as to produce vomiting, and the moſt diſagreeable ſenſations that can be imagined, medicines ſometimes produce good effects, how much more uſeful muſt they be, when given according to juſt principles? The predjudices of patients may ſometimes be turned to their advantage, by judiciouſly alternating ſtimuli, ſo as to humour their whims. The medical prejudices of the vulgar, are generally dictated by thoſe of phyſicians. At preſent they are as unreaſonably in favour of tartar emetic, as they are againſt opium.

† This is one of many facts that prove purging to be the effect of a ſtate of indirect debility, occaſioned by the improper ſubduction of ſtimulant powers. Had the powders been regularly repeated in the night, the purging and griping would not have taken place. This I have obſerved ſo repeatedly with reſpect to calomel, that I have no heſitation in aſſerting it to be an undoubted fact.

of calomel were directed to be taken every three hours, through the day, and four grains of each at bed-time. 26th, the same plan was continued; and he had no return of fever.—27th, he had no fever and his mouth was very sore. The pills were ordered to be given every six hours. 28th, his head, face, tongue and throat, were much swelled; he had a considerable discharge of blood from the mouth and sauces, and some purging. In this case, the medicines were by no means correctively exhibited. But it is probable also, that they were not regularly taken. Salivation, or, in cases of local disease, where salivation cannot be produced, a discharge of blood from the mouth and sauces, does not take place, while the mercury is regularly taken, but when it is either suddenly laid aside, or given at improper intervals.* The following mixture was prescribed—tincture of opium three hundred drops--water one pint—peppermint water and sugar, as much as will make the mixture agreeable—an ounce of it to be taken every hour. The pills were omitted. On the 29th and 30th, he continued the mixture; his mouth was better; he had no fever, and but little purging; and his pulse was 86.—October the 1st, his pulse was 76, and of good strength; his mouth was much better; and he had no return of fever. The tincture of opium was diminished to two hundred drops.—From that period, he recovered in strength and had no return of fever. The mixture was gradually decreased in strength and discontinued. On the 16th of October, he was discharged apparently well.

* Vide the subsequent cases, and the "Treatise on Mercury."

THERE are ſeveral inferences to be drawn from this caſe. The obſtinacy of the fever convinced me, that it depended upon local diſeaſe, and determined me to give mercury in large doſes. The diſcharge of blood from the mouth and fauces, without a previous increaſed flow of ſaliva, was an additional proof of the exiſtence of internal local affection. And, although this patient left the Hoſpital apparently well, I am convinced, from the circumſtances mentioned, as well as from an irregularity of his bowels, that his abdominal viſcera were in a diſeaſed ſtate, and that his exemption from general diſeaſe was merely temporary. From theſe obſervations, I would not be underſtood to infer, that mercury acts as a *ſpecific* in removing local diſeaſe; but that, by ſupporting the excitement of the whole body, it invigorates each particular part, and thus occaſions, to a certain extent, the regeneration of thoſe organs, which may have been injured by diſeaſe.

THIS is not the only inſtance, in which the good effects of opium have been experienced, where an exceſſive ſalivation, or a diſcharge of blood from the fauces, after the uſe of mercury, had taken place. As theſe ſymptoms happen from too ſudden a ſubduction, or an irregular repetition of the mercury; ſo they may be either obviated or removed, by a proper application of the ſame power. But as the prejudices of patients will ſeldom admit of a continuance of the medicine, in theſe caſes, it is abſolutely neceſſary to ſubſtitute ſome other ſtimulant power, equivalent in force. Thoſe which I have found to anſwer beſt, are opium, bliſters, and the warm bath. Other ſtimuli, juſtly proportioned might, no douht anſwer equal-

ly well. But from the endleſs hypotheſes of the art, no ſucceſsful attempts have yet been made to aſcertain their relative powers. This is a diſcovery, which, however diſtant, I am yet ſanguine enough to expect. For, in the medical as in the moral world, attachment to principles inſtead of perſons, may be expected to increaſe, with the progreſs of knowledge.

CASE VIII.

HENRY DALLAWAL, aged 26, was admitted into the General Hoſpital, on the evening of the 22d of October, 1796. He had, for a fortnight before, complained of headach, pain of loins, hoarſeneſs, and cough, &c. pulſe 58. He was ordered to take two grains of opium and four grains of calomel, at 9 o'clock, P. M. and again at twelve. On the 23d, he was ſomewhat eaſier. Pulſe as before. He had no ſtool. One grain of opium and three grains of calomel, were given every three hours; and ſeveral glyſters of caſtor oil. 9 o'clock P. M. he had one ſtool. The opium and calomel were deſired to be repeated as the night before. Pulſe 64.---24th, he thought himſelf better; but his cough continued ſevere. Pulſe 56. He was deſired to take four grains of calomel every three hours.---9 o'clock P. M. he was not ſenſible that

the pills produced any effect. Four grains of opium and ten grains of calomel were ordered to be taken immediately, and repeated at 12 o'clock.---25th, he was seized in the morning with violent spasms. Pulse 64. He was put into the warm bath, which was ordered to be repeated according to circumstances. Afterwards, two grains of opium and four grains of calomel were directed to be taken every two hours, day and night.—26th, he was much better and had no cough. The pills were continued.—27th, he thought himself better. His pulse beat only 44 strokes in the minute. The pills were repeated every three hours. ---28th, his mouth was gently affected. Two grains of opium and two grains of calomel were given every three hours.—29th, he was in every respect better, had some slight spitting, and felt a returning appetite. Pulse 68. One grain of opium and one grain of calomel were given every four hours.—On the 30th, he was discharged well.

An uncommonly flushed countenance, and what is called a plethoric habit, together with an unusual slowness of pulse, hoarseness, cough, and pains, would have indicated, according to the common practice, blood-letting and other evacuations, in this case. The powers, however, by which a cure was effected, proved, that these symptoms depended upon a state of indirect debility; and that the use of debilitating powers, would have been improper. For the same reason, it may be inferred, that a peculiar slowness, as well as a quickness of the pulse, sometimes takes place in a state of indirect debility. Every departure of the pulse from the healthy standard, whether in quickness or slowness, depends upon debility; as well as every deviation from health, in any of the other functions.

Coſtiveneſs, as well as purging, depends upon debility of the inteſtinal canal. This is ſhewn from patients affected with the ſame diſeaſe having, in ſome caſes a quickneſs, in others, a ſlowneſs of pulſe; in ſome caſes purging, in others coſtiveneſs; and all of them being cured by the ſame means. It is farther corroborated by the proof, that ſuch a ſtate as that of exceſſive excitement, cannot take place. As blood-letting is the abſtraction of a high ſtimulant power, it muſt be ſhewn that diſeaſes of exceſſive excitement exiſt, before it can be admitted as a remedy. Or if it be contended that blood-letting is uſeful in diſeaſes of debility, it muſt be ſhewn that it acts as a ſtimulant power. Mere aſſertions that it has been found uſeful, do not amount to a ſufficient refutation of this reaſoning.

THERE was an error of ſome importance in the treatment of this caſe, which affords the moſt convincing proof of the neceſſity of repeating the doſes of medicines, at certain regular intervals, and by a certain rule.—On the morning of the 25th,—after having taken four grains of opium and ten grains of calomel, at nine and at twelve o'clock, the preceding night, the patient was ſeized with violent griping and ſpaſms. This ſymptom, as I have had frequent opportunities of obſerving, was undoubtedly owing to the doſes not having been repeated at proper intervals. If a doſe of equal ſtrength, or one ſomewhat ſmaller, had been given at three, and another ſtill ſmaller, at ſix o'clock in the morning, the ſtate of indirect debility, conſtituting ſpaſm, would not have taken place. As theſe ſymptoms may be occaſioned, or prevented, at pleaſure, the fact is incontrovertible. In this

caſe, they immediately yielded to the ſtimulant power of the warm bath,—another proof that they aroſe from a ſtate of indirect debility, occaſioned by a deficient frequency or force, in the application of ſtimulant powers. Opium, calomel, camphor, æther, or caſtor oil, given in juſt proportions, would have produced the ſame effect with the warm bath. But external applications may often, with great advantage and conveniency, be alternated, or conjoined, with internal remedies.

CASE IX.

Robert Williamson, aged 25, was admitted into the General Hoſpital, at Calcutta, on the 28th of October, with a quick and ſmall pulſe, laborious breathing, pain of back, loins, &c. His face was tirged, and his eyes red and ſtarting. His tongue was foul and furred. He reported that he was attacked with fever, ſeven or eight days before, which had become more ſevere and continued for the laſt two days. Some medicines had been taken before he came into the Hoſpital.—At 3 o'clock P. M. when I firſt ſaw him, ten grains of calomel were ordered to be taken every three hours. At 10 P. M. his pulſe was 112, and his breathing exceedingly laborious. A ſcruple of calomel was ordered to be given immediately, and to be repeated at one o'clock, A. M. A bliſter was applied to his ſternum. On the 29th of October, his pulſe was 120, with burning heat of ſkin. His tongue felt like a rough board. He had one ſmall ſtool in the morning. Ten grains of calo-

mel were ordered to be repeated every three hours. At 9 o'clock P. M. his pulse was 124. He had one stool* ; his breathing was laborious, his eyes starting, and he seemed in all other respects worse. Three grains of opium and twelve grains of calomel were desired to be given immediately, and repeated at twelve o'clock. October the 30th, he died at 4 o'clock, A. M.

Upon dissection, the thoracic viscera were found adhering to each other, in such a manner as to form but one mass. The lungs adhered to the pleuræ, mediastinum and diaphragm ; the heart to the pericardium ; and the pericardium to all the surrounding parts. The adhesions were remarkably strong as well as general. The lungs were of a darker blue than usual. Upon a general view of the abdominal viscera, they appeared to be sound. The scrotum was gangrenous. In one of the arms, there was a mark of a recent incision made by a lancet.

This was undoubtedly a case of the most violent peripneumony. According to the common practice, the patient would have been repeatedly bled. Would the abstraction of blood have produced a resolution of the adhesions, which were found in the thorax ? The greatest partizan of the practice, I think, would scarcely affirm it. According to the confused notions entertained of peripneumony being a disease of excessive excite-

* In this case the medicine seemed to produce but a very small effect. If to supply the waste of the excitability be the proper function of the lungs, it is evident that, after a certain degree of organic lesion has taken place, it cannot be recruited. But stimuli are not therefore to be withheld. For, by such treatment, the excitability must be still farther exhausted.

ment, it becomes neceſſary, in order to preſerve ſome appearance of conſiſtency, to divide the diſeaſe into different ſtages; and to uſe a different or even an oppoſite plan of treatment, in each. Is it poſſible that any diſeaſe can vary in its progreſs, excepting in degree? And if not, ought the powers applied for the cure to be varied, in the progreſs of any diſeaſe, excepting in their degree of force? Theſe would appear to be the concluſions of reaſon and common ſenſe. But to overturn ſuch ſlimſy arguments, come in medical hypotheſes and ſay "inflammation we *ſuppoſe* ariſes "from an increaſed impetus of the blood in the "part affected, and is *therefore* to be cured by "diminiſhing the quantity of that blood. In pe-"ripneumony, there is an inflammation of the "lungs; and in order to cure the diſeaſe, the im-"petus of the blood in the lungs muſt be leſſen-"ed by blood-letting." To this curious fabric of reaſoning, I will juſt oppoſe a ſingle fact.—There is not an inflammation, with which we are acquainted, that is not to be cured (as far as it is curable) by the application of ſtimulant powers,—as warm fomentations, tincture of opium, tincture of cantharides, camphorated ſpirits, æther, volatile alkali, and mercury. If any perſon ſeriouſly doubts the fact, it will be an eaſy matter to ſubmit it to the teſt of experiment.—And if there be any other reaſon, for perſevering in the practice of blood-letting, than becauſe it is derived from the hypotheſes of the ſchools, and is conformable to cuſtom, let it be produced. That blood-letting had been uſed, in this caſe, previous to the patient's having been ſent into the hoſpital appears probable from the inciſion in the arm:—that he was purged is known. As catharticks, however, produce an increaſed degree of excitement, before

the debilitating operation of purging ſucceeds, their ſtimulant effects will often more than counterbalance the indirectly debilitating effects, which afterwards ariſe. But as blood-letting is a directly debilitating operation,—the abſtraction of an ordinary and powerful ſtimulus,—it muſt always be highly injurious. In diſeaſes of direct debility, as far as they can become ſubjects of medical treatment, it muſt add to the accumulation; in thoſe of indirect debility, it muſt increaſe the exhauſtion (*). It is upon the ſuppoſition alone that ſome diſeaſes depend upon a ſtate of exceſſive excitement, that blood-letting can ever be thought admiſſible. And that ſuch a ſtate does not exiſt has, in my opinion been fully proved. I know it will be urged, by individuals, that they have found blood letting uſeful. But this like many other medical facts, is mere aſſertion, not proof. Whatever has been uſeful in one caſe, muſt be uſeful in every ſimilar caſe of diſeaſe. But it is not ſo with blood letting.—It has not invariably been found uſeful in any one diſeaſe. We may therefore, I think, fairly conclude, that it has never been uſeful in any one caſe of diſeaſe. If it be ſaid that this is reaſoning, and that experience; let me be permitted to aſk whether juſt reaſoning and real experience can ever differ? It is impoſſible. —Whatever is true in theory, muſt be right in practice. To inculcate a contrary opinion is the grand ſhield of empiriciſm. Circumſtances delivered as facts, from the preſumed experience of individuals, ought never to weigh againſt principles which are deduced from numerous and undoubted facts, and which can be put to the teſt of experiment by all mankind.

(*) Vide "View of the Science of Life," Prop. XXVI.

THE quantity of calomel given here was large. But after taking two ſcruples at two doſes, and allowing time for the operation of purging from indirect debility to take place, only one ſcanty ſtool was produced. This ſhews clearly, that, although the quantity was large, in proportion to what is uſually given, it was by no means ſufficiently large in proportion to the exhauſtion of excitability that had taken place; or, in other words, to the violence of the diſeaſe. Although it be extremely doubtful whether the excitability can ever be accumulated to the healthy ſtandard by any degree of ſtimulant power, when ſo many principal organs have become unable to perform their functions; yet it is certain that, in order to give a patient, in ſuch circumſtances, the only chance of cure, the ſtimuli ſhould be increaſed in power, until they produce ſome effect. In this caſe, therefore, the medicines ſhould have been both increaſed in quantity, and more frequently repeated. But as, in every kind of practice, the prejudices of patients, or careleſsneſs of attendants, will frequently render it impoſſible ſtrictly to adhere to the application of principles, we can only make ſuch approach to them, as theſe, and other circumſtances, will permit.

HAD it not been my wiſh to bring the theory and practice of this doctrine to the fulleſt and faireſt proof of diſcuſſion and experiment, this is one of thoſe caſes which I would have ſuppreſſed. It is to be regretted that writers do not oftener think it neceſſary to publiſh their unſucceſsful as well as their ſucceſsful caſes.

CASE X.

ROBERT WOODSIDE, aged 25, was admitted into the General Hoſpital, at Calcutta, on the 24th of October, with a dyſentery of a fortnights ſtanding. He had 10 or 12 ſtools in the day, with blood; and complained much of headach, pain of loins, griping, and teneſmus. He lay eaſieſt on his right ſide. His pulſe was 108: and he had frequently a fluſh in both cheeks. I began by giving him ſmall doſes of calomel, frequently repeated; frictions of mercurial ointment; and draughts of 70 or 80 drops of tincture of opium, repeated according to circumſtances, through the night. In the courſe of a few days, the calomel was increaſed to ſix grains, with two grains of opium, every two hours; an ounce and a half of ointment was rubbed in at four times, in the courſe of the day; and draughts, with two hundred drops of tincture of opium* in each, were given, every ſecond hour, during the night. The calomel was occaſionally alternated with camphor, and the tincture of opium with æther. Bliſters were applied, and glyſters of caſtor oil frequently given. Theſe applications were made in concourſe or ſucceſſion; and increaſed or diminiſhed in ſtrength, according to the judgment formed of the ſtate of the excitement, at the time. For a fortnight he ſeemed to get better; at one time the purging rather decreaſed,

* Some caſes of dyſentery will require much more than this quantity. It is to be recollected however, that the laudanum was weaker, perhaps one third, than what is commonly uſed in Europe.

and he had no blood in his ſtools. But from his mouth not being affected, ſo as to produce an increaſed flow of ſaliva, after having uſed an uncommon quantity of mercury; from frequent ſickneſs and vomiting; his always lying on the right ſide; ſome degree of ſillineſs and anxiety; an occaſional fluſh of the cheeks; and his having no appearance of getting better upon the whole; I concluded, although there was no apparent enlargement, that his liver was diſeaſed.* The medicines, however, were continued, with a view of ſupporting the excitement, with as much equality as poſſible. He continued nearly in the ſame ſtate as at firſt deſcribed, until the 14th of November, when his pulſe (which had varied throughout from 64 to 108, with intermiſſions occaſionally) increaſed in frequency to 120. His tongue became very dry and gloſſy. On the 15th, together with his other ſymptoms, he had a ſevere hiccup, and intermiſſion of the pulſe after every 7th or 8th beat. On the 16th, the hiccup was ſevere and inceſſant; his pulſe 116, and intermittent; he had no power in his extremities—and at ten o'clock P. M. he died.

In tedious illneſs, patients naturally get diſguſted with their medicines in the courſe of ſome weeks, or their attendants become negligent. Although both theſe circumſtances happened, in ſome degree, in this caſe, the directions were upon the whole obſerved with much punctuality. From the beginning a cure was not expected. For in every ſimilar caſe, of between twen-

* By diſeaſe of the liver is meant, that ſtate in which it is incapable of performing its functions, whether it conſiſt in inflammation, ſuppuration, induration, enlargement, &c.

ty and thirty that were opened by myſelf, and ſome by Dr. Yates, the appearances of local diſeaſe were ſo much alike, that I can now almoſt venture to pronounce, from the ſymptoms, in what ſtate the viſcera will be found, upon diſſection. In this caſe, I was ſo certain the liver was diſeaſed, that it was mentioned in the daily report ſome time before his death. Upon diſſection, there were found ſeveral abſceſſes in both lobes of the liver, communicating with each other, and containing, in all, about one pound of matter, of a thick conſiſtence and white colour. On the upper ſurface, there were five or ſix ulcers, communicating with the abſceſſes. The edge of the right lobe, a part of the colon in contact with it, and part of the diaphragm, at its origin from the cartilages of the ninth and tenth ribs, were all ſphacelated. The inteſtines, omentum, &c. were adhering throughout.

Are flushed cheeks a ſymptom common to perſons whoſe viſcera are deceaſed, whether of the thorax or abdomen? I have frequently obſerved it in both.

CASE XI.

Thomas Kellan, aged 28, was admitted into the General Hoſpital, at Calcutta, on the 2d of October, 1796, with dyſentery of five weeks ſtanding, accompanied by pain in the region of the liver. He had the uſual ſymptoms of griping, teneſmus, and a diſcharge of blood; generally lay ei-

ther upon his right ſide, or in a ſitting poſition; in the latter of which he found moſt eaſe. He was frequently ſick, and vomited. His tongue was white and furred; and his pulſe 104. Four grains of calomel, and one grain of opium were given every hour. One ounce of mercurial ointment, and half an ounce of calomel were rubbed in. On the 4th, he was eaſier, and had ſlept well. His tongue and pulſe remained as before. The ointment was ordered to be rubbed in, morning and evening, and the pills to be continued*; he was allowed eight glaſſes of wine in twenty four hours†. —Eight o'clock P. M. he had ſlept much during the day; pulſe 120; he was in other reſpects much as before.—5th, his pulſe was 120, and he complained of weakneſs. He had ſix or ſeven ſtools, without blood; and was much inclined to doſe. He complained of conſiderable pain, and burning ſenſations, in the region of the liver. A bliſter was ordered to be applied; and two grains of opium, with eight grains of calomel, to be given every hour. He was allowed twenty glaſſes of wine in the twenty four hours.—6th, he had taken ten doſes of the opium and calomel. Was much vomited and purged, and had ſome degree of fever during the night‡; but was then better. Pulſe 108. The pain in the region of the liver

* In the commencement of this caſe, two miſtakes were made: one in not giving draughts at night, and the other in not rubbing the ointment at ſhort intervals.

† This quantity was by far too little. In a caſe like this, a wine glaſsful every hour, would not have been too much.

‡ In conſequence of the irregular exhibition of the pills. This frequently happens, when pills are given in the day, and diſcontinued at night; or where draughts are not given at night, in lieu of them.

was ſomewhat relieved. A pill of one grain of opium and four of calomel was ordered to be taken every hour; a draught with one hundred and fifty drops of tincture of opium, to be given at eight o'clock P. M.; and to be repeated at twelve. The ointment was continued.—7th, he ſlept well, and had only two ſtools. Had taken ſeven pills, and the draughts; pulſe 100. The pills, ointment, and draughts, were continued.—8th, he was conſiderably better; had five or ſix ſtools. He had taken eleven pills, and the draughts, the pills, ointment and the draughts reduced to 100 drops, were continued.--9th, he had taken ten pills, and one draught; had ſome ſtools yeſterday, but none laſt night. Pulſe 100; no ſickneſs. The medicines were continued.—10th, having begun to get indifferent about taking his medicines, they were varied, in order to humour him. Inſtead of the pills, a mixture conſiſting of half an ounce of tincture of opium, and one pint of water, was given in divided portions, in the day. This was again alternated with pills. Bliſters were repeatedly applied, and the draughts were continued; but the pain and burning ſenſations over all his abdomen ſickneſs and vomiting; frequency of ſtools with blood; ſmallneſs of the pulſe, &c. ſeemed to be rather increaſing. On the 14th the tincture of opium in the mixture was increaſed to an ounce and a half, to one pound of water, of which he was ordered to take an ounce every half hour; the ointment was omitted, and the draughts continued. On the 15th, he ſaid that he had been eaſier the day before; but having become irregular in taking his draughts, he was frequently purged and griped at night. From that period till the 23d, the opium and calomel, from two to four grains of the one, and from ſix to ten

grains of the other, were alternated with the mixture; the ointment was rubbed occaſionally; and the draughts, with from 60 to 100 drops of tincture of opium were given at night, or 3 or 4 grains of opium, whichever he ſeemed inclined to prefer. From the 23d of October, to the 18th of November, he appeared to be ſo much better, that, although confident of the exiſtence of much internal local diſeaſe, I was not without hopes, that it was of ſuch a degree as to admit of a reproduction of parts. His pulſe varied from 80 to 96. The doſes of medicines were conſiderably diminiſhed. Camphor, four grains every two hours, was alternated occaſionally with the calomel and opium. Glyſters, with one ounce of caſtor oil, were ſometimes given every hour, or every two hours; and two pounds of decoction of bark, with an ounce of powder, was given in the day. The ointment, and calomel pills were gradually diminiſhed, to two drachms of the former, four times in the day; and two grains of the latter, every two hours. His ſickneſs and vomiting ſtill recurred. The burning ſenſations of the abdomen continued. And he was ſenſible of a feveriſh exacerbation every third day.—Nov. 17th, the pills were omitted, and the other medicines continued.—18th, he had not taken any of his medicines the day before. Complained of the offenſive ſmell of his breath. This was evidently occaſioned by leaving off the medicines. Being tired of all thoſe to which he had been accuſtomed, I thought it might be of uſe to try the effects of hepar ſulphuris, to remove the offenſive ſmell of his breath, and preſcribed one drachm three times a day. The other medicines (viz. decoction of bark, glyſters, and draughts) were at the ſame time, deſired to be continued. —20, he had frequent ſickneſs, and vomiting;

much purging, and great thirſt. No appetite; and a ſenſe of burning heat in his ſtomach and inteſtines. Common flowers of ſulphur had been given inſtead of hepar ſulphuris. They were deſired to be omitted. Two pounds of decoction of bark, with half an ounce of æther, was given, in the courſe of the day; and the draughts were repeated.---22d, his ſymptoms continued as before. There was an evident enlargement of the right lobe of the liver; but no perceptible undulation. From that period, he had two pounds of decoction of bark, with two hundred drops of tincture of opium, in the day; the draughts occaſionally at night; calomel, caſtor oil, and other medicines were alſo given, and alternated, ſo as to prevent, as much as poſſible, his being diſguſted with a ſameneſs of treatment. But the ſymptoms were rather increaſing in violence. The purging became more ſevere, with blood in the ſtools; ſickneſs and vomiting more frequent; he complained much of heartburn; and had ſometimes feveriſh paroxyſms, which ſeemed to be of a quartan type. There was from the beginning, a fluſh in both cheeks, like thoſe of a conſumptive perſon. He complained of inſenſibility of the back, and weakneſs of the extremities. From all theſe circumſtances, and from no increaſed flow of ſaliva having been produced by the mercury, I concluded that there was ſuch a degree of local diſeaſe as to render the caſe incurable, by any treatment that was poſſible, in ſuch a ſituation, to be purſued. It was, however, perſiſted in, with as much regularity as was practicable. He continued gradually ſinking, until the 2d of December, when he died.

Upon diſſection, the left lung was found adhering ſtrongly to all the neighbouring parts. Its

ſubſtance was unuſually dry, hard, and yellow; and appeared as if it had not, for ſome time, tranſmitted blood, or performed its proper functions. The liver weighed about five pounds,* was conſiderably indurated, but had undergone no ſuppuration. The other abdominal viſcera were adhering, in ſuch a manner as to form but one maſs; with the exception of the ſpleen, which had a ſound appearance.--- The cœcum, colon, and rectum, were ulcerated throughout their whole extent. The ulcers were, in many places, an inch in diameter; and had penetrated the two inner coats. It is ſomewhat remarkable that, in between thirty and forty caſes of dyſentery which I have ſeen opened, there was not, in a ſingle inſtance, any of the ſcybali mentioned by authors, as a ſymptom of that diſeaſe.

THE uncommon quantity of mercury that was here uſed, without being followed by any affection of the mouth, was a ſufficient proof that there exiſted a leſion of organs, which, if curable, required the application of ſtill higher powers than thoſe that were employed. Even in external local affections, it is now well known, that a cure depends more upon the ſupport of the general excitement, than upon local applications. The cure then, of internal local diſeaſe, were it even poſſible to apply local remedies, muſt ſtill be performed by the application of powers, calculated to ſupport the general excitement.

WE have yet, perhaps, no adequate idea of the degree of power, that may ſometimes be required,

* The average weight of a ſound liver, I believe, may be about three pounds and an half, or perhaps ſomewhat more.

to produce this effect. But it is very certain that while in ſome caſes by far too little, in others by far too much of ſtimulant power is applied. Mercury, for inſtance, in caſes of dyſentery, is generally uſed in too ſmall proportions, while in venereal caſes, it is by much too freely given. Half a grain of calomel, or leſs, given every two or three hours, will in a ſhort time effect a cure in ordinary caſes of chancre, gonorrhœa, or even a certain degree of ſyphilis. In theſe caſes, there is ſeldom any great degree of organic leſion, at leaſt of thoſe organs which are moſt eſſential to life. It is only when ſome of the primary organs are in a ſtate of local diſeaſe, that a great and long continued application, of high ſtimulant powers, becomes neceſſary, in order to reproduce health. Of this, dyſentery is one of the moſt familiar and fatal examples.

The diminution of the medicines that was made at one period, upon the proſpect of the patient being better was injudicious. Although in ſuch a caſe, no plan would probably have ſucceeded, a perſeverance in the regular application of high exciting powers, would have given him one chance of recovery.

The offenſive ſtate of his breath, which he complained on the 18th of November, was evidently occaſioned by the ſubduction of the medicines. This is a ſymptom of indirect debility, as well as ſalivation, purging, ſweat or any other effect of an irregular application, or ſudden ſubduction, of mercury. That theſe effects are ſo frequently produced, by the ordinary mode of exhibiting that medicine, ought not to ſurpriſe us. It is alſo ob-

vious that if, when given at random, this and other medicines of high ſtimulant power ſo frequently produce good effects, their ſalutary effects, when applied according to juſt principles, may be expected to ſurpaſs any thing, of which we can yet form an idea.

CASE XII.

JOHN CLUFF, aged 30, was admitted into the General Hoſpital, at Calcutta, on the 18th of November, 1796, with a dyſentery of ſome days ſtanding. He had inceſſant calls to ſtool, paſſed blood, with ſevere griping, teneſmus, and prolapſus ani. His thirſt was intenſe; and he ſeemed in dreadful agony, from lancinating pains. Six grains of opium, and eight grains of calomel, were ordered to be given every hour; a glyſter, with three ounces of caſtor oil, and three ounces of warm water every hour; and half an ounce of mercurial ointment to be rubbed in, four times in the day. A bottle of Madeira, in two quarts of barley water, was preſcribed for drink. At twelve o'clock, A. M. he had taken two of the pills, and ſeemed eaſier. In conſequence of a conſultation, the pills were ordered to be omitted, and two ounces of the following mixture to be given every half hour;—viz. Sal. Cathart. Amar. ten drachms, Crem. Tart. two drachms, Tart. Emetic two grains, water one pint. A draught, with one hundred drops of tincture of opium, was ordered at eight

o'clock, and another at twelve. November the 19th, after having taken the mixture, he was both vomited and purged. These operations continued occasionally during the night, and were not entirely stopped by the draughts. His pulse was 92, tongue foul, and thirst intense; he complained of great pains across the umbilical region; and passed blood in his stools. The mixture was ordered to be repeated; the ointment and glysters to be continued; warm fomentations to be used; and three draughts, with one hundred and fifty drops of tincture of opium in each, were ordered to be given at night, at intervals of three hours. November the 20th, he was much better. His tongue, however, was foul. The glysters did not seem to produce much effect. The mixture, ointment and draughts were ordered to be repeated; and the glysters to be discontinued.—21st, having, on the evening of the 19th, taken his three draughts at once, in the course of yesterday he became rather confused; and was dissuaded, by one of his comrades, from taking the draughts the night before as prescribed. He appeared much confused; but the purging was less severe. The mixture, ointment, and draughts, with one hundred drops in each, were desired to be repeated. 22d, he was again dissuaded, with the best intentions however, from taking his draughts; in consequence of which his confusion increased, and he ran about the ward, in a state of considerable derangement, all night. I represented to his friend, who had with-held the medicines through kindness, the danger of persevering in such conduct; and entreated that he would exhibit the doses exactly as they were prescribed, which he afterwards punctually did. But in order to ensure a compliance, I thought it best occasionally to vary the remedies,

and to uſe ſuch as ſhould fall in with the prejudices of the patient and his friend. Accordingly one drachm of jallap was immediately given. The warm bath was deſired to be uſed three times a day; and after the bath, two drachms of mercurial ointment to be rubbed in each time.—When the operation of purging ſhould commence, after the exhibition of the jallap, a pill conſiſting of four grains of opium, and ſix of calomel, was directed to be given every hour; and to be continued through the night, in lieu of the draughts.—23d, in the courſe of the preceding day and night, he had taken nine pills, conſiſting of four grains of opium and ſix of calomel each. He ſlept well; had little purging; and was free from pain. He only complained of weakneſs and thirſt. The pills were reduced to two grains of opium, and four grains of calomel, every two hours. The ointment was continued; and the bath and glyſters omitted—24th, he was better. He ſtill paſſed ſome blood by ſtool, and, and had a difficulty in making water. He complained that his mouth was ſore. Theſe ſymptoms I judged to have ariſen, either from the ſubduction of ſtimulus the day before having been too great, or the patient having neglected to take the quantity that was preſcribed. The medicines were deſired to be continued; and the patient was particularly enjoined to take them regularly.—25th, his mouth was leſs ſore, he had fewer ſtools, and no blood in them; his ſkin was moiſt and his pulſe 80.—26th, pulſe 88, and ſmaller. Purging and griping continued. By miſtake, he had no pills during the night. This fully accounted for the alteration ſince the day before. He was ordered to have a quart of decoction of bark, with two hundred drops of tincture of opium, to be taken in divided doſes through the

day. Two drachms of mercurial ointment, and one drachm of calomel, were rubbed in four times in the day*. On the 27th, he was rather better; the medicines were continued; on the 28th, he was much the same; the decoction, with two hundred drops of tincture of opium, was continued.—He did not always take the whole of the decoction; but generally more than two thirds of it. The ointment was diminished to one drachm four times in the day; and two draughts, with eighty drops of tincture of opium in each, were ordered to be given in the night.—29th, he had taken the draughts and slept well; had only one stool; pulse 84;—tongue clean; he felt some degree of oppression about the pit of the stomach; a blister was applied; the ointment was omitted; the decoction of bark, with tincture of opium, was ordered to continued; and the draughts to be reduced to sixty drops. From that period, he continued to get better. The stimuli were increased, or diminished, according to circumstances; and on the 12th of December, he was discharged without any complaint, excepting a little griping at times. At his own request, he had a small phial of tincture of opium, and some pills, with directions how to take them, if required, before he could join his ship at Dirmand Harbour.

When, in consequence of consultations, as happened in this case, cathartics were exhibited, I endeavoured so to manage them, as regularly to support the excitement; and to prevent, as far as possible, the state of indirect debility, which con-

* On the 26th and 27th there was an omission, in not prescribing draughts or pills, sufficient to support the excitement in the night.

ſtitutes vomiting and purging, by exhibiting other ſtimuli, on the commencement of theſe operations. But this is generally very difficult to accompliſh, principally from the ideas, which patients traditionally imbibe, of the utility of theſe operations.

ACCORDING to the hitherto uncertain ſtate of the art, it is not ſurprizing that conſultations, in which, to uſe the words of an elegant writer, "learned phyſicians neutralize their plans,*" ſhould ſeldom be productive of benefit to patients. They are too often ſcenes of mutual complaiſance, in which he, who has moſt to gain, ſacrifices moſt of his opinion. This has been a ſubject of much regret to ſenſible men of the profeſſion; and ſuch ſcenes have conſequently been avoided by many of them. It is no mean proof of the truth of the medical principles, aſſerted in theſe pages, that two perſons, who thoroughly underſtand them, will differ, but in a very ſmall degree, in their application to practice. In this reſpect, I have known a coincidence ſo perfect, that it could, in no other manner, be accounted for. Their general adoption, then, would baniſh that vulgar adage, which, at preſent, not undeſervedly attaches a degree of ridicule to the cultivators of the healing art, "doctors differ."

IN the report of the 24th of November, it is obſerved, that the patient had a difficulty in making water, and a ſoreneſs of the mouth, which were judged to have ariſen, either from the ſubduction of ſtimulus, on the 23d, having been too great, or his having neglected to uſe the quantity preſcribed. This is not hypotheſes; but a clear induction of

* Aikin's Letters to his Son.

facts. It is certain, that a difficulty of making water, is a ſymptom that ariſes from a ſtate of indirect debility, whether that ſucceeds the exhibition of cantharides, opium, or any other ſtimulant power. It is alſo true, that it may be cured by opium, the warm bath, or cantharides. The general mode of applying bliſters is ſuch, as often to induce that ſtate; and is therefore improper. Bliſters of a ſmall ſize, frequently repeated, will produce a regular excitement, like ſucceſſive frictions of mercurial ointment. But they ought not to lay on the ſkin ten or twelve hours; nor ſo long as to be ſucceeded by veſication, which is a ſtate of indirect debility. Neither is it neceſſary that they ſhould be applied, in preference, to any particular ſpot. For although they make the firſt, and a ſomewhat greater impreſſion, upon the part, with which they come immediately in contact; yet, to whatever part of the body they are applied, their action will extend to every other. The action of ſtimuli upon the excitability, may be compared to an electric ſhock, which, ſeemingly at the ſame inſtant of time, affects every perſon in company,—the neareſt and moſt diſtant from the phial. When the *modus operandi* of the one is aſcertained, we may expect to aſcertain the *modus operandi* of the other.

In the preceding, as well as many other caſes, medicines were often exhibited improperly; ſometimes from omiſſions in preſcribing, ſometimes from negligence or miſtakes of attendants, and ſometimes from the prejudices of the patients.

With any number of patients, there cannot be much difficulty in preſcribing, according to the old plan of practice, which conſiſts in giving certain

fixed doſes of medicines, in every diſeaſe, whatever be its degree. But juſtly to proportion the application of ſtimulant powers, to the exhauſtion of the excitability of each patient, requires more exertion of judgment and conſideration, on the part of the practitioner, and a ſtricter conformity with directions, on the part of the patient, and of the attendants. It is evident then that, in an hoſpital, it requires an unuſual degree of exertion to apply theſe principles to practice, in from thirty to forty bad caſes of diſeaſe, daily. But it is their introduction only that is difficult. Once generally admitted, their application would be attended with as much facility, and certainly with more pleaſure, becauſe with more ſucceſs, than any routine of empiriciſm.

CASE XIII.

Isaac Hudson, aged 30, was admitted into the General Hoſpital, at Calcutta, on the 31ſt of October, 1796, with the following ſymptoms; Pulſe 132, and ſmall. He had for ſome time feveriſh paroxyſms, at 11 o'clock, A. M. and at 11 P. M. which continued between two and three hours. Tongue foul; ſkin hot; his bowels were quite irregular, ſometimes extremely looſe, at other times exceſſively coſtive. He had a cough, with hoarſeneſs; and pains of the bones and joints. Together with theſe complaints, he had chancres

of a fortnights ſtanding.—One grain of opium and one grain of calomel were preſcribed every hour; and two drachms of mercurial ointment were ordered to be rubbed in, three times in the day. November the 1ſt, pulſe 96. The fever and purging continued. His pains were rather leſs ſevere. His tongue was very white. Ten grains of calomel were given every three hours. On the 2d, his pulſe was 92. He had taken four doſes of the calomel. His tongue was leſs foul. Eight grains of calomel were ordered every three hours, day and night.—3d, pulſe 88; he had taken eight doſes of the calomel. He had a ſore throat and hoarſeneſs, with an incipient ſpitting. The calomel was omitted, becauſe it was deemed highly probable that he would not have taken it, if preſcribed. Three grains of opium were given every hour. And three drachms of ointment were ordered to be rubbed in, three or four times in the day.—4th, his mouth and very throat were ſore, and he ſpit ſome blood; from whence it was concluded, that he had omitted to take his medicines, or that he had uſed them in an irregular manner. A bliſter was applied to one of his cheeks; two grains of opium were given every two hours; and a glyſter, with one ounce of caſtor oil, was ordered every two hours. He was allowed four glaſſes of wine in the day. On the 5th, his mouth became very ſore, and there was ſome increaſed flow of ſaliva. A bliſter was applied to the other cheek; the pills and glyſters were continued; and he was allowed ſix glaſſes of wine.—6th, his mouth became exceedingly ſore, and his face more ſwelled. He had no ſtool; a

bliſter* was applied to his breaſt. The pills were ordered to be continued, and a glyſter, with two ounces of caſtor oil, to be given every ſecond hour.—7th, he was much in the ſame ſtate; the medicines were ordered to be continued.—On the 8th, he had ſome difficulty of breathing, his pulſe was exceedingly ſmall, and he had fainting fits. Upon enquiry, it was found that he had lately neglected to take the medicines, which he himſelf confeſſed. In order to enſure a compliance in this reſpect, a change was made in the medicines. He was put into the warm bath three times in the day. The glyſters were continued. And he had three draughts, with one hundred drops of tincture of opium in each, at regular intervals in the night. 9th, he was better; his pulſe was 108 and ſtronger. Cough leſs ſevere; and ſwelling of the face abated. The bath, and glyſters were ordered to be repeated; and a draught, with forty drops of tincture of opium, to be given every hour.—10th, he was much in the ſame ſtate; the medicines were continued.—11th his breath was very fœtid, and tongue much ſwelled; which evinced that he had been irregular in taking his medicines. A bliſter was applied to his neck, and the other medicines were continued.—12th he was rather better; the medicines were continued; and two drachms of ointment were ordered to be rubbed in, twice a day.†—14th, his mouth continued very

* Among patients, upon whoſe veracity there is not much dependence, I prefer in theſe caſes, the uſe of bliſters, upon this principle, that they cannot deceive.

† This was too ſeldom. Wherever mercurial frictions are neceſſary, they ought to be uſed at leaſt four times in the day: and it would alſo be attended with advantage to repeat them at night.

ſore, and he complained of weakneſs; one drachm of ointment was rubbed in three times in the day, the other medicines continued.--15th, he ſeemed better, but complained of weakneſs; ſome blood was diſcharged from his mouth and fauces; he did not permit the ointment to be rubbed in, the day before. The ointment and glyſters were continued; and he was enjoined to uſe his medicines regularly. The following mixture was given,—decoction of bark two pounds, powder of bark one ounce, tincture of opium one hundred and fifty drops; the whole of it was ordered to be taken, in divided portions, in the day. The draughts were continued as before. From that period, he got gradually better. His mouth became more or leſs ſore, in the exact proportion of the regularity, with which he took his medicines. By that ſymptom I could detect his irregularities. He continued, for ſometime, ſubject to purging, and ſlight paroxyſms of fever occaſionally. But, by a perſeverance in the ſame plan of treatment, diminution of the medicines, he remained, on the 13th of December, free from complaint, excepting a ſlight ſoreneſs of the mouth. And on the 14th, when I diſcontinued attending him, he was in an advanced ſtate of convaleſcence.

THIS is one of thoſe caſes which ſhews that ſoreneſs of the mouth, and ſalivation, do not ariſe from the action of mercury, when regularly applied, and gradually decreaſed; but that theſe, and other ſymptoms of indirect debility ariſe in conſequence of its irregular application, or ſudden ſubduction. The patient, like many others, was ſo ſenſible of the truth of the above obſervation that, after there was a neceſſity for uſing the warm bath, he took his medicines with much regu-

larity until he became convaleſcent. He was, from repeated experience, convinced that the ſoreneſs of his mouth increaſed, upon the ſubduction of the mercury, opium or warm bath.

FROM the beginning I was doubtful of a recovery. For, a ſmall and quick pulſe, hoarſeneſs and difficulty of breathing, and the very irregular ſtate of his bowels, indicated, that ſome degree of local affection, both of the thoracic and abdominal viſcera, had taken place. From the iſſue, however, it appeared that they were of ſuch a degree, as to admit of a regeneration of organs.

CASE XIV.

ABRAHAM JACKSON, aged 23, was admitted into the General Hoſpital, at Calcutta, on the 15th of November, 1796, with dyſentery of a few days ſtanding.—16th, he had four doſes, conſiſting of ten grains of calomel each, through the night. Pulſe 100; tongue white; ſkin hot. There was a conſiderable quantity of blood in his ſtools. Ten grains of calomel and four grains of opium, were ordered to be given every three hours; and a glyſter, with two ounces of caſtor oil, every two hours. On the 17th, he was rather eaſier; but had been much griped through the night.* The

* Griping, purging and reſtleſſneſs, are frequently produced under a courſe of opium, or mercury, in conſequence of the doſes not being properly repeated through the night.

glyſters gave him eaſe. The pills were intended to have been continued through the night; but as it was not particularly expreſſed in the report, they were not given.—The pills were omitted; a glyſter was given every hour; and common infuſion of ſenna, with two grains of tartar emetic, in ſmall doſes, frequently repeated through the day. Draughts with 80 drops of tincture of opium, were deſired to be given at bed time; and to be repeated, according to circumſtances, through the night. 18th, he was rather better. One grain of opium and four grains of calomel were given every ſecond hour. Two drachms of mercurial ointment were ordered to be rubbed in, four times in the day. The glyſters and draughts were continued.—19th, he had taken only one draught; and his head became confuſed towards morning.* He was much griped. Pulſe 80. The draughts were omitted, from a conviction that he would not take them. The other medicines were continued; and warm fomentations applied to the abdomen.—20th, he had not ſlept well, and was much purged and griped. The pills were omitted; and a ſolution with ten drachms of ſal catharticus amarus, and two grains of tartar emetic, was given, in ſmall doſes, through the day.—21ſt, from this period, he had a quart of decoction of bark, with one hundred drops of tincture of opium, daily; one drachm of mercurial ointment was rubbed in, four times in the day; and three draughts, with ſixty drops of tincture of opium in each, were given at intervals during the night. He continued to get better. On the 28th,

* It cannot be too often inſiſted on, that this ſymptom ariſes from medicines not being properly repeated. It is what frequently happens, in the ordinary way of exhibiting opium; and for which the medicine itſelf is by no means to blame.

he was ſo well, as to aſk leave to go to town.—29th, having committed exceſſes the day before, he had pains and other feveriſh ſymptoms. His pulſe was above a hundred. He was ordered to have a mixture of ſal catharticus amarus; and the draughts were repeated. 30th, he had a ſevere paroxyſm of fever in the night, and perſpired profuſely. Pulſe 100. Two grains of opium and ſix grains of calomel, were given every ſecond hour. Two drachms of mercurial ointment were directed to be rubbed in, every three hours.* December the 1ſt, he perſpired profuſely, and had a paroxyſm of fever in the night. Pulſe 100. Three drachms of ointment, with one drachm of calomel, were ordered to be rubbed in, four times in the day. The pills were continued. And three draughts, with 60 drops of tincture of opium in each, were ordered to be given, in the courſe of the night.—2d, he was worſe. His pulſe was 112; he had a paroxyſm of fever, and ſome purging in the night. The ointment was continued. A pill, with four grains of opium and eight grains of calomel, was given every ſecond hour in the day; and three draughts, with eighty drops of tincture of opium in each, in the night. On the 3d, he was better. Pulſe only 100. On the 4th, his pulſe was 96, and his mouth a little ſore. 4th, 5th, and 6th, his medicines were continued; he was better; and had no fever. On the 7th having diſcontinued his medicines the day before, his mouth became very ſore, and an encreaſed flow of ſaliva commenced. The pills were ordered to be reduced to ſix grains of calomel, and three grains of opium; the draughts to be repeated and the

* It was a great omiſſion, at this time, not to have given draughts, or pills, through the night.

ointment omitted. But as I had no reliance on his taking the pills regularly, a quart of decoction of bark, with a hundred drops of tincture of opium, was ordered to be taken in the day, to prevent his mouth from becoming exceſſively ſore.—8th, did not take the pills on account, as he ſaid, of his having ſome difficulty in ſwallowing them; but took the decoction and draughts; pulſe 100; his mouth continued ſore, and the flow of ſaliva increaſed. Three drachms of mercurial ointment were ordered to be rubbed in four times in the day; and he was informed that, if he did not allow it to be regularly applied, his mouth would become much ſorer. The decoction and draughts were continued; and the pills omitted.—9th, he ſpit freely; and ſeemed much better. The decoction and draughts were continued; and the ointment omitted. From that period he was convaleſcent. And on the 14thof December, when I diſcontinued attending him, he had no complaint, excepting the ſoreneſs of his mouth; which, however, was rapidly decreaſing.

When the medicines were increaſed to a due degree, as on the 3d of December, the patient ſpeedily got better; and had he continued to take them with regularity throughout, he would have got well much ſooner. He had however taken a ſufficient quantity, to be ſucceeded by an increaſed flow of ſaliva. And after that ſymptom occurred, he was conſidered as out of danger.

In the foregoing caſes, in general, the ſtate of the pulſe has been noted with ſome care. The pulſe in all its degrees of quickneſs, flowneſs, weakneſs, irregularity, and intermiſſion, may be conſidered as a kind of thermometer, by which,

together with the ſtate of other functions, ſome judgment may be formed of the ſtate of the excitement. A deviation from health in the ſtate of the pulſe, is one of the moſt conſtant ſymptoms of indirect debility. But the ſureſt criterion yet known, by which to eſtimate the degree of exhauſtion, is the effect produced, by the ſtimulant powers, applied for the cure.

When the effects of the mercurial ointment were not deemed ſufficiently powerful, calomel was added. The ointment uſed was the ſtrongeſt; but the quick ſilver was not always ſufficiently triturated. It is almoſt unneceſſary to obſerve that, in dangerous caſes, mercury may at the ſame time be uſed, both internally and externally, with advantage.

The explanations annexed to the caſes will, perhaps, appear unneceſſarily copious; and, in ſome parts mere repetitions. But that was deemed the moſt familiar, and therefore, in ſome reſpects, the beſt mode of illuſtrating the ſubject. Examples will often place inferences in a clear point of view, when they might not be obvious from general reaſoning.

POSTSCRIPT.

By C. MACLEAN.

THE preceding cases, it will be observed, are not particularly selected from such as terminated happily. Those only that were deemed most instructive, in illustrating particular points, have been chosen. Many more of equal importance might have been added; but the publication would thus have become too voluminous. None of them are offered, as approaching to perfect examples; but merely as conveying a general idea of the mode, in which, according to our opinion, the principles of the doctrine should be applied to practice.

ALTHOUGH opium and mercury are the medicines, upon which we have placed most dependance, in diseases of high degree, as being more intimately acquainted with their powers; it is conceived that the doctrine, properly understood, embraces the whole range of the Materia Medica. It does not admit, indeed, of any other effect being produced, by the application of any power in nature, to living bodies, than an increase or diminution of the vigor, with which they perform their proper functions; i. e. an increase or diminution of their excitement. With a view to the excitement solely is every medicine whatever prescribed.

And when the means employed are unſucceſsful, the failure ſhould be attributed to a want of judgment in their application rather than to any error in the principles themſelves.

It ought not be overlooked that, in moſt of the foregoing examples, the diſeaſes were thoſe of the greateſt exhauſtion, occurring among a ſet of men (ſoldiers, mariners, &c.) poſſeſſing robuſt conſtitutions, and accuſtomed to the application of high degrees of ſtimulant power. In diſeaſes of warm climates, in general, the exhauſtion is muſt greater that in thoſe of cold climates. Perhaps too, in the former, the medicines loſe much of their ſtrength, before they come into uſe. So that a material difference will be required in the practice. Another caution that deſerves to be attended to, in all countries, is to guard againſt the application of cold, during the operation of high exciting powers. For, when the ſmalleſt degree of indirect debility happens to take place, from irregularity in the application of theſe powers, the application of cold, or to ſpeak more correctly, the ſubduction of heat, will increaſe the exhauſtion, and add to the force of the diſeaſe.

The ſtrenuous and authoritative manner, in which this doctrine has always been oppoſed, renders a knowledge of its application to practice difficult to be obtained, even by thoſe who thoroughly underſtand its principles. The laws of mechanics may be perfectly well underſtood. But if a body of artificers, who had from time immemorial conducted the operative part, in total ignorance of thoſe laws, were unanimouſly to declare, "that "the principles might indeed be both ingenious "and juſt, for aught they knew, but that they "were dangerous in their application to practice,"

it is certain that the public would for a time, be deceived by the repreſentations of theſe workmen; and the principles of mechanics, however juſt or applicable, could not generally be reduced to practice, until the deception ceaſed. Moral truths may be perfectly well underſtood by a few; but the ignorance, prejudices, and paſſions of a great majority of the human race, will long retard their complete application to practice. Medical truths however have only to combat the prejudices and intereſts of a particular, and but a ſmall body of men. It may therefore be permitted to hope, that their application to practice, cannot be much longer delayed.

THOSE who have admired, and thoſe who have oppoſed the new medical principles, without being maſters of the ſubject, muſt have been equally unſucceſsful, in their attempts to apply them to practice. By every ſucceeding caſe of failure, the admiration of the one would be diminiſhed, the oppoſition of the other confirmed. The objection, therefore, is very juſt, that "attempts to apply "the principles of the Brunonian Doctrine to "practice may be dangerous in ignorant hands." In other words men cannot apply to practice principles, which they do not underſtand.—Let us ſuppoſe a perſon, wholly unacquainted with the *laws* of living bodies, applying *powers* to them; how can he be expected to produce a *given effect*? Overlooking the immenſe variety of degrees, between the ſtate of health, and the higheſt ſtate of exhauſtion, he would probably preſcribe one grain of a ſolid medicine, when he ſhould have preſcribed twenty; or twenty, when he ſhould have preſcribed but one; he would give twenty drops of a fluid, when he ſhould have given two hundred;

or two hundred, when he ſhould have given but twenty. He would repeat the medicine but once or twice in the twenty-four hours, inſtead of every hour, or every half hour, according to the duration of its action. He would uſe the ſtrongeſt powers, inſtead of the weakeſt; and the weakeſt inſtead of the ſtrongeſt. He would not make any diſtinction between the delicate female, and the robuſt male frame; between childhood and youth, and youth and old age; between recent and long ſtanding diſeaſes. He would not even know how to make allowances for inveterate habits. In ſuch hands, no ſucceſs could be expected, any more than from a mechanic, who ſhould employ equal powers to raiſe unequal weights. He might ſometimes indeed be right by chance.

FAR otherwiſe is it with him who applies principles to practice. He calculates, combines, and proportions his powers, according to known laws; and applies them, in ſuch a manner, as to produce certain and given effects. Nor is the practice of medicine different, in this reſpect, from any other art, which is founded upon principle, and requires a certain degree of mental exertion.

IN the preceding pages, ſome things may appear doubtful, the arrangement occaſionally inaccurate, and the whole requiring illuſtration. Was it not even too late, I ſhould not think myſelf at liberty, without the approbation of my ingenious and eſteemed friend, Dr. Yates, to make any material alterations in the text. But, in the mean time, it may not be improper to offer ſuch remarks, as have been dictated by ſubſequent reflection, and may perhaps lead to an arrangement

ſomewhat different, if ever an opportunity ſhould occur of reviſing the ſubject.

In the firſt place, diſeaſes of accumulation, or of direct debility, appear to be even more rare than we have ſuppoſed them. For if, to a body in a ſtate of accumulation, the ordinary ſtimuli be applied, a diſeaſe of exhauſtion will immediately enſue. But a body can never long remain in a ſtate of accumulation, without having the ordinary degree of ſtimulant power applied, and ſometimes even more. The accumulation, which is produced by the abſtraction of heat, food, or the mental paſſions, if it be not immediately removed, by the gradual re-application of theſe powers, will be converted into a ſtate of exhauſtion, as ſoon as the ordinary exciting powers, which ſupport the healthy ſtate, are again applied. It is evident, then, that accumulation of the excitability, from the abſtraction or diminution of one or more ſtimuli, muſt ſoon terminate in the re-eſtabliſhment of health, by the gradual re-application of theſe powers, or in the eſtabliſhment, of a ſtate of exhauſtion, or of indirect debility, by their ſudden and exceſſive re-application. But it is difficult to ſuppoſe, ſuch a complete abſtraction of heat, food or mental ſtimuli, as to occaſion death, without the intervention of ſome ſtimulant power, converting the ſtate of accumulation into a ſtate of indirect debility. When food and drink have been long with held, even a draught of water will exhauſt the excitability, and occaſion death. Let us ſuppoſe a perſon travelling through a ſandy deſart, under the ſcorching rays of a vertical ſun. If he was previouſly in a ſtate of accumulation, from the abſtraction of the ordinary ſtimuli, that would immediately be converted into a ſtate of exhauſ-

tion.* And a continuance of the abſtraction, would ſtill farther add to the exhauſtion, until it terminated in death. When heat has been long abſtracted, and to a conſiderable degree, a degree leſs than that which conſtitutes the common temperature, ſuddenly applied, will produce mortification, or the death of a part. The caſe of the Roman mother, ſo aptly quoted by Brown, will exemplify the ſame principle, as applied to the mental ſtimuli. The ſtate of torpor in which ſome animals remain, during the winter, and the manner of their reſuſcitation in the ſpring, even in a lower degree of temperature than that in which they became torpid, at the ſame time that it affords a beautiful explication of the principles of this doctrine, ſeems to ſhew, that death does not take place, from the mere abſtraction of heat, or from accumulation of the excitability. In this ſtate of prolonged ſleep, while reſpiration is languidly performed, the other functions are diminiſhed or entirely ſuſpended. Thus in a two-fold manner, the excitability is accumulated, the ſuſceptibility of impreſſion is proportionally increaſed, and a degree of heat lower than that under which torpor took place in autumn, will produce healthy excitement in ſpring.† It ſeems very difficult to conceive, how death can ever take place from mere accumulation. For while excitability remains, a due application of exciting powers will produce healthy excitement; and when it is accumulated in an unuſual degree, it is only required that a diminution of exciting powers, proportionate to

* This follows as a conſequence from Prop. V. I. although not ſo ſtated in the text.

† This idea is, in part, taken from Dr. Girtanner.

the accumulation, or to the ſuſceptibilty of impreſſion, ſhould be made, in order to produce the higheſt excitement. But in every caſe, in which death *ſeems* to take place from accumulation, it is eaſy to conceive, that it *really* happens from exhauſtion. For, in the higheſt degrees of accumulation, for inſtance, when a living body is nearly frozen, the ſmalleſt degree of exciting power, although greatly below the force of the ordinary ſtimuli applied in a ſtate of health will be diſproportionate to the ſuſceptibility of impreſſion, and will therefore produce a ſtate of exhauſtion. And the farther ſubduction of heat, will increaſe the exhauſtion ſo produced, until it terminates in death. Upon the whole, it may, I think, be concluded, that death never takes place directly from accumulation ; but always from exhauſtion of the excitability. The ſtate of accumulation, then, when it does not terminate in health by the gradual reapplication of exciting powers, muſt always terminate in a ſtate of exhauſtion, by the application of exciting powers, diſproportionate to the ſtate of the excitability. Scurvy therefore, and the other diſeaſes which have been mentioned as ariſing from the abſtraction of ſtimuli, would ſeem to be all diſeaſes of exhauſtion or of indirect debility. In proof of this, every caſe, that I have met with at ſea, reſembling what has been deſcribed by authors under the name of ſcurvy, yielded to mercury. It was ſo certain a cure, that I never thought of uſing any other remedy. Nor did it at all, when properly exhibited, increaſe the debility of the patient. The reaſon why mercury has ſo often been found injurious in ſcurvy, is, that it has ſeldom been given in proper manner. The ſalivation of which authors complain, as being ſo eaſily excited, would never occur, if it was exhibited in

ſuch a manner, as regularly to ſupport the excitement. It is now perfectly known, that this and every other ſymptom of indirect debility, which ſucceed the uſe of mercury, ariſe from the ſubduction, not from the immediate action of that medicine. But where ſalivation actually takes place, after the application of mercury, or other ſtimulant powers, many facts concur in ſhewing, that but a ſmall degree of organic leſion exiſts; and if a patient, in that ſtate, ever dies, it muſt be from ſubſequent miſmanagement. The complaints, therefore, againſt mercury, in ſcurvy, and other diſeaſes, are not juſtly to be attributed to the medicine, but to the abuſe of it. There does not ſeem much difficulty in accounting for the bad effects, which have ariſen from the abuſe of mercury in that diſeaſe. As the proper principle, upon which that and every other medicine ſhould be exhibited, as not being underſtood, the mode in which it was applied in ſcurvy, muſt neceſſarily have increaſed the exhauſtion, or converted the original ſtate of accumulation, into a ſtate of exhauſtion; and the viciſſitudes of weather, that uſually occur on board of ſhips, would increaſe ſtill farther the exhauſtion. It is in this way, and upon the principles explained in the text, that cold proves ſo injurious, during the application of mercury, or other high exciting powers, when they are unſkilfully exhibited. Scurvy, in fact, appears to be a diſeaſe merely general, and in its origin of ſlight degree; at firſt ariſing from the ſubduction of nouriſhment, and the mental ſtimuli, and afterwards increaſed by an exceſſive, or irregular application of other exciting powers, and a continued negation of food ſufficiently nouriſhing. Accordingly, the gradual re-application of food ſufficiently nouriſhing, and of the mental ſtimuli, is alone, for the moſt part, ſuffi-

cient to cure the diſeaſe. It is upon the principle of the gradual re application of nouriſhment, that vegetables have been found at firſt preferable to animal food. And this fact it was, if the above reaſoning be right, that led to the error, committed in the text, of conſidering ſcurvy as a diſeaſe of accumulation.

With reſpect to the excitement and excitability, a more elegant and juſt arrangement of the propoſitions might, no doubt, have been made. This defect, however, is not of material importance; as the principles of the doctrine are ſtill ſufficiently intelligible; and every one, who underſtands them, as they now are, will be able to judge what they ought to be.

An early and ſincere admirer of this doctrine, for whoſe judgment I entertain a reſpect, having expreſſed ſome doubts in regard to the non-exiſtence of diſeaſes of exceſſive excitement, and requeſted me to re-conſider the ſubject, a deference for his opinion, and a wiſh to place the matter in a clearer point of view, induce me to enter upon a detail, which ſeemed at firſt unneceſſary. As the entire rejection of diſeaſes of exceſſive-excitement, is a great deviation from the original doctrine, and one of very conſiderable importance in its influence upon practice, I ſhall endeavour, by ſtating the grounds of it at ſome length, to obviate all reaſonable objections to the theory. In this place, it may be proper to obſerve, that medical facts, as they have been called, are too often nothing more than a looſe relation of circumſtances. A fact, properly ſpeaking, muſt be ſo evidently true, that every man, poſſeſſing ſound organs, may dif-

cern it. And the general facts, or principles, which are inductions from particular facts, may alſo be diſcerned by all men of ordinary capacities, who will take the trouble of going through the neceſſary ſteps in reaſoning. But where are the facts of this deſcription, which prove that ſome diſeaſes ariſe from what has been called, by Brown, a ſtate of exceſſive excitement, and, by others, a ſtate of plethora? If they can be produced, I will with much readineſs acknowledge my error, in having denied the exiſtence of ſuch a ſtate. Until that happens, however, there is no good reaſon why it ſhould be taken for granted, upon mere *ipſe dixit*. As in medicine, much uſeleſs controverſy might have been avoided, by attending to accuracy of expreſſion, it may not be improper to explain the ſenſe, in which the term "exceſſive excitement" is here underſtood. Excitement is meant to expreſs the vigor, with which the functions of life are performed, in all their different degrees. But the functions of life can only be performed in a due, or in a deficient degree. To ſay that they can be performed in an *exceſſive* degree, is as great a contradiction in terms, as *exceſſive virtue*, or *exceſſive joy*; the one is *vice*, the other *pain*. When ſtimulant powers are applied in due proportion, the excitement is at the degree which conſtitutes vigor, tone, or health. But when they are applied, either in a deficient or an exceſſive degree, the power with which the functions of life are performed, i. e. the *excitement* is diminiſhed. That power conſiſts in a pleaſant, eaſy, and exact uſe of theſe functions; which is certainly not enjoyed in the diſeaſes, that have been referred to a ſtate of exceſſive excitement. When a degree of ſtimulant power, higher than is neceſſary to the ſtate of health, is applied, the functions of life will be performed

with more than uſual vigor, before they fall into a ſtate of indirect debility; but never with *exceſſive* vigor. The *action* of the fibre may be exceſſive, but its *power* cannot.—If we trace the progreſs of the living functions, in a perſon expoſed to the action of high ſtimulant powers, it will be found, that their vigor is firſt increaſed to the higheſt point, and afterwards diminiſhed in a degree proportionate to the exceſs. But if theſe powers be gradually ſubducted, that diminution will not take place; or if they be re-applied, it will be removed; unleſs the exceſs has been ſuch as to occaſion the deſtruction of organs. It will not, I believe, be denied, that the headach, ſickneſs, &c. which ariſe after exceſſive drinking conſtitute a ſtate of indirect debility, which might have been prevented by the gradual ſubduction, and is to be removed by the re-application of ſtimulant powers. That a certain quantity of ſpirits, a ride, &c. will remove theſe ſymptoms, is a fact that is known, almoſt to every one. After exceſſive walking, or dancing, that ſtate of indirect debility conſtituting fatigue, is not immediately induced. It becomes more ſevere the ſecond and third day, unleſs, by a certain degree of walking, or dancing, or the ſubſtitution of other ſtimuli, in the intermediate time, it be prevented. After ſuch an exceſs, reſt is exceedingly injurious.*—It is equally true, that the delirium, fever, &c. which ariſe from exceſſive expoſure to the ſun, from opium, æther, mercury, or any other ſtimulant power, applied in too

* Dean Swift's mode of taking exerciſe, but in ſomewhat lower degree, was good. The regulation of exerciſe and the paſſions, is at preſent almoſt totally neglected, in the cure of diſeaſes. They are ſubjects which ſeem to be yet but little underſtood, although their importance to health and to morals are evidently great.

high a degree, depend upon indirect debility; and that they may be prevented by a gradual reduction, or cured by a proper re-application of the ſame powers, or of others equivalent in force. None of theſe ſymptoms occur, during the action of the exciting powers; they always commence after theſe powers have been withdrawn. If this be denied, it muſt be ſuppoſed, that medicines lie dormant in the body for ſome hours, after having been taken; and then, all at once, begin to act. But headach does not inſtantaneouſly follow the application of ſpirituous liquors; delirium, or fever, the application of opium, or the ſolar rays; vomiting, the application of tartar emetic; ſalivation, the uſe of mercury; purging, the exhibition of carthartics; ſweat, of ſudorifics; nor veſication, the application of a bliſter, or of fire to the ſkin.—On the contrary, theſe ſymptoms always appear ſometime after the application of the exciting powers; and may be prevented by a gradual reduction, or cured by a judicious reapplication of the ſame powers, or of others equivalent in force; excepting, indeed, when the force of the noxious power has been ſo great as to produce an immediate leſion of organs. Let us take a familiar caſe, as an example. Suppoſe an arm, or a leg has been expoſed to the action of fire, no perſon, in his rights ſenſes, would think of plunging it into cold water, or ſnow, or applying ice. It is a fact well known, that ardent ſpirits, vinegar, and other ſtimuli of high degree, are the proper remedies; and that, if applied in due time, and in ſufficient quantity, they will prevent the inflammation, veſication, pain, and fever that would otherwiſe enſue. If the principle be eſtabliſhed, in one caſe of exceſſive application of ſtimuli, it muſt equally apply to all. Every fact concurs in proy-

ing, that the bad ſymptoms which ariſe after an exceſſive application of the ſtimulant powers already mentioned, or of others, depend upon a ſtate of indirect debility, *not* upon ſuch a ſtate as that of exceſſive excitement; and that they are to be prevented or removed by the proper application, *not* by the ſubduction of ſtimulant powers.

If, to a perſon in health, a very high degree of heat has been applied, as in expoſure to the rays of a burning ſun, would it not be as dangerous to remove him ſuddenly into a cool, or even a temperate atmoſphere, as it would, in the caſe of a perſon, who had been expoſed to a high degree of cold. In the one caſe the fact is univerſally admitted, and the principle applied to practice: Why not in the other? Is it more difficult to comprehend that, after an application of extraordinary ſtimuli, a ſudden ſubduction of them ſhould produce indirect debility, than that the ſame effect ſhould follow a ſudden re-application of the ordinary ſtimuli, after they have been for any time withheld?—Upon principles equally clear, the excitability in the one caſe, would not be accumulated; in the other, it would be exhauſted. Hence it is evident, why caſes of *coup de ſoleil* are ſo frequently fatal. I ſhould think myſelf acting with equal propriety, in ſuddenly ſubducting, not only the high ſtimulant power of the ſolar rays, after having been for ſome time applied, (at leaſt without ſubſtituting another ſtimulus nearly as powerful, and then gradually reducing it) but farther taking away a quantity of blood, and diminiſhing all the ordinary ſtimuli, as in plunging legs nearly frozen into hot water, giving a pound of meat to one who had been long faſting, and farther applying, to perſons, in theſe ſtates, opium, æther, or bran-

dy. It is much to be regretted that, in this, as well as in many other caſes, practitioners who are not themſelves convinced of the efficacy of blood-letting, ſhould think it incumbent upom them, from a falſe deſire of reputation, or a regard to intereſt, to put it ſo frequently in practice. It is very true, that a conformity with the common practice is ſafeſt in a prudential view. For, if a patient dies of peripneumony, without the formalities of bleeding and purging, he will be ſaid to have loſt his life, in conſequence of theſe omiſſions. But if he dies, after they have been duly performed, it is only from the neceſſity of his fate.

PERIPNEUMONY, in reality, is ſeldom a dangerous diſeaſe, until, by blood-letting and other debilitating means, inflammation and adheſion of membranes, ſuppuration, and dropſy are produced. —Has a perſon ever died in a ſtate of exceſſive vigour? No, nor ever will. No danger, then, need be apprehended from ſuch a ſtate.

IF it be a certain fact that opium, judiciouſly repeated, will prevent or cure thoſe very ſymptoms, which an unſkilful application of it may have produced; if, by the proper exhibition of mercury, that medicine may be given, not only without producing ſalivation, but ſo as to cure it; if the ſickneſs and headachs that occur, after exceſſive drinking, may not only be prevented by a gradual diminution of the exceſs, but may be cured by the application of a certain degree of the ſame power. If, I ſay, all theſe be facts (and they will be found ſo by thoſe who will give them a fair trial) the inevitable concluſion is, that all the diſeaſes in queſtion, depend upon a ſtate of exhauſtion or of indirect debility, and are to be cured, by the appli-

cation of ſtimulant powers, in a degree proportionate to the exhauſtion.

FROM the general ignorance and neglect of this doctrine, the beſt adapted of theſe powers to particular caſes and degrees of diſeaſe, have not yet been well aſcertained. But in proportion as it is more generally received, phyſicians, inſtead of random empirical preſcriptions, will apply powers to living bodies, according to known principles, and with a view to particular effects. They will conſider the living body as a whole, upon the ſtate of which depends that of every particular part; and they will deſiſt from the hopeleſs taſk of preſcribing for ſtrangling ſymptoms. They will co-operate in diſcovering the relative powers, the duration of their action, and the beſt method of exhibiting, every ſubſtance that can be employed in medicine. While, in diſeaſes of the higheſt degree, they will all probably employ the moſt diffuſible ſtimuli, as opium, æther, camphor, volatile alkali, mercury, &c.*; in the lower degrees, each may with advantage give a preference to his favourite medicine. And if he applies it, ſo as to ſupport the excitement, health will be re-produced, whether he uſes bark, or wine, ſalts, aloes, or gamboge; caſtor oil, rhubarb, or cream of tartar.

NOTHING perhaps has contributed more to increaſe the confuſion in medical doctrines, than the inaccurate language and looſe reaſoning, with which the cultivators of the art have found it neceſſary to veil the abſurdities of their ſyſtems. The

* The powers of arſenic and other ſubſtances called poiſons, are by no means well aſcertained. But we have implements enough, if we knew how to uſe them.

diviſion of cauſes into proximate and remote, is a remarkable inſtance of this. It ſhews evidently that, in medical reaſoning, POWER has uniformly been confounded with CAUSE. Many powers may combine to produce one effect; but it is not any one of theſe powers, but the ſum of the whole, that conſtitutes the *cauſe* of that *effect*. Thus, exceſſive heat,* fatigue, bad news, noxious air, may all combine to produce a ſtate of indirect debility. The cauſe of this ſtate of indirect debility, is *not* exceſſive heat, fatigue, bad news, or noxious air; *but* the ſum of all theſe powers. Again, indirect debility, in its various degrees, is the cauſe of all thoſe ſymptoms which conſtitute diſeaſes, depending upon that ſtate, each of which has, in nological ſyſtems, obtained a particular name.—But, as there can be nothing intermediate between a cauſe and its effect, and as there can only be required one cauſe to produce one effect, *remote cauſe* is evidently a groſs contradiction in terms. To ſay that any of the powers, the application of which will produce a ſtate of indirect debility, is a *cauſe* of ſymptoms, which are *conſequences* of that ſtate, appears to me as great a perverſion of reaſoning, as it would be to affirm, that a man dies *becauſe* he has been begotten. The one event undoubtedly precedes the other; but they are not in the relation of cauſe and effect, as theſe terms are generally underſtood.

ANOTHER circumſtance, which has contributed to prolong the public deluſion, in reſpect to the uncertainty of medical principles in this. THE-

* It is always to be underſtood, that exceſſive heat, or other ſtimuli applied in exceſs, relates to the ſtate of the excitability, not to any particular ſtandard of heat, or any degree of other ſtimulant powers.

ORY and HYPOTHESIS, I hope and believe more through ignorance than design, have been very generally confounded under the common name of OPINION; as if it were impossible, that principles should exist, because they have not been discovered by system makers; that, as all medical systems which have hitherto been framed are erroneous, there cannot be a true one in nature; or that man alone is that curious composition, that "fortuitous concourse of atoms," which nature in a frolicksome mood, had exempted from the operation of laws, fixed, immutable, eternal.—It will be difficult, without the aid of inspiration, to reconcile assertions of successful practice, with a confession that it is founded upon conjecture. It will be equally difficult to account, with decency, for an opposition to a doctrine, of which the fundamental propositions are either self-evident facts, or inductions from numerous facts; of which every proposition has an evident relation to every other, and the whole to every part. It might rather be supposed that the contention would be, who should apply the principles most correctly to practice.

To the ridiculous and vague objections, founded on the alledged danger of giving large doses of medicines, the following remarks, it is presumed, will be a sufficient reply. From the principles of the foregoing doctrine, it results that, in every disease, a sum of stimulant power equal, or nearly equal, to that which has produced the disease, must be applied, in order to effect a cure. It is only when the sum of the powers so applied exceed that, which has produced the disease, that the medicines can do no harm. In that case, and in that case only, they will produce a disease more dangerous,

becauſe higher in degree, than that which had previouſly exiſted. Hence it appears that, while in diſeaſes of the higheſt degree, as plague, dyſentery, and fevers, more eſpecially in thoſe caſes in which organic leſion has taken place, the common doſes of medicines is merely ſporting with lives, in diſeaſes, deviating but little from health, they, for the moſt part, exceed the juſt proportion. While, in ſome caſes of the former, from four to five hundred drops of tincture of opium will be too little, in ſome caſes of the latter, the uſual quantity of from twenty to thirty drops, will be too much. Indeed in caſes, deviating but little from health, thoſe high ſtimulant powers are unneceſſary, and ought not to be uſed. Theſe concluſions will appear ſo evident, to all who underſtand the principles of the new doctrine, that it would be ſuperfluous, and might ſeem impertinent, to dwell longer on that ſubject.

In like manner, it is evident whence the diſputes, which have ariſen among phyſicians, reſpecting the virtues of particular medicines, have derived their ſource. From want of juſt principles as a guide, the ſame power which proved uſeful in the hands of one man, from a particular mode of application, has been found injurious by others, from a different mode of exhibiting it. Hence the virtues of the peruvian bark, ſince its firſt diſcovery, have been extravagantly extolled, and as unreaſonably decried. Hence hemlock, which was ſo ſucceſsfully uſed by the judicious Dr. Stork, entirely failed with other practitioners, and unjuſtly loſt his reputation. Hence electricity, which, applied according to principle, I will venture to affirm, will be found a power of ſuperior efficacy in the cure of diſeaſes, has been greatly neglected;

and when ſucceſsful, has only been ſo by chance.* And hence, more recently ſtill, the inconcluſive diſputes concerning the effects of opium, and other ſubſtances of high ſtimulant power, applied to living bodies.

One of the moſt egregious miſtakes which has been made, reſpecting the doctrine of life, remains ſtill to be mentioned. It has been underſtood, or rather miſunderſtood, to conſiſt entirely in the exhibition of opium, brandy, and wine, in every caſe, and with no diſcrimination. To thoſe who know it better, it muſt appear evident, that theſe ſubſtances have no more relation to the principles of the doctrine, than any other powers, that may be applied to the excitability. The free uſe of them, in a ſtate of health, is even contrary to principle. But the laws of nature, as they reſpect living bodies, would ſeem, in the ordinary routine of cuſtom, to have been nearly reverſed. In a ſtate of health, for the moſt part, too great a ſum of ſtimulant power is applied; in a ſtate of diſeaſe, generally too little. Suppoſe opium, brandy, and wine annihilated, the doctrine would remain entire. Provided the excitement be ſupported, it matters not by what powers it is done. It is evident, then, that thoſe, who have reſted their oppoſition upon objections to any particular medicine, or the doſes of medicines, could not have underſtood the ſubject. Indeed to underſtand is to believe in it. As ſoon will eyes, in a ſound ſtate, be unable to diſtinguiſh light from darkneſs, as a mind capable

* I have ſome opinions regarding electricity, as applied to living bodies, which I ſhall take an early opportunity of verifying, or diſproving by experiment. If they prove true, it will throw much light on the principles of the doctrine.

of comprehending the terms, can diſbelieve the fundamental propoſitions of the doctrine of life. If this be true, can it be denied, that the doctrine has, by all its opponents, been either prejudged or miſunderſtood?

This is not a queſtion of party; but a conteſt between truth and error. It is not the judgment, dignity, or character of this or that individual, that is in diſpute; but the truth or falſehood of a doctrine, whoſe principles embraces every part of animated nature. Whether diſcoveries have been made by a man named Brown, or a man named Cullen; whether they have iſſued from the obſcurity of a cottage, or the elevated deſk of a profeſſor, is of little conſequence to the world. But it is of eſſential importance, that they ſhould know the nature and extent of the diſcoveries. It is high time to bring the queſtion to an iſſue. If the doctrine be true, it behoves thoſe, who conſider themſelves as *multis experimentis eruditi*, avowedly to embrace it; if falſe, they ſhould, by reaſoning, or a comparative trial, undeceive the riſing generation, whoſe minds are rapidly receiving the infection.

TREATISE

ON THE ACTION OF

MERCURY,

UPON

LIVING BODIES;

AND

ITS APPLICATION FOR THE CURE OF DISEASES OF INDIRECT DEBILITY.

By CHARLES MACLEAN.

DOVER, (N. H.)

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ADVERTISEMENT.

THE following "TREATISE," *is rather a History of the Manner in which Mercury has been applied, upon Principle, for the Cure of Diseases of indirect Debility, than a strict logical Disquisition.*

This mode was chosen in order to assert my Right, should the Theory hereafter be universally applied to Practice, to such Share of the Merit of the Discovery, as may appear to be justly due.

It is hoped that, in the present Form of the Treatise, the Proofs, although more diffused, will not be found less convincing, than if adduced in a more regular Series of Propositions.

TREATISE, &c.

In enquiring into the action of Mercury upon living bodies, no attempt will be made to inveſtigate its *modus operandi*, of which we are totally ignorant. It is the effects, whether ſalutary or noxious, that ſucceed the application of that power to living bodies, which will form the ſubject of conſideration.

Whatever be the mode in which mercury acts, like every ſubſtance in nature, it can produce no other effect upon living bodies, than to increaſe or diminiſh the power, with which they perform their proper functions; in other words, to increaſe or dimiuiſh their excitement. All the ſubſtances in nature, which are capable, when applied to living bodies, of increaſing or diminiſhing their excitement, are denominated ſtimulant or exciting powers. Should it, then, appear that mercury will increaſe or diminiſh the excitement,—that it

will both produce and cure diſeaſes of indirect debility,—may we not, nay, muſt we not conclude that it is a ſtimulant or exciting power?

This theory I had adopted in 1789; ſince which period, I have applied it to practice, in many caſes, and with conſiderable ſucceſs. The firſt trial was made upon myſelf. In January, 1789, on the paſſage from Bengal to England, having been ſeized with a quotidian intermittent fever, tartar emetic, and afterwards bark, with now and then a cathartic medicine, were, as uſual, exhibited. Under this mode of treatment, I daily became weaker, and in the courſe of three weeks, during which the ſame plan was perſiſted in, my legs became ædematous, the paroxyſms of fever more ſevere, and I could, with difficulty riſe out of bed.

The *evacuant* and *antiſeptic* plans were now entirely abandoned; and between two and three drachms of mercurial ointment, were rubbed upon my body, at bed time. The alteration, which this ſingle rubbing produced, was equally unexpected and ſalutary. I ſlept the whole night; and in the morning, awoke in a gentle perſpiration, without fever, or pain, or any diſagreeable ſymptoms, excepting ædema and general debility, remaining. The ointment was rubbed in, three or four times; and I had no return of fever. My mouth was not affected; and I ſpeedily got well. The iſſue of this experiment made a deep impreſſion on my mind, had determined me, in future, to uſe mercury, in every caſe of intermittent fever. Having obtained a ſlight knowledge of the Brunonian doctrine, I thought myſelf in the ſtate of the benighted traveller, to whom Brown, with ſo much juſtice

and elegance, compared himself, upon the first discovery of his doctrine. *** "veluti viatori, ig-"notâ regione, perditis viæ vestigiis, in umbrâ "noctis erranti, perobscura quœdam, quasi prima "diurna, lux demum adfulsit*." I inferred that mercury, in common with *many*† other medicines, was a stimulant power; and would, therefore, be useful in all diseases of indirect debility. As, according to the same principles, it appeared that other fevers differed from intermittents, only in degree; and as mercury was found a certain cure for intermittents; I thence concluded that fevers, whatever their nosological distinctions, were the proper cases, by which to subject the theory to farther proof. One of the first instances, in which an opportunity of trying the practice in other fevers occurred, was the following.—Having made a voyage to Jamaica, in the interval of two voyages to Bengal, I was, early in 1790, on a visit to my friend, Dr. Hector Maclean, of Russel Hall, in the parish of St. Mary's. During my residence there, an European book-keeper upon the plantation, by name —— Macmillan, was seized with typhus‡, or the common yellow fever of that country. When I first saw him, he was comatose and picking the bed cloathes; he had got some purges, and had been taking bark. His pulse was quick and small; his tongue black and furred; and he was supposed beyond the possibility of recovery.

* Elementa Medicinæ.

† *All*, according to the present ideas.

‡ It is almost unnecessary to observe that nosological distinctions are totally disregarded, as incompatible with the principles of the new doctrine. Generic names are, for convenience, sometimes retained.

I repreſented to Dr. Maclean the good effects produced by mercury, in other caſes of fever, and requeſted that he would permit it to be tried in this; to which, with a liberality, not always to be met with from eſtabliſhed practitioners, he readily conſented*. About an ounce of ſtrong mercurial ointment was immediately rubbed on the patient's body. But, as in typhus, this was a new experiment, I did not chooſe wholly to truſt to the mercury; and therefore deſired that he might be allowed a wine glaſsful of Madeira every hour.†

The next day he was ſtill inſenſible; but ſat up in bed, and ſearched, as it were indiſtinctively, for the Madeira bottle. When it was given him, he would not conſent to part with it; but held it firm, between both hands, as if ſomething, upon which depended his exiſtence. The ointment was again rubbed in, by gueſs, twice in the day,—the quantity about half an ounce each time; and the wine was continued. He was perceptibly getting better. The ſame treatment was perſevered in; and at the end of five days, from the commencement of it, he walked in the verandah, in a ſtate of convaleſcence. It was ſometime, however, before he entirely loſt the fatuitous look which has been noticed as a ſymptom of yellow fever. His face was a little ſwelled, and his gums ſlightly af-

* This gentleman had been a practitioner of reputation. But had then retired from the exerciſe of his profeſſion, and reſided on his eſtate.

† This is but a ſmall quantity of wine in typhus fever.—In ſome caſes it may be neceſſary to give three or four bottles, in the twenty-four hours. In others, wine, in any quantity, is not ſufficiently powerful. Recourſe muſt then be had to the more diffuſible ſtimuli.

fected by the mercury. During convaleſcence, he took wine and bark freely.

THIS recovery, although it appeared ſurpriſing, was ſtill only regarded as accidental. The idea of uſing mercury in fevers was treated, by the generality of medical men, as an extravagant chimera; or, at beſt, a mere ebullition of Brunonianiſm, which they had learnt, at ſchool, to conſider as heretical.* But theſe rebuffs by no means diſcouraged me from proſecuting my reſearches, as will appear from the following remarks, extracted from a medical journal, which I kept in the year 1790:

"MERCURY is univerſally allowed to cure lues "venerea. All writers on hepatitis concur, in ex- "tolling its virtues in that diſeaſe. I have ex- "perienced its efficacy repeatedly in intermit- "tent fevers, once in typhus, twice in gout, and "once in bleeding diſcharges. A caſe is related "in the London Medical Journal of 1786, (page "413) of obſtructed menſes cured by calomel. "Affections produced in irritable habits, by the "tranſplantation of teeth, have alſo been cured by "mercury; and hence, theſe diſeaſes have, in my "opinion, very erroneouſly been ſuppoſed ve- "nereal."

* From this it may be inferred, how well the doctrine has been underſtood, by thoſe who have pretended to ſit in judgment on it. The uſe of mercury as a ſtimulant power reſults as an obvious inference from the medical principles of Brown. But not more ſo than tartar emetic, or falts. He did not perceive theſe inferences himſelf: from whence it will appear, that inſtead of puſhing the conſequences of his doctrine too far, he did not extend them far enough.

This concluſion, which is certainly not juſt, muſt have been productive of the moſt diſagreeable conſequences. The very idea would ſeverely wound the feelings of delicate and modeſt females; among whom diſeaſes, from the tranſplantation of teeth, have moſt frequently ariſen. Beſides the injury to the conſtitution, from an exceſſive uſe of mercury, ſuppoſing the diſeaſe to be venereal. In that diſeaſe, mercury is uſually given, in much larger quantities than is neceſſary, and very ſeldom in ſuch a manner, as to produce the beſt poſſible effects. In fact, ulcerations produced by the improper exhibition of mercury, may be cured by ſuch an application of the ſame power, as to ſupport the general excitement.—The ſame journal proceeds thus;

"As it muſt be allowed that mercury, like ev-
"ery other power, can have but one uniform op-
"eration upon living bodies, it may fairly be con-
"cluded, that all the diſeaſes, which it cures, are
"of the ſame kind. And as ſome of theſe are cer-
"tainly diſeaſes of debility, the reſt muſt be diſ-
"eaſes of debility alſo*. I infer therefore, with
"as much confidence as analogical reaſoning can
"juſtify, that mercury is uſeful, in every diſeaſe

* This propoſition, although of eaſy comprehenſion, does not ſeem to be generally underſtood. It means that all diſeaſes, which can be cured by the ſame powers, muſt depend upon a ſimilar ſtate of the body, by whatever powers that ſtate may have produced. Thus the matter of ſmall pox, and the powers which produce dyſentery, and typhus, muſt occaſion a ſimilar ſtate of the body, differing only in degree; for they are all cured by the application of the ſame powers, differing only in degree.

"of debility.* But I would not be underſtood "to prefer it in every caſe, nor totally to rely up- "on it in any. For, even in lues venerea, where "it is generally a certain cure, it often requires "the aid of other ſtimuli, particularly opium, "wine, and bark; or to be alternated with them, "when from habit, it begins to loſe its effect."

The following caſe, extracted from the ſame journal, is the inſtance alluded to of gout and bleeding diſcharges, being cured by mercury.

"Mrs. E—— B——, of Kingſton, Jamaica, "aged forty years, had been accuſtomed to live "freely, and was ſubject to frequent attacks of "gout. Having been occaſionally at her houſe, "ſhe ſometimes aſked my advice. In the courſe "of a ſhort ſpace of time (for ſhe was ſubject to "frequent paroxyſms) ſhe was cured of two at- "tacks of gout, by mercury, opium, and the warm "bath; but mercury was the principal power ap- "plied. On the 8th of Auguſt, 1790, ſhe com- "plained of an inceſſant menſtrual diſcharge, al- "ternating with a diſcharge of blood from the "piles. Theſe ſymptoms ſhe ſaid had commen- "ced ſeven weeks before, occaſioned, as ſhe "thought, by fear; and for ſome days, had been "accompanied with headach, pain of back, loins, "and other feveriſh ſenſations.—Her ſtomach was "very irritable, and could bear nothing liquid in "the morning, excepting water, acidulated with "elixir of vitrol, or ginger tea. She had a trou- "bleſome cough, and pain in her ſide, which ſhe "ſuppoſed to ariſe from the affection of the liver.

* It ſhould have been *indirect* debility. Theſe obſerva- tions were originally written for my own amuſement, without any intention of publiſhing.

"This idea she was rather encouraged to enter-
"tain, that an opportunity might be got of trying
"the effects of mercury, in bleeding discharges.
"Two drachms of mercurial ointment were rubbed
"on her body in the evening, and she was desired
"to take a draught, with forty drops of tincture of
"opium, every four hours, through the night. Her
"legs were immersed in warm water. She was
"advised to take solid food only; and to use for
"drink water strongly accidulated with elixir vit-
"riol, or ginger tea. August the 9th, the oint-
"ment and laudanum had been used as directed.
"She had no fever; her headach was less severe;
"and she perspired freely. The menses ceased to
"flow, and discharge commenced from the piles.
"She was still encouraged to believe that her liv-
"er was affected; and the medicines were order-
"ed to be continued. August the 10th, she was
"in all respects better. The discharge from the
"piles was considerably less.—One drachm of
"ointment only was rubbed in, and the tincture
"of opium was omitted. 11th, the ointment was
"once more rubbed in. The discharge from the
"piles entirely ceased; and she had no return of
"any of her symptoms."

Those who are inclined to question the efficacy of mercury, in diseases of indirect debility, may object that, as other powers were, in this case, combined with it, the cure cannot fairly be attributed to the mecury alone. That is very true. All the other powers performed their respective parts. But, from a thousand analogies, I think it may be affirmed, that mercury alone would have been sufficient. In general, when several powers can be applied to different parts of the body, either in concourse or succession, so as to support the ex-

citement regularly, and with equality, it is much better to have recourſe to many than to truſt entirely to one.

THE effects of mercury, in fevers and other diſeaſes of indirect debility, were mentioned in converſation with medical men, in many parts of the Iſland of Jamaica; moſt of which I viſited in 1789-90. The idea as uſually happens, was endeavoured to be ridiculed, and the facts to be diſcredited. It has ſince that period, however, come into general practice in Jamaica, the other Weſt-India Iſlands, and in America, as appears from Dr. Duncan's Medical Commentaries, for 1795*. By this hiſtory, it is not intended to claim any more merit for the introduction of that practice, than each reader may be diſpoſed to allow. Provided the facts be admitted, the origin and progreſs of the diſcovery is of little conſequence. As the practice, in ſo far as it is good, is but a mere application of the principles of Brown, the whole merit of it is, in my opinion, juſtly and ſolely due to the doctrine of that moſt ingenious phyſician.

THE following extracts, from the Medical Journal of the Engliſh Eaſt-India Company's ſhip Northumberland, in the years 1791 and 1792, will farther ſhew the manner, in which the application of mercury, upon the ſame principles, was extended to diſeaſes, in which it had never, to my knowledge, been uſed before.

* Page 348 to 354.

"JOHN HURST's case,* is a proof of what I "have experienced on several occasions, and first "of all tried upon myself,—the efficacy of mercury "in intermittent fevers. In all the cases (not less "than ten or twelve) in which the experiment was "fairly made, I have not known it to fail once, "where the mercurial ointment was used in such "quantity as to affect the mouth. The soreness "of the mouth, seems to be a sign, that the system "is sufficiently excited, to overcome diseases of "debility.† A man in health, or in a state of "high vigor, is much sooner affected, than a per-"son in a low, languid condition. In the case of "John Hurst,‡ William Smith,§ —— Cummins,‖ "and Paul Harris,¶ the quantity of mercury used "before salivation was produced, seemed to be "inversely as their vigour. This proposition is "farther confirmed by a fact well known to prac-"titioners—that by premising blood-letting, more

*A case of intermittent. The observations refer to particular cases in the journal.

†This is incorrect. The soreness of the mouth arises from a state of indirect debility, in consequence of the sudden subduction or irregular application of mercury.

‡ Intermittent—§ Jaundice—‖ Ophthalmy—¶Hectic fever—These patients were prescribed for, without any other rule, than to rub in a certain portion of mercurial ointment daily, until the disease should cease, or the mouth become affected, But this as I have since found, is not a proper mode of exhibiting mercury. As it was not supposed to act in any *specific* manner, its operation was supported by opium, camphor, wine, bark, the warm bath, and blisters, according to circumstances. The principles, however, were not always correctly applied. Nor does it seem to be any valid objection, that a knowledge of their application is not to be acquired by intuitively.

" opium or mercury may be *safely* thrown into the " ſyſtem."

ALTHOUGH it is rather deviating from the ſubject, it is worth while to pauſe a moment in admiration of the rule of practice, founded upon this fact. Firſt, to draw blood, to have afterwards the pleaſure of introducing more opium, or mercury into the ſyſtem, than could otherwiſe have been done; to debilitate, in order to ſtrengthen; to accommodate the patient's habit to the quantity of medicine that is to be given, rather than proportion the quantity of medicine to the ſtate of the patient; theſe are rules ſo wonderfully ſublime, that they can never be ſufficiently admired! If it were permitted, upon ſuch ſubjects, to reaſon in a plain way, I would aſk, if a patient's excitement be five degrees below the healthy ſtandard, how can any rational being think of lowering it five degrees more, that he may afterwards raiſe it, with the greater ſafety? He will then require to apply double the force, that would at firſt have been ſufficient. The Journal goes on to obſerve, that " mercury affects the mouth much ſooner, when " opium, bliſters, the warm bath, or any other of the " more powerful ſtimuli are uſed at the ſame time. " In the caſe of William Kirk, the additional " ſtimulus of the warm bath ſpeedily accompliſhed " what opium, mercury, and wine did not effect " for a fortnight."

THIS patient had the uſual ſymptoms of chronic diarrhœa, with a conſiderable degree of hectic fever, emaciation, and entire loſs of appetite. Externally he uſed mercury, and internally opium and wine, according to circumſtances. It was

found neceſſary to alternate theſe ſtimuli with others, ſuch as bliſters and the warm bath. He uſed to remain a quarter of an hour in the bath, heated to as great a degree as he could eaſily bear. It was not tried, until after he had been a fortnight uſing mercury. After having uſed it twice, his mouth became ſore. There was an increaſed flow of ſaliva, and he recovered in a very ſhort ſpace of time, to the great ſurpriſe of all who ſaw him; and, I confeſs, contrary to my own expectations. It now, however, appears, as a caſe of diſeaſe, by no means dangerous, if treated in a manner, but diſtantly approaching to the exactneſs of ſcientific principles. The following remarks are in proſecution of the ſame ſubject:—"In June, "1791, we had from thirty to forty ſoldiers, ill of "fevers, catarrhs, and rheumatiſms, and many "more with various trifling ailments, whoſe caſes "were not entered in the Journal. The ſimilari-"ty of their diſeaſes and treatment, rendered it "unneceſſary to record any, excepting the moſt "dangerous. In every caſe in which mercury "was given, ſo as to produce ſalivation, the pulſe "roſe, and all complaints gave way, as ſoon as the "mouth was thoroughly affected. But in ſome "caſes, that was found very difficult to accom-"pliſh; and in others, I was afraid, although per-"haps without juſt grounds, to puſh the medicine "to a great extent, particularly in diarrhœa and "dyſentery."

This groundleſs apprehenſion, aroſe from a knowledge of the purging effects that ſucceeded the uſe of calomel, and other mercurial preparations; and from erroneouſly ſuppoſing that a medicine, which exhibited in one way, produces purging, cannot, if exhibited in another way, cure dil-

caſes, of which purging is the principal ſymptom. But farther reflection and experience, ſoon baniſhed this remnant of ſcholaſtic prejudice.

I SHALL give one extract more, from the obſervations upon this ſubject, made on board the Northumberland, in April, 1792. "In every "caſe of low fever, which occurred among the "ſoldiers, on the paſſage to India, from the mo- "ment the mouth was affected*, a recovery com- "menced. But as the mercury was uſed exter- "nally only; and as, in ſome caſes, the mouth "could not, in that manner, be affected (which "caſes never terminated favourably) might not "the internal uſe of that medicine prove more effec- "tual? And would it not be adviſeable to exhibit "it, in ſmall doſes, frequently repeated, until the "deſired effect is produced?"

As the foregoing obſervations were not originally deſigned for publication, it was found impoſſible to copy them literally from the journal. In many places, therefore, words are altered to render them leſs unfit for publication; but no alteration is

* By affection of the mouth, is meant an increaſed flow of ſaliva. When a free and increaſed flow of ſaliva takes place, ſuch as conſtitutes ſalivation, a recovery will always enſue, if the ſucceeding treatment be right. But the mouth, gums, fauces, and tongue may be ulcerated, without an increaſed flow of ſaliva being produced. In thoſe caſes, many facts authoriſe the concluſion, that no recovery will take place. Internal local diſeaſe, of the thoracic or abdominal viſcera, or both, will be found upon diſſection. Theſe appearances have been ſo uniform, in many caſes which I have opened, that I can now venture nearly to predict, in what ſtate the viſcera will be found, were the mouth cannot be affected, ſo as to produce an increaſed flow of ſaliva.

any where made in the ſenſe. The journal, from which they are extracted, was examined by the Engliſh Eaſt-India company's phyſician, in Auguſt or September, 1792, and afterwards depoſited in their warehouſe.

From that period my confidence in the powers of mercury, for the cure of all diſeaſes of indirect debility, became ſo decided, that I determined to apply it in every caſe, in which the ideas of my patients would admit of the practice,—even in diarrhœas, and dyſentery, the diſeaſes in which the theory ſeemed moſt difficult of reconciliation. With reſpect to the diſeaſes that were conſidered as depending upon a ſtate of exceſſive excitement, although I much doubted the exiſtence of ſuch a ſtate, yet my ideas were by no means ſufficiently clear in regard to it. An opportunity having ſoon occured of putting it to the teſt of experiment, in my own perſon, it was eagerly embraced. In September, 1793, after having been expoſed a whole day to the heat of the ſun, in an open boat, upon the river Hooghly, I was ſeized, in the evening with ſymptoms of high fever. According to the common practice, I ſhould immediately have loſt blood, taken an emetic, or purgative, and abſtracted as far as poſſible, all the uſual and ordinary ſtimuli. Inſtead of that, a pill, conſiſting of one grain of opium and one grain of calomel, was taken every hour, through the night. By this means the excitement was ſufficiently ſupported, and I remained eaſy, with an abatement of all the febrile ſymptoms. On the following morning, a conſiderable ſtiffneſs, ſwelling, and pain, affected my left arm, from the ſhoulder downwards; and it had aſſumed a kind of livid appearance rather alarming. This arm from the ſituation in which I ſtood in the

boat, had been more expoſed to the direct rays of the ſun, than any other part of my body. It was bathed with tincture of opium, and rubbed with mercurial ointment alternately; and the pills were continued. After having taken about thirty pills, my arm began to return to its uſual ſtate, and all the other ſymptoms diſappeared. The pills were omitted; and I found myſelf quite well.—From eight to twelve hours, however, after the pills were omitted, my mouth, all at once, became very ſore. A diſcharge of blood from the fauces and gums ſoon commenced, which continued troubleſome for two days, and ended in ſalivation. Had I then adverted to the fact, that a ſore mouth and ſalivation are not produced by a regular exhibition of mercury, but by the irregular exhibition, or ſudden ſubduction of it, theſe troubleſome and diſagreeable ſymptoms might eaſily have been avoided; or if, by neglect, they had been allowed to occur, they might as readily have been cured. The fever did not return; and I was ſoon reſtored to health. This fever, after a bleeding or two, would moſt probably have aſſumed the appearance of peripneumony, which, according to the medical hypotheſes of the ſchools, would have indicated ſtill farther bleeding and other evacuations. And there is little doubt that under ſuch treatment, it would have terminated, at the beſt, as ſo many caſes of acute diſeaſes do, in this country,—in adheſions of membranes, local affections of the viſcera, or a very lingering recovery*. But

* In conſequence of a converſation that took place, after writing this treatiſe, the following note, extracted from the 9th vol. of the Edinburgh Medical Commentaries, was ſent me, "Dr. Robert Hamilton, of Lynne Regis, on eighteen "years experience, recommends mercury, joined with opium,

let me be not be misunderstod. It is the bleeding alone which I condemn in so unqualified a manner. The cathartics, sudorifics, &c. employed in these diseases, although by no means given with the proper view, and therefore seldom given in a proper manner, are, upon the whole, productive of more good than harm. Their effect is always to increase excitement, and the state of indirect debility, which succeeds their operation, constituting purging, sweating, &c. arises from their not being repeated afterwards in such a regular manner, as to produce the highest excitement.

Soon after this period, an opportunity occurred of giving mercury a fair trial, in diarrhœa and dysentery, almost the only diseases in which I had not yet ventured to apply it. Early in the year 1794, I was on board the English East-India Company's ship Houghton, composing part of a squadron on a cruize against the French and designed for the protection of Batavia. The crew of the Houghton, in consequence of the ship's having been ill manned, some peculiarities in the internal economy, and having been stationed, at the port of Batavia, a month longer than the other ships, suffered much from sickness. A very great proportion of the seamen were seized with diarrhœas, fevers, and dysenteries, the severest that I had ever seen. The

" in inflammation of the liver, peripneumony (even in women " far advanced in pregnancy) inflammatory gout, wounds of " the head, thorax, abdomen—from one to five grains of ca- " omel, and from $\frac{1}{4}$ to one grain of opium, every six, eight, " or twelve hours." This most excellent practice was, in all probability opposed at the time, in order to support some ridiculous hypotheses of the Schools.

European ſoldiers and laſcars,* being ſubject to different regulations enjoyed a tolerable exemption from diſeaſe. Upon this occaſion, the inefficacy of the treatment, recommended by authors and teachers, in ſevere caſes of dyſentery, ſtruck me in the moſt forcible manner. The uſual doſes of medicines produced no perceptible effect. In this dilemma, it was determined, as had been ſucceſsfully practiced upon other occaſions, "to uſe opium, camphor, mercury and other ſtimuli, both internally and externally, until the diſeaſe "was cured, or a ſalivation produced. In every "caſe, in which the mouth was affected, a recovery with certainty enſued.† Bliſters and wine "were uſed, with great advantage, as auxiliaries." Theſe remarks are taken, with ſome trifling alteration in the language, from a copy of the Medical Journal, kept on board the Houghton, in 1793 and 1794.‡

* We had on board a company of European Infantry, and a company of gun laſcars, from Bengal.

†But in thoſe caſes, in which the mouth could not be affected, ſo as to produce an increaſed flow of ſaliva, not one recovered. This remark was omitted in the Journal, having been ſuppoſed to follow as a neceſſary concluſion from the other. But as, upon a more attentive conſideration, that does not appear to be the caſe, it is proper that both circumſtances ſhould be explicitly ſtated. I was ſometimes deceived by an appearance of ſoreneſs of the mouth, and left off the medicine prematurely.

‡The Journal itſelf, ought to have been depoſited, as uſual, at the India Houſe. But I am informed, that it has either been miſlaid, or, for private reaſons, wilfully ſuppreſſed, by the commander of the Houghton, on his paſſage to Europe. A copy of the remarks, however, has been forwarded to the Court of Directors.

Thus it appears, that the efficacy of mercury has been experienced in almoſt every diſeaſe of indirect debility. In the Eaſt and Weſt-Indies, and in America, it has been found a cure for the yellow fever of theſe climates. But it has not been exhibited with the view, or in the manner, in which alone it can produce the beſt poſſible effects, viz. ſo as to ſupport the excitement. Dr. Chiſholm, indeed, has approached the neareſt to the proper mode of exhibiting this medicine, without however ſeeming to underſtand the principles. It is more ſurpriſing that Dr. Ruſh, who appears to underſtand the fundamental principles of the doctrine of life, ſhould not have applied them, in the treatment of the yellow fever of Philadelphia. His attributing the cure to purging operation, which ſucceeds the uſe of calomel, ſhews how difficult it is to eraſe early impreſſions, however erroneous, even from the moſt vigorous mind.

If opium, wine, and bark failed in caſes of yellow fever oftener than mercury, as is ſaid to have happened at Philadalphia, it muſt have ariſen from the former having been exhibited in deficient quantities, while the latter was given more freely. It will often happen that the prejudices of practitioners, as well as of the multitude, will render the choice of one medicine more elegible than that of another, when there is no difference in other reſpects. The circumſtance of calomel being ſucceeded by purging, led by chance, to a proper practice. But I cannot admit, with Dr. Ruſh, that it was "the triumph of a medical principle." The diſeaſe would have been cured by any mode of treatment capable of ſupporting the excitement in ſuch a manner as to admit of an accumulation of the excitability.

That the opinion is erroneous, needs no other proof than this fact, that, in all diſeaſes, a cure will be better effected, when the medicine is repeated at ſuch intervals, as not to produce purging; but to ſupport the excitement in a regular manner. A cure will alſo be performed by the external application of mercurial ointment, without producing purging, as well as by the internal exhibition of calomel. Neither is ſalivation, ſweating, or an increaſed diſcharge of urine, neceſſary to the cure. On the contrary, theſe ſymptoms, all of which in their different degrees depend upon a ſtate of indirect debility, ſhould, as far as poſſible, be prevented. Salivation is, no doubt, an unequivocal proof of the original diſeaſe having been removed; for being itſelf a diſeaſe of indirect debility, occaſioned by the ſudden ſubduction of mercury, or its repetition at improper intervals, it cannot co-exiſt with any other diſeaſe. Although, therefore, in diſeaſes of very high degree, ſalivation is ſo far a deſirable ſymptom; yet as the diſeaſe, if not incurable, may be cured without it, it ought as far as practicable, to be avoided. There are however, two conditions neceſſary to this. The firſt is, that the practitioner ſhould know the principles, and the manner in which they are to be applied to practice: the ſecond, that the patient ſhould conform exactly to his directions. When theſe circumſtances happily concur, according to any facts that are yet known, there is not a ſingle diſeaſe of indirect debility, in which an organic leſion has not taken place, that may not be cured, without producing either purging, or ſalivation*.

* Two ingenious papers, on the uſe of nitric acid in the cure of diſeaſes, were, ſome time ago, publiſhed at Bombay,

On the contrary, all evacuations, in ſo far as they exceed the degree that takes place in the healthy ſtate, are ſymptoms of indirect debility; and ought therefore to be avoided.

From the caſes annexed to the "View of the "Science of Life," and from the preceding account of the application of mercury for the cure of diſeaſes of indirect debility, as well as from the hiſtory of ſome hundred caſes which have come

ſaid to be written by Dr. Scot, of that place. Upon peruſing them, I was led to inſtitute ſome experiments with that medicine. For reaſons unneceſſary to mention, they were not completed. But there were ſufficient grounds to infer, that Dr. Scot's ſtatement of its effects was faithful, and not overcharged. In chronic caſes of diſeaſe, of every kind, it produced good effects; and, in ſeveral caſes, after the nitric acid was laid aſide, a very ſmall quantity of calomel was ſucceeded by ſalivation. The inference is obvious. It produced an effect upon the mouth, ſimilar to that which ariſes from mercury; and, if a conſiderable degree of ſalivation ſeldom enſued, in the caſes in which I tried it, that probably aroſe from its not having been given in ſufficient quantity.—The ingenious author of the papers alluded to, it is hoped, will find leiſure to trace the analogy, betweeen mercury and nitric acid, more in detail; and to give his ideas to the public in a leſs periſhable ſhape, than a news-paper eſſay. The diſcovery is the more entitled to our reſpect, as it was the reſult of reaſoning, not of accident. Perhaps the large quantity of fluid, neceſſary to dilute the acid, may be an objection, where the leſs bulky preparations of mercury can be uſed with more convenience. But it will often be found a pleaſant drink: and may, with advantage, be alternated with the preparations of mercury. I uſually began by giving from ſixty to a hundred and twenty drops, of highly concentrated acid, in a quart of water, in the 24 hours.

within my knowledge, I think myſelf warranted in drawing the following

CONCLUSIONS :

I.

THAT mercury applied to living bodies, in due proportion, will increaſe the excitement, and thereby cure diſeaſes of indirect debility, in their various degrees.

II.

THAT, applied in an exceſſive degree, or in an irregular manner, it will induce a ſtate of indirect debility, in its various degrees.

III.

THAT this ſtate is indicated by ulcerations of the throat, ſoreneſs of the mouth, ſalivation, purging, ſweat, an increaſed flow of urine, ſometimes ſtrangury, and coſtiveneſs, &c.

IV.

THAT in the exhibition of mercury for the cure of diſeaſes, all theſe ſymptoms ſhould, as far as poſſible, be avoided.

V.

BUT as in diſeaſes of high degree, in which large quantities of mercury are required, it will for the moſt part be difficult, and often impracticable to conform to preſcriptions, with the ne-

c ſſary exactneſs ;* it is much ſafer in ſuch caſes, to run the riſque of producing theſe ſymptoms, than to give ſuch an under proportion as not to remove the diſeaſe.

VI.

THAT the duration of the action of each doſe of mercury, upon the living body, appears to be not leſs than one or more than two hours. This, however, is not conſidered as a point yet eſtabliſhed, with ſufficient preciſion.

VII.

BUT whatever be the duration of its action, ſuch exactly is the period at which the doſes ſhould be ſucceſſively repeated ſo as to ſupport, in a regular manner, the excitement.

VIII.

ULCERATIONS of the throat, ſoreneſs of the mouth, ſalivation, purging, ſtrangury, coſtiveneſs, &c. ariſe, *not* from the immediate action of mer-

* If in the application of mercury, the judgment of the phyſician, and the punctuality of the patient, ſhould even cooperate in enſuring a perfect conformity to principle ; the intervals of ſleep will often be ſufficiently long to occaſion a ſore mouth, an increaſed flow of ſaliva, griping, purging, or any of the other ſymptoms of indirect debility. Few patients, under a courſe of mercury, according to the uſual mode of exhibiting it, entirely eſcape theſe ſymptoms. But in proportion as the principles and practice here inculcated are better underſtood, it will be more in the power of practitioners and patients, ſo to regulate their conduct, as to prevent, for the moſt part, thoſe diſagreeable occurrences.

cury, *but* from its irregular application, or ſudden ſubduction.*

IX.

When, in conſequence of an injudicious application, or ſudden ſubduction of mercury, theſe ſymptoms of indirect debility occur, they may be cured by the ſame, or other exciting powers, applied in a degree proportionate to the exhauſtion of the excitability.

X.

Mercury may, upon theſe principles, be given in much greater quantity, and with much better effect, than could have been done, according to the old mode of exhibiting it; and without producing ſalivation, or any other ſymptom of indirect debility.

XI.

As, in the cure of thoſe high degrees of exhauſtion, conſtituting dyſentery and fevers, mercury has been found to be one of the moſt uſeful medicines; and as plague is a diſeaſe, depending alſo upon a very high ſtate of exhauſtion, it is inferred, that mercury will be found proportionally

* If any one affects to doubt this fact, let him take one grain of calomel every hour, for twenty or thirty hours, and then ſtop. He will find that his mouth does not become ſore while he is taking the calomel, at regular periods, but ſome hours after having left it off; that the ſoreneſs will continue to increaſe for ſome time after having deſiſted from taking the medicine; and may be diminiſhed, or removed by a proper re-application of the ſame power.

uſeful, in the cure even of that peſtilential and fatal diſorder.

XII.

Every caſe of diſeaſe, in which an increaſed flow of ſaliva ſucceeded the uſe of mercury, terminated in recovery.

XIII.

Every caſe in which ulceration of the gums, fauces, and tongue, or a diſcharge of blood from theſe parts took place, without being accompanied or ſucceeded by an increaſed flow of ſaliva, terminated in death.

XIV.

In all the caſes, which, under theſe circumſtances, terminated fatally, extenſive local diſeaſe of the abdominal or thoracic viſcera, or both, was found upon diſſection.*

* In a word, infinitely the worſt in the Calcutta General Hoſpital, and perhaps in all India, I opened, during the moſt unhealthy months of the year, the body of every patient that died under my charge. The appearances were recorded on the books of the Hoſpital. In every caſe there was an extenſive leſion of ſome of the primary organs. Several livers weighed each between five and ſix pounds, and one nearly eight. Some of them contained above a pint of thick pus; and that which weighed near eight pounds, contained above a quart. In ſome caſes cartilaginous, in others boney ſubſtances, were found in livers, in which there were no traces of recent ſuppuration. They ſeemed to be concretions formed from purulent matter. There were generally, in theſe caſes, ulcerations of the cœcum, colon, and rectum. In one caſe of fever, the ſubſtance of the ſpleen was quite diſ-

XV.

From all theſe facts I conclude, that leſion of particular organs, ſuch as to render them unfit for the performance of their proper functions, is the ſtate which conſtitutes an incurable diſeaſe, when the foregoing principles are ſkilfully applied.

XVI.

To what degree a leſion of organs, of primary importance to life, may take place conſiſtently with the re-eſtabliſhment of health, is a point that is by no means aſcertained. We have now, however, one criterion by which to judge, with tolerable accuracy, when organic leſion actually exiſts.

The proſecution of this ſubject, conducted upon the principles which have now been explained, may be attended with important advantages to the practice of medicine; and it is hoped will not be neglected by thoſe, who wiſh to exerciſe their intellectual powers upon ſubjects of real importance.

ſolved. It had the appearance of dark coloured mud, without a ſingle trace of a blood veſſel remaining. The moſt urgent ſymptom, in that caſe, was a raging thirſt. The treatment, in every inſtance of diſeaſe of high exhauſtion, was conducted on the ſame plan that was purſued in the foregoing caſes. And I have the ſatisfaction to ſay, that I did not loſe a ſingle patient, who came under my charge in the incipient ſtage of diſeaſe. But as it is not my deſign to ſet my own judgment in competition with that of any other perſon, I will only affirm, that the practice reſulting from the principles of the new doctrine, was in general infinitely more ſucceſsful, than the common mode of practice, in like caſes, has ever been in my own hands. That of Dr. Yates, and Mr. Brydie, founded upon the ſame priciples, was attended with undeniable ſucceſs.

A

DISSERTATION

ON THE SOURCE OF

EPIDEMIC

AND

PESTILENTIAL

DISEASES;

IN WHICH IS ATTEMPTED TO PROVE, BY A NUMEROUS INDUCTION OF FACTS, THAT THEY NEVER ARISE FROM CONTAGION, BUT ARE ALWAYS PRODUCED BY CERTAIN STATES, OR CERTAIN VICISSITUDES OF THE ATMOSPHERE.

By *CHARLES MACLEAN.*

DOVER, *(N. H.)*

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"SCIENCE has much to deplore from the Multiplicity of Dif-
"eaſes.—It is as repugnant to truth in Medicine, as Poly-
"theiſm is to Truth in Religion. The Phyſician who con-
"ſiders every different Affection of the different Syſtems
"in the Body, or every Affection of different Parts of the
"ſame Syſtem, as diſtinct Diſeaſes, when they ariſe from
"one Cauſe, reſembles the Indian or African Savage, who
"conſiders Water, Dew, Ice, Froſt and Snow, as diſtinct
"Eſſences: while the Phyſician, who conſiders the morbid
"Affections of every part of the Body (however diverſified
"they may be, in their Form or Degrees) as derived from
"one Cauſe, reſembles the Philoſopher, who conſiders
"Dew, Ice, Froſt and Snow, as different Modifications of
"Water, and as derived ſimply from the Abſence of Heat."

☞ *See an Account of the Bilious Yellow Fever, By* B. RUSH, *M. D. Page* 177.

DISSERTATION

ON THE SOURCE OF

EPIDEMIC AND PESTILENTIAL

DISEASES, &c.

IN endeavouring to promote knowledge, it may ſometimes be as uſeful to correct ancient errors as to promulgate new diſcoveries. In medicine, doctrines of the greateſt importance have been handed down from generation to generation, which although demonſtrably falſe, have never once been called in queſtion. The ſuppoſed exiſtence of contagion in plague, dyſentery, and fevers, appears to me, to be a very remarkable inſtance of this propenſity in man, to purſue the beaten tract, however unprofitable or unſafe. Is not this conduct often the effect of ſelfiſhneſs, chooſing to avoid the reſponſibility of innovation? And is it not for the ſame reaſon, that erroneous doctrines generally remain longer undiſproved, in proportion to the extent of their influence upon practice? However that may be, it is certain that contagious matter has, in all ages, been conſidered, by the multitude, as the cauſe of plague, dyſentery, and fevers

—by far the moſt deſtructive diſeaſes that affect the human race. And this hypotheſis, upon the belief of which muſt have depended, and may yet depend, the lives of millions of our fellow creatures, ſeems to have been implicitly aſſented to, by every phyſician, from Hippocrates to the preſent day.

Although I had long entertained doubts upon this ſubject, it was not till very lately, that I was led to conſider it, with particular attention. Upon peruſing Dr. Ruſh's publication on the yellow fever, which deſolated Philadelphia in 1793, all my former doubts recurred, with ten fold force; and the hiſtory of that epidemic, ſerved to complete my conviction, *that no general diſeaſe, which affects a perſon more than once during life, can ever be communicated by contagion.* But as this term may be variouſly underſtood, it may not be improper to give a definition of it in this place. Contagion I conceive to be—a ſpecific matter, generated in a perſon affected with diſeaſe, and capable of communicating that particular diſeaſe, with or without contact, to another.

Was it a matter of mere idle ſpeculation to inquire into the truth of this hypotheſis, not leſs reſpectable from its antiquity than from the univerſality of its adoption, I ſhould have been entirely ſilent. But the frequent recurrence and great mortality of epidemic and peſtilential diſeaſes, in many parts of the globe, render it an object of the moſt eſſential importance to aſcertain, whether they are ever contagious. That they never ariſe from that ſource, I ſhall endeavour to prove, in the following manner :—

1ſt—By ſhewing that conſequences would neceſſarily reſult from the exiſtence of contagion in epidemic and peſtilential diſeaſes, which do not actually take place.

2dly.—By ſhewing that the exiſtence of contagion, has always been taken for granted in theſe diſeaſes, not only without any proof, but even contrary to the evidence of numerous and convincing facts.

3dly—By pointing out the real ſource of ſuch epidemic and peſtilential diſeaſes, as have uſually been reputed contagious; viz. a certain ſtate or certain viciſſitudes of the atmoſphere, together with the caſual application of other powers, producing indirect debility.*

I.—Consequences would reſult from the exiſtence of contagion, in epidemic and peſtilential diſeaſes, which do not actually take place.

If a perſon be affected with any contagious diſeaſe, it will neceſſarily be communicated to every other perſon who comes within the infectious diſtance†, and is not at the time labouring under ſome diſeaſe higher in degree‡. But it is well known, to

* When any reference is made to general medical principles, in this Diſſertation, they are underſtood to be thoſe of the Elementa Medicinæ Brunonis, with the modifications of that doctrine, contained in the preceding "View of the Science of Life."

† By infectious diſtance, I do not mean to expreſs any definite ſpace, but merely the diſtance at which contagion is ſuppoſed to act.

‡ Vide prop. viii. View of the Science of Life.

every one converſant in the ſubject, that in plague, dyſentery, and fevers, a very ſmall proportion only of thoſe, who come within what may be ſuppoſed to be the infectious diſtance, or even in contact with the ſick, is ſeized with theſe diſeaſes. In the moſt univerſal epidemic, it does not appear that a tenth part of the whole inhabitants of a city, has ever been, at one time affected. But let it be ſuppoſed, that every ſixth perſon might have been ſeized; is it credible that the remaining five ſixths were, either, not within the infectious diſtance, or were at the time, labouring under ſome diſeaſe higher in degree, than the prevailing epidemic? If it even be admitted that, in a terrible peſtilence, one half of the inhabitants of a city, may poſſibly be affected, the ſuppoſition that the other half could eſcape, if the diſeaſe was contagious, would be more extravagant; for the greater the number affected, the leſs chance muſt any individual have, of being exempted from contagion. Allowing that one perſon in ten may not have been within the infectious diſtance; and that one in an hundred may have been labouring, at the time, under a more ſevere diſeaſe, than the prevailing epidemic; ſuch is the exact proportion that would eſcape. The reverſe, however, is probably true. But whatever may be the proportion of the number ſeized, to thoſe that eſcape, it cannot be doubted that the application of powers, which produced the diſeaſe, in the perſon firſt affected, is adequate to produce the ſame effect, in all thoſe, who are ſubſequently ſeized.

As the fact cannot be denied, that a great majority have eſcaped, after contact with perſons ill of diſeaſes ſuppoſed to be contagious, attempts may perhaps be made to account for it, by ſup-

poſing a certain peculiarity of conſtitution, which exempts from, or diſpoſes to diſeaſe. Is it the many, who eſcape, that have this happy peculiarity of conſtitution; or the few, who are ſeized, that are ſo unfortunate as to poſſeſs it? The former are evidently too numerous to admit of ſuch an hypotheſis. The property muſt, therefore, I conclude, be given to the latter. But a child, here and there, is exempted from ſmall-pox, although expoſed to its contagion. In order to preſerve a conſiſtency, this fact muſt be accounted for, by the ſame, or another peculiarity of conſtitution. Peculiarities of conſtitution, then, exempt from contagion in one caſe, and diſpoſe to it in another: and thus a term, which in reality means nothing, may be made to account for any thing. For my own part, I muſt confeſs my inability to comprehend any other *peculiarities of conſtitution*, or *idioſyncraſies of habit* than what are conſtituted, by the different degrees of health and diſeaſe,—the different ſtates of excitability.

It appears, therefore, wholly unneceſſary, for any purpoſe that I know, to ſuppoſe that, in epidemic and peſtilential diſeaſes, contagious matter is generated in thoſe individuals who are at firſt ſeized, and from them communicated to others; unleſs indeed, it be determined, at all events, to take the exiſtence of ſuch a power for granted.

It is a well known law of nature, that ſmall-pox, meazles, and other general diſeaſes, which are unqueſtionably contagious, occur, in the ſame perſon, only once during life. It is alſo acknowledged by every author, who has written upon the ſubject, that plague, dyſentery, and fevers affect the ſame perſon, as often as the powers which produce

them are applied. Dr. Alexander Ruſſel, affirms of the plague "the having had this diſtemper "once, does not prevent the contracting it again. "I have ſeen inſtances of the ſame perſon being "infected three ſeveral times, in the ſame ſeaſon." A ſimilar obſervation is made by Dr. Ruſh, reſpecting the yellow fever of Philadelphia. "Caſes of reinfection," ſays he, "were very common during "the prevalence of this fever."

Small-pox, meazles, and other general diſeaſes, which occur only once during life, never diſappear, until the whole of thoſe who have been within the infectious diſtance, and were not, at the time, labouring under ſome diſeaſe higher in degree, have received the infection. As theſe diſeaſes are very mild*, children ſometimes reſiſt the power of contagion, from the ſuperior force of other diſeaſes, although they may be ſo ſlight as to eſcape common obſervation. I will venture to aſſert that no perſon, in perfect health, ever was, or can be expoſed to the power of contagion, without receiving the ſpecific diſeaſe, which that contagion produces; excepting in the ſmall pox, meazles, &c. when the perſon has previouſly the diſeaſe.

Plague, dyſentery, and fevers, then, as they are not ſubject to the ſame law, would, if they were contagious, never diſappear. The contagion, meeting with no obſtacle from other diſeaſes, ſeverer in degree (for there are few indeed of that deſcription) would exerciſe an unlimited and fatal ſway. No perſon could eſcape. Thoſe,

* They are not diſeaſes of exceſſive excitement, but of indirect debility, and generally of a low degree.

who once recovered would, again and again, be ſeized. Infection would proceed, in a continued circle, until the whole human race was extinguiſhed.

2. The exiſtence of contagion in plague, dyſentery, and fevers, has uniformly been taken for granted, not only without proof, but even contrary to the evidence of numerous and convincing facts.

It is well known, that, in hoſpitals, camps, and ſhips, a very ſmall proportion only of thoſe, who ſleep within a ſhort diſtance of, are frequently in converſation, or even in contact with, perſons ill of typhus, dyſentery, or fever, is ſeized with theſe diſeaſes. So far from infection being invariably communicated in this manner, no inſtance of it has ever been diſtinctly traced. If ſuch caſes had ever been recorded, we muſt either reject them as falſe, or abandon one of the fundamental axioms of philoſophy. For, whatever has happened once, muſt happen often; it muſt happen always, in ſimilar circumſtances. But in the ſituations alluded to, theſe circumſtances conſtantly occur, and the alledged effects do not follow. It is not fair to conclude, that dyſentery is contagious, becauſe one perſon happens to be taken ill, while in the neighbourhood of another, who has got the diſeaſe. If the concluſion was juſt, all within the infectious diſtance, not labouring under a diſeaſe higher in degree, would be ſimilarly affected. They would have the diſeaſe with as much equality of force as children have the ſmall-pox. In proportion to the number affected, the power of contagion would increaſe. It would proceed in a geometrical ratio, diverging from the centre, to

every point of the circumference, of a city, a camp, an hoſpital, or a ſhip. It is evident then, that in theſe ſituations, a contagion, which had the power of producing its peculiar diſeaſe, in the ſame perſon, more than once during life, would never diſappear. But dyſentery, fevers, and the plague itſelf ceaſe, in all thoſe ſituations, without having affected perhaps a tenth part of the community. They ceaſe too when they are epidemic, according to ſome periodical law, which evinces that they do not ariſe from any caſual and uncertain ſource, like the accidental application of contagious matter.

The abſurdity of the concluſions which reſult from admitting contagious matter to be the cauſe of epidemic and peſtilential diſeaſes could not have been overlooked till now, if the exiſtence of ſuch a ſource had not been ſo implicitly taken for granted, that even to call in queſtion the truth of it, muſt, to many, have the appearance of ſucceſſive ſcepticiſm. But I ſhall endeavor to deduce my concluſions, from ſuch numerous and undoubted facts, as ought, perhaps, to exempt me from that imputation.

During the prevalence of epidemic and peſtilential diſeaſes, it is well known, that nurſes, and other attendants upon the ſick, are not more liable to be affected than other people, who undergo an equal degree of fatigue. It may perhaps, be ſaid, that they become habituated to the contagion. But how do they eſcape the firſt application of it? They have not then got the habit. No perſon of that deſcription caught the infection from thoſe who died, of what was called the jail fever at the black aſſizes at Oxford; a caſe of alledged

contagion ſo generally known, and ſo frequently quoted by authors. That the power, which occaſioned diſeaſe at the Oxford aſſizes, was not contagious matter, is proved by its producing diarrhœa in ſome, while it produced fevers in others. And further, no perſon was ſeized, who had not been directly expoſed to the influence of the noxious air. Specific contagion, I conceive, cannot produce a diſeaſe leſs uniform in its appearance, than ſmall pox and meazles. But every epidemic and peſtilential diſeaſe, which has hitherto been reputed contagious, aſſumes ſuch various and diſſimilar appearances, in different perſons, that they cannot be the effect of any power, equal and uniform in its operation. The ſymptoms are not, in any two perſons, exactly alike. Hence the difference of opinion among the phyſicians of Philadelphia, during their late epidemic; ſome aſſerting that every diſeaſe had reſolved itſelf into yellow fever, while others, certainly with more reaſon, affirmed that the diſeaſes of the city were various. No epidemic can become ſo general, as to ſuppreſs all other diſeaſes; becauſe all men, labouring under diſeaſes of lower degree, are not expoſed to the powers which produce an epidemic. The ſame perſon indeed cannot, at the ſame time, have both a dyſentery and a dropſy;* but every uſual variety of diſeaſe may exiſt in a community, even in the time of a powerful epidemic, although the epidemic be the moſt general diſorder. The diſſimilarity of ſymptoms, which occaſioned this difference of opinion at Philadelphia,

* It is only meant, in as far as they are general diſeaſes; for, the local affections, which have obtained theſe names, as they occur in different parts of the body, may readily coexiſt.

is, to me, a convincing proof, were there not many others, that the yellow fever of that city, did not arise from any power, of such uniform operation, as contagious matter. Like wine, opium, or mercury, specific contagion must produce similar effects, upon all men, who are similarly situated. It must act alike in Egypt and in America, in London and in Constantinople. But, according to all accounts, the symptoms of epidemic diseases, in different parts of the world are very dissimilar; while those diseases that are undoubtedly contagious, such as small-pox, meazles lues venerea, &c. are the same in all. Wine will intoxicate, cathartics will purge, mercury will salivate in all countries. They will produce these effects, upon almost all men; certainly upon all men who are in health. Those only, who are in a state of disease, higher in degree than these powers can produce, will resist their operation.* But this proportion cannot be one in a thousand, perhaps not one in ten thousand. Such also may be the proportion that would escape, from the effects of a specific contagion, applied to them. It is common, however, for men in health, to be exposed to contact with the sick, and to escape. In that case, contagion, if the disease had been contagious, must inevitably have been applied; and without producing its imputed effects.

Was not the typhus fever, by which so many of the unfortunate people, who were imprisoned

* It is impossible, with the greatest quantity of mercury that has ever been given, to salivate a person, whose liver is in a state of suppuration. No quantity of wine will intoxicate a person, ill of typhus fever, without having first cured the disease.

in the black hole of Calcutta, periſhed, attended with an endleſs variety of ſymptoms? It does not appear that the diſeaſe was, in that caſe, communicated to any perſon, who had not breathed the polluted air of the dungeon. Will it be ſaid, that the Nabob Surajeddoullah had previouſly ordered contagious matter to be inſerted in the black hole? If not, whence was it imported, or where generated?

In the hiſtory of theſe diſeaſes, I think it may be remarked, that phyſicians have been peculiarly exempted from their influence. Is it that there is a principle of repulſion between medical ſkill and contagion? or is it not rather for this plain reaſon that theſe diſeaſes depend upon ſome other power, which the phyſician is better able to avoid? For, will any reaſonable perſon aſſert, that a medical practitioner (unleſs the ſtructure of his body be ſuppoſed different from that of other people) can viſit a patient ten or twelve times, feel his pulſe, and converſe with him without receiving the infection, if the diſeaſe of the patient be contagious, and the practitioner has not, at the time, a diſeaſe of higher degree? Phyſicians in perfect health, have attended as many patients, ill of diſeaſes hitherto reputed contagious, as they could viſit in the day; and yet have eſcaped. But it is as abſurd to believe, that a perſon can be expoſed to the influence of any power, capable of producing plague, dyſentery, or fever, without being affected, as that a large quantity of ſpirituous liquors, or ſtimuli, ſtill more diffuſible, without producing a correſpondent effect. If it be at all admitted, that contagion is the cauſe of theſe diſeaſes; it muſt alſo be admitted, that contagion, as in this caſe, may

ſometimes be applied, without producing its effect, —which is impoſſible.

Another fact worthy of notice is, that aged perſons and children, are both ſeldomer and leſs ſeverely attacked by epidemic and peſtilential diſeaſes, than the young and middle aged; and women ſeldomer and leſs ſeverely than men. Now, if contagion was the ſource of theſe diſeaſes, the caſe would be exactly reverſed. Old people, women, and children, being more in the way of contagion, would be more frequently and more ſeverely attacked. But the young and middle aged, being more expoſed to the viciſſitudes of the atmoſphere, —the principal ſource, as I ſhall afterwards endeavour to ſhew, of thoſe diſeaſes, than aged perſons and children, and men more than women, they are conſequently more ſeverely attacked. It has been a puzzling queſtion to ſolve, "why old people and "children have been leſs obnoxious to plague, "dyſentery, and fevers, than the young and mid-"dle aged; and women leſs than men?" But the ſolution will no longer be difficult, if it ſhould be proved that theſe diſeaſes never ariſe from contagion, but are always produced by certain ſtates or certain viciſſitudes of the atmoſphere, together with the application of other powers, co-operating in the production of indirect debility. For, it is evident that, to the influence of theſe ſtates, or viciſſitudes, and of theſe powers, the young and middle aged are always more expoſed than old people and children; and men more than women.

Let a perſon, in the height of a peſtilential diſeaſe, be removed from the atmoſphere which occaſioned it, into one more pure, he will communicate the infection to no one. "It has been re-

"marked," ſays Dr. Ruſh, ſpeaking of the yellow fever of Philadelphia "that this fever did not "ſpread in the country, when carried there by "perſons who were infected, and afterwards died "with it." In another place he obſerves, "during "four times that it occurred in Charleſton, in no "one inſtance, according to Dr. Lining, was it "propagated in any other part of the ſtate."* Convincing proofs theſe, that the diſeaſe did not depend upon contagion, but upon the ſtate of the atmoſphere at Philadelphia in the one caſe, and at Charleſton in the other. The various ways in which the College of Phyſicians of Philadelphia and Dr. Ruſh attempted to account for the origin of the contagion, which they ſuppoſed had produced the yellow fever of 1793, ſhews into what inconſiſtencies the moſt ſenſible men may be betrayed, when they attempt to reaſon upon falſe data. Having all taken the *exiſtence* of contagion for granted, they only differ with reſpect to the *origin* of it. The College was of opinion, that it was *imported*; Dr. Ruſh affirmed, that it was *generated* in the city. A better deſcription cannot be given of the ſeveral hypotheſes, which diſtracted the faculty, upon this occaſion, than in his own words, "public report had derived it" (the contagion) "from ſeveral different Iſlands; had chaſ-"ed it from ſhip to ſhip, and from ſhore to ſhore; "and finally conveyed it, at different times, in "the city, alternately by dead and living bodies; "and from theſe tales, all of which, when inveſti-"gated, were proved to be without foundation,

* Vide an account of the bilious, remitting, yellow fever, of Philadelphia, by B. Ruſh, M. D. page 157.

" the college of phyſicians compoſed their letter.*
" It would ſeem, from this conduct of the college,
" as if medical ſuperſtition had changed its names,
" and that in accounting for the origin of peſtilen-
" tial fevers, celeſtial, planetary, and demoniacal
" influence, had only yielded to the term—*im-*
" *portation*†." But it does not appear that Dr. Ruſh, in his attempts to trace the origin of the contagion, was more ſucceſsful than the college. He ſuppoſed it to ariſe from putrid exhalation, produced by a heap of damaged coffee, lying on a wharf. But the progreſs of the diſeaſe was not traced, with any certainty to that focus. It is evident, indeed, from Dr. Ruſh's own account, that the inhabitants of other ſtreets had been as early and as generally affected, as thoſe of the ſtreets in the immediate neighbourhood of the coffee.

In this, and every other cauſe of epidemic and peſtilential diſeaſe, the exiſtence of contagion would ſeem to have been uniformly taken for granted, not only without examination, but even contrary to the evidence of numerous facts—a conduct certainly not leſs unphiloſophical in medicine, than in any other department of ſcience.

3.—Certain ſtates or viciſſitudes of the atmoſphere, together with the application of other powers, producing indirect debility, are the cauſe of all epidemic and peſtilential diſeaſes, which affect the ſame perſon more than once during life, and have hitherto been reputed contagious.

* Containing their opinion reſpecting the origin and treatment of the Yellow Fever. Vide Ruſh, page 21.

† Vide an Account of Yellow Fever, page 164.

EVERY country has its unhealthy ſeaſon, correſponding with ſome particular period of the year, at which the diſeaſes, peculiar to that country, are more general and ſevere than at other times. This is obſerved to happen, in thoſe months moſt remarkable for heat, calm weather, or ſudden viciſſitudes of the atmoſphere; and they are nearly the ſame in all parts of the world. In Europe, Aſia, Africa and America, from July to October, with little variation, includes the moſt unhealthy portion of the year. In ſome places indeed, as Aleppo, that happens from April to July; but always with a certain regularity, coinciding with periodical ſtates of the weather. The diſeaſes which annually ariſe from this ſource, are not always general or ſevere. It is only when the heat, calm weather, or viciſſitudes of the atmoſphere, have been uncommon, that the ordinary diſeaſes of the ſeaſon ariſe to a degree, which conſtitutes epidemic and peſtilential diſeaſes.

FROM every record of epidemic and peſtilential diſeaſes, it would appear, that they have their ſtated periods of recurrence; that theſe periods are ſuch months, as are moſt remarkable for viciſſitudes of the atmoſphere; that they become general only in years in which theſe viciſſitudes are extreme; that they do not occur in ſeaſons when the degrees of heat or cold, however intenſe, are equable; nor in years when the ſtate of the atmoſphere remains tempered throughout; and that they uniformly ceaſe, with the eſtabliſhment of an equable ſtate of the atmoſphere, whether the weather be hot or cold.

THE yellow fever in America "appeared ſix

"different times about the 1ſt or middle of Au-
"guſt, and declined or ceaſed about the middle
"of October—viz. in 1732, 1739, 1745, and
"1748 in Charleſton; in 1791 in New-York;
"and 1793 in Philadelphia."* In 1793, the yellow fever appeared alſo in different parts of the Weſt-Indies.† Attempts were made, in the Iſlands, to trace the contagion to the continent. On the continent it was traced back to the Iſlands. But why ſhould we heſitate to believe, that the ſame general cauſes which produced unuſual viciſſitudes of the atmoſphere, in the one country, ſhould extend their influence to the other? In the ſame year and the ſame ſeaſon, the Engliſh ſettlers, on the coaſt of Africa, were ſeized with a fever, which proved fatal to a great number of them. It happened, at this period, that a ſhip arrived from Boullam, on the coaſt of Africa, at Grenada, in the Weſt-Indies. And hence the contagion was ſuppoſed, by Dr. Chiſholm and others, to have been imported in that ſhip. Was it neceſſary, it might eaſily be ſhewn, that theſe ſuppoſitions were adopted upon very ſlight grounds. But if the exiſtence of contagion can be diſproved upon general grounds it would be ſuperfluous to inveſtigate every particular circumſtance in its favour, that may have been haſtily aſſumed as a fact.

In Aleppo according to Dr. Ruſſell, the European inhabitants regularly ſhut themſelves up, in their houſes, every year, at ſome period between April and July. And the rich natives begin to adopt the ſame plan, as far as their cuſtoms will

* Ruſh on the Yellow Fever.

† Vide Chiſholm on the Malignant, Peſtilential Fever, &c.

permit them to do, without ſcandal. From this fact, it appears that the plague occurs at Aleppo, in a ſtate leſs or more mild, almoſt annually, and *that it commences and ceaſes at certain known periods.* But it has been remarked there that, in its moſt ſevere ſtate, this diſeaſe recurs only at periods of ten years, or thereabonts—a regularity, which cannot, upon any known principle, be attributed to a power of ſuch caſual application, as contagious matter.

It has farther been obſerved of the plague, that "the winter puts an end to it at Conſtantinople; the "ſummer deſtroys it in Egypt." In fact, what epidemic or peſtilential diſeaſe has been known to occur with ſeverity at theſe periods of the year? But, in order to account for this, will it be ſaid, that contagion is deſtroyed both by heat and by cold? The aſſertion would certainly be abſurd. Beſides the fact can be much better explained. At theſe periods, the body is not ſo liable to diſeaſe, becauſe it is not expoſed to the effects of heat and cold, dryneſs and moiſture, tempeſtuous and calm weather, ſuddenly and frequently alternated. Theſe viciſſitudes are moſt remarkable in ſpring and autumn, which accordingly are the ſeaſons, moſt fertile of diſeaſes, in all parts of the globe. It is a curious circumſtance, and much to our preſent purpoſe, that the belief of the Turks in the contagious nature of the plague, has conſiderably increaſed, ſince their communication with Europeans has become more extended. Formerly there was no want of ſervants, or relations, to undertake every neceſſary office about the ſick, the ſame as in any common diſtemper; but now, it is difficult to procure even mercenary attendants. "I have met," ſays Dr. Ruſſell, ſpeaking of the plague

at Aleppo in 1760, "with ſeveral inſtances, even "in Turkiſh houſes, where the miſtreſs of the "family was not only ill attended, but even aban- "doned through the timidity of her daughters and "ſlaves. I apprehend the dread of contagion "gains ground among the Mahommedans, in all "parts of Syria, where the Europeans have much "commerce." Mahommed, having probably perceived the bad conſequences that would reſult ſuch a dread, condemned the belief of diſeaſes being ſpread by contagion, as *impious*. And this at leaſt ſhews, that the plague has not always been ſuppoſed, by the Turks, to ariſe from contagion; or if it has, that the belief was deemed injurious. With the example of European credulity before them, the modern followers of Mahommed may, in no long time, put more faith in contagion, than in this law of their prophet. But in ſuch a renunciation of faith, even a Chriſtian will have little cauſe to rejoice. If it ſhould appear to be only a ſubſtitution of one error for another, Europeans will not have much reaſon to ridicule the former ſtupidity of the Turks; nor to boaſt of their own ſuperior penetration, in introducing among them a belief in the contagious nature of peſtilential diſeaſes.

PHYSICIANS, having obſerved the dependence of epidemic diſeaſes upon the ſtate of the atmoſphere, their uniform appearance under ſome ſtates, and ceſſation under others, could not well reconcile theſe facts with the hypotheſis of contagion. But a reconciliation was, at all events, determined upon. The ſtate of the atmoſphere was made to act upon the matter of contagion, in ſuch a manner as to explain every phœnomenon. Is the weather hot, when an epidemic commences, heat gives activity to contagion; is it cold, cold is fa-

vourable to contagion ; is it dry, the contagion is concentrated ; is it wet, diluted : even viciſſitudes ſet it in motion. But ſhould the epidemic happen to ceaſe, during any of theſe ſtates of the atmoſphere, this may with equal facility be accounted for, by aſſigning to the *ſame* powers, as has frequently been done in medical reaſoning, *different* or even *oppoſite* modes of operation. Let the exiſtence of contagion be once admitted as a fact, and there is nothing more eaſy than to trace its origin to ſome ideal ſource. The moſt obvious, and therefore the moſt frequently inſiſted upon, is contact with ſome perſon, ill of the ſame diſeaſe. But as the perſon, who happens to be firſt ſeized, could not have received the infection in that manner, it was found neceſſary to refer it to various ſources. Even with thoſe advantages, however, it was often difficult, and exerciſed the ingenuity of the learned, to diſcover the origin of particular epidemics. The imputed ſources of thoſe calamities became at length ſo numerous, that it requires little labour to trace the origin of all diſeaſes to ſome one, or other of them. If, for inſtance, it cannot be traced to actual contact, it will probably be diſcovered, that the patient has, at ſome recent period, been expoſed to the effluvia of rotten hemp, flax, coffee, cabbage, onions, black pepper, or potatoes ; for all of theſe powers have been ſaid to produce epidemics. But in years, when theſe diſeaſes are ſo highly peſtilential, that the effluvia ariſing from a heap of rotten vegetables, might ſeem too trifling a power to produce ſuch important effects, recourſe may ſtill be had to the importation of contagious matter, in bales of goods from the Mediterranean ; or, with the ingenious Gibbon, to the generation of it, by ſwarms of putrid locuſts, in Egypt. Theſe hypotheſes, were

they not ſupported by the authority of celebrated names, are almoſt too ridiculous for refutation. That a parcel of rotten vegetables ſhould produce a diſeaſe, that is contagious, and capable of producing deſolation and death, over a populous city, ought not certainly to be credited without proof; and with reſpect to proof, it does not appear that there is any, excepting that, during the prevalence of epidemics, vegetables have become putrid. Was putrid vegetable exhalation ever the cauſe of a contagious diſeaſe, it would ſpread in an evident and regular progreſſion, affecting firſt thoſe who are neareſt to its ſource. There could be no poſſibility of miſtaking or overlooking the cauſe. But as no ſuch progreſs has ever been aſcertained, and as it might have eaſily been traced had there been any truth in the opinion, it is every way inconſiſtent with juſt reaſoning to admit, that putrid vegetable exhalation can be the cauſe of contagion.—I mean not to deny, that putrid vegetable exhalation may produce diſeaſe, but the diſeaſe will not be contagious. There cannot be a doubt that putrid vegetable exhalation is a power, capable of producing diſeaſe, in its immediate neighbourhood; but it is equally certain, that it never can occaſion an epidemic or peſtilential diſeaſe, over a whole country, or city. The putridity of vegetables, and the epidemic diſeaſes of animals, are probably occaſioned by the ſame power, viz. a certain ſtate or certain viciſſitudes of the atmoſphere. That kind of weather or that diſpoſition of the ſurrounding elements, which occaſions an uncommon mortality among animals and vegetables, will alſo produce an uncommon degree of putrefaction, among theſe ſubſtances, their dead ſtate.

COULD the hiſtory of all epidemic and peſtilential diſeaſes of animals be minutely traced, I am well convinced it would be found that they have uniformly been attended with correſpondent diſeaſes of vegetables, in that particular part of a country, to which they have been confined. For, is all living bodies are ſubject to the ſame laws,* it is evident that any power, which can produce general diſeaſe in animals, will have the ſame effect upon that portion of vegetable ſubſtances to which it is applied; and *vice verſa*. Accordingly thoſe diſeaſes of indirect debility of vegetable, known to farmers by the terms *ruſt* and *blaſt*, have often been obſerved to occur, at the ſame time with epidemic diſeaſes among animals. And the reaſon why ſuch a coincidence has not always been expreſsly noticed, is probably, that the ſubject has not been conſidered in this point of view. If ſuch a coincidence then ſhould be found invariably true, will it be ſaid that contagion may be communinated from animals to vegetables, and from vegetables to animals?

WHEN particular diſtricts of a country, whole nations, or conſiderable portions of a continent, are ſuffering from a ſcarcity of grain, will it be ſaid that the diſeaſe of vegetables, which is the cauſe of the ſcarcity, was produced, not by the ſtate of the atmoſphere, but by contagion? In this caſe, how is the contagious matter to be traced? Is it waſted, as it were by a magic influence, from field to field,—over mountains, rivers, lakes, and oceans? The infectious diſtance would, in that caſe, be wide indeed! But I apprehend it will ſcarcely be contended, that the epidemic diſeaſes of vegetables

* Vide Prop. I. View of the Science of Life.

are contagious. And in regard to animals, the opinion does not appear at all more probable; excepting from the ſingle circumſtance of their not being rooted to the ſoil. Would it not be more rational to admit, that the diſeaſes, in both caſes, as produced by the operation of ſome ſuch general power as the ſtates or viciſſitudes of the atmoſphere, to the influence of which animals and vegetables are equally expoſed?

Of the numerous facts, by which this propoſition is ſupported, it will ſuffice to quote a few. As Dr. Ruſh's account of the yellow fever of Philadelphia is, perhaps, the beſt hiſtory that has been given of any epidemic, it may be often with propriety referred to. There was ſomething in the "heat and drought of the ſummer months, (1793) "which was uncommon, in their influence upon "the human body. Labourers every where gave "out, (to uſe the common phraſe) in harveſt, and "frequently too when the mercury in Farenheit's "Thermometer was under 84*****. The crops of "grain and graſs were impaired by the droughts."

It appears, from ſeveral obſervations, that there was, that year, an uncommon calmneſs of the weather.

"In the year 1762, the billious yellow fever "prevailed in Philadelphia, after a very hot ſum-"mer, and ſpread like a plague, carrying off daily, "for ſome time, upwards of twenty perſons." Can it be doubted, that theſe ſtates of the weather will produce diſeaſe, both among animals and vegetables? And if the operation of ſuch an obvious power, be adequate to explain the phœnomena of peſtilential diſeaſes, what need is there of adopting

an ideal one, like contagious matter, to account for them?

MR. Potter, in a letter to Dr. Ruſh, dated from Caroline, county Maryland, 1ſt November, 1793, ſays, "it is an invariable maxim here, both among "phyſicians and farmers, that, if the wheat be "damaged by ruſt or blaſt, a contagious dyſente-"ry is ſoon to follow."*

PREVIOUS to the occurrence of every epidemic, ſomething unuſual, in the ſtate of the atmoſphere, has always been remarked. A yellow fever appeared at Cadiz, after a hot and dry ſummer in 1764; and at Penſacola, in ſimilar circumſtances, in 1765. Was the contagion traced, in this caſe, from Cadiz to Penſacola, by a direct or circuitous channel, or was it traced at all?—That the yellow fever of Philadelphia, in 1793, depended upon the ſtates or viciſſitudes of the atmoſpere, evidently appears from the following obſervations, communicated to Dr. Ruſh, by a gentleman, who reſided occaſionally in ſouthern and tropical countries. He informed him, that he had obſerved, in "the month of July, ſeveral weeks "before the yellow fever became general, a pecu-"liar and univerſal fallowneſs of complexion, in "the faces of the citizens of Philadelphia, ſuch as "he had obſerved to precede the prevalence of "malignant bilious fevers, in hot climates. Dr. "Dick had obſerved the ſame appearance in the "faces of people in Alexandria, accompanied in "ſome caſes, by a yellowneſs in the eyes, during "the laſt ſummer, (1793) and ſome time before

* Page 181.

" violent, bilious fevers became epidemic, upon the " banks of the Potowmac."* A change ſo gradual and general in the appearance, both of animals and vegetables, can never be explained by admitting contagion, but is eaſily and ſatisfactorily accounted for, by ſuppoſing the ſtates or viciſſitudes of the atmoſphere to have been the noxious power. " It appears farther, from the regiſter of the " weather, that there was no rain between the " 25th of Auguſt, and the 15th of October, ex- " cept a few drops, hardly enough to lay the duſt " of the ſtreets, on the 9th of September, " and the 12th of October. In conſequence of " this drought, the ſprings and wells failed in many " parts of the country. The duſt, in ſome places, " extended two feet above the ſurface of the " ground. The paſtures were deficient or burnt " up. There was a ſcarcity of autumnal fruits in " the neighbourhood of the city. But while veg- " etation drooped or died from the want of moiſture " in ſome places, it revived with preternatural " vigour, from unuſual heat, in others. Cherry trees " bloſſomed, and apple, pear, and plumb trees bore " young fruit, in ſeveral gardens in Trenton, thirty " miles from Philadelphia, in the month of Octo- " ber.

" However unoffenſive uniform heat when " agitated by gentle breezes, may be; there is, " I believe, no record of a dry, warm, and ſtag- " nating air, having exiſted for any length of time, " without producing diſeaſes. Hippocrates in " deſcribing a peſtilential fever, ſays, the year in " which it prevailed, was without a breeze of wind. " The ſame ſtate of the atmoſphere, for ſix weeks,

* Vide Ruſh, page 183.

" is mentioned in many of the hiſtories of the " plague, which prevailed in London, in 1665."*

THUS all the facts ſtated by Dr. Ruſh, and many of his obſervations prove, that the yellow fever of Philadelphia, in common with other epidemics, was produced by the ſtates or viciſſitudes of the atmoſphere, and not by contagious matter, imported, or generated in the city.

PESTILENTIAL diſeaſes are neither ſo frequent nor ſo fatal in modern, as they were in ancient times. Cities are now more commodiouſly built; the mode of living is improved; and every circumſtance that can contribute to the preſervation of health better underſtood. Is it not from theſe changes, in the ſtate of ſociety, that London, Paris, Madrid, Liſbon, and Marſeilles are now much leſs ſubject to epidemic diſeaſes than formerly? And in the progreſs of improvement, may not theſe diſeaſes entirely diſappear? The inhabitants of Grand Cairo, according to Mr. Savary, are heaped together by thouſands. Two hundred citizens there occupy leſs ſpace than thirty at Paris. Thirty citizens at Paris occupy leſs ſpace than ten citizens of London. Twenty citizens of Grand Cairo, therefore occupy leſs ſpace than one citizen of London. The manner in which the citizens of Grand Cairo are thus crouded together, would alone ſeem ſufficient, in a ſtagnant ſtate of the atmoſphere, to produce peſtilential diſeaſes of the higheſt degree.

THE large commercial cities, which have been

* See Ruſh pages 109—110.

moſt frequently ravaged by the plague, are for the convenience of ſea ports, built in low and unhealthy ſituations. Their ſtreets have generally been irregular, crouded, and dirty. In theſe cities, therefore, peſtilential diſeaſes always commence. This circumſtance, together with that effect of ſelf-love, which prevents us from diſcovering the origin of any evil with ourſelves, probably gave riſe to the idea, that contagion was imported in bales of goods, or even in parcels of old clothes, from diſtant countries. The Epidemic of a ſeaſon, appearing generally in ſeveral places at a time, by enabling the inhabitants of one place to trace it to another, has alſo ſerved to ſtrengthen the ſame opinion. But may not ſimilar ſtates of the atmoſphere occur in the ſame ſeaſon, in Egypt and in Syria, in Damaſcus and in Aleppo, in Grand Cairo and in Marſeilles, in Smyrna and in London, in the Weſt-India iſlands and in America? And will not theſe ſimilar ſtates produce peſtilential diſeaſes of a ſimilar appearance? The plague, indeed, will never appear with ſimilar ſymptons in London and in Conſtantinople, becauſe the ſtates or viciſſitudes of the atmoſphere, in theſe two places, can never be exactly alike. But if it depended upon a power, like ſpecific contagion, which muſt be the ſame in all places, the ſymptoms would every where appear with a uniformity ſimilar to thoſe of ſmall-pox.

CONTAGION then, it would ſeem, cannot explain the phœnomena of peſtilential diſeaſes, without the aſſiſtance of the ſtates or viciſſitudes of the atmoſphere; but the ſtates or viciſſitudes of the atmoſphere will explain them, without the aſſiſtance of contagion. Here I will again avail myſelf of the authority of Dr. Ruſh, as far as impor-

tation is concerned. "The report of the College "of Phyſicians has ſerved to confirm me in an o- "pinion, that the plagues which deſolated moſt of "the countries in Europe in former centuries, "and which were always ſaid to be foreign ex- "traction, were in moſt inſtances of domeſtic ori- "gin. Between the years 1006 and 1680, the "plague was epidemic 52 times all over Europe. "It prevailed 14 times in the 14th century. The "the ſtate of Europe in this long period is well "known. Idleneſs, a deficiency of vegetable ali- "ment, a camp life from the frequency of wars, "famine, an uncultivated and marſhy ſoil, ſmall "cabins, and the want of cleanlineſs in dreſs, diet, "and furniture, all concurred to generate peſti- "lential diſeaſes. The plagues which prevailed "in London every year, from 1593 to 1611, and "from 1636 to 1649, I ſuſpect were generated in "that city. The diminution of plagues in Eu- "rope, more eſpecially in London, appears to "have been produced by the great change in "the diet and manners of the people; alſo by the "more commodious and airy forms of the houſes "of the poor, among whom the plague *always* "makes its firſt appearance. It is true theſe "plagues were ſaid by authors to have been im- "ported, either directly or indirectly from the "Levant; but the proof of ſuch importation were "in moſt caſes as vague and deficient as they were "of the Weſt-India origin of our late epidemic. "The peſtilential fevers, which have been men- "tioned, have been deſcribed by authors, by the "generic name of the plague."*

WHY do peſtilential diſeaſes *always* make their

* Page 265—266.

firſt appearance among the poor? Has contagious matter an inſtinctive attachment to this claſs of men? No. But they are conſtantly more expoſed than the rich, to the principal power, which produces peſtilential diſeaſes, viz. certain ſtates or certain viciſſitudes of the weather.

THE viciſſitudes of the atmoſphere conſtitute a power great, evident, and extenſive, in its effects upon the animal and vegetable world:—a ſource, to which the epidemic and peſtilential diſeaſes of living bodies may, with certainty, be traced. Whereas contagious matter is a power that has uniformly been taken for granted, without examination; of which the exiſtence, in epidemic and peſtilential diſeaſes, is even diſproved by a numerous induction of facts; and, if admitted, is incapable of explaining their phœnomena.

FROM all theſe conſiderations, I conclude that no general diſeaſe, excepting ſuch as occur only once during life, is contagious. And that all epidemic and peſtilential diſeaſes, which occur more than once during life, and have hitherto been reputed contagious, depend upon certain ſtates, or certain viciſſitudes of the atmoſphere, together with the application of other powers, producing indirect debility.

VIEWING this as not merely a queſtion of idle medical diſputation, but as one of the utmoſt practical importance, I regret that neither my abilities nor my ſituation, enable me to do it that juſtice, which it certainly deſerves. The attempt which I have made, may however, be the means of calling forth the obſervations of others, better qualified to illuſtrate the ſubject. Whether the

exiſtence of contagion, in epidemic and peſtilential diſeaſes, be ultimately proved, or diſproved, a diſcuſſion, and deciſion of the queſtion muſt be attended with conſiderable utility. Let us take a view of the pernicious conſequences which reſult from the opinion now received, ſuppoſing it to be falſe; and contraſt it with the benefits that would ariſe from a contrary one, ſuppoſing it to be true.

THE conſternation and mortality, occaſioned by epidemic diſeaſes, muſt always be greatly increaſed, by a belief in their contagious nature. Thoſe who are yet well, will be the more readily affected; and thoſe who are ill, will be in greater danger of ſuffering, from the deſertion of timid relations, or mercenary attendants. What ſerious evils may not the dread of contagion produce, among the uninformed multitude, when it can occaſion ſuch ſcenes as the following, among ſenſible men of the medical profeſſion? In 1665, we find Dr. Hodges preſcribing, from his parlour window, for patients in the ſtreets of London; and at a later period, Dr. P. Ruſſell preſcribing from a chamber window, fifteen feet above the level of of the ſtreets at Aleppo. Dr. A. Ruſſell's candid account of the manner in which he preſcribed is worthy of note; both as it tends to diſprove contagion, and to ſhew the pernicious conſequences of believing in it. "In the two preceding "years" (he wrote in 1744) "I had preſcribed for "the ſick chiefly from the accounts brought me "by a perſon, whom I employed to viſit them; "for though before ſhutting up, I was often in "ſpight of all my precautions, deceived by falſe "repreſentations of the caſe, and led to viſit ſome "of the infected; yet I avoided it to the utmoſt

" of my power : but this year the dread of con-
" tagion (like that of other dangers to which one
" has been long expoſed) being much worn off, I
" attended the ſick in the plague in the ſame man-
" ner as thoſe labouring under ordinary fevers."
Could Dr. Ruſſell, or his deputy, have attended the ſick, with impunity, if the diſeaſe had been contagious ? In other words, can a power be applied, without producing its correſpondent effect ? I know not by what refinement of ſophiſtry the force of this objection can be alluded. To come down to a period ſtill more recent, ſome of the phyſicians of Philadelphia are ſaid to have fled the city, during the prevalence of their late epidemic ; a conduct that muſt have added both to the conſternation and mortality of their patients. The effects of a popular belief in ſuch opinions are, in my eſtimation, no leſs injurious to mankind, than they are humiliating to the medical profeſſion. What would be ſaid of a military officer, who deſerted his poſt at the ſight of an enemy, leaving his fellow-ſoldiers to fight the battle ? During the rage of an epidemic, phyſicians may be looked upon as general officers, in whom it is always regarded more ſhameful to abandon the field of battle, than in private ſoldiers.

If on the other hand, a belief in contagion was entirely laid aſide, the European inhabitants of Aleppo, and other places ſubject to the plague, would no longer ſhut themſelves up in their houſes, for fear of contagion. They would only remain at home occaſionally, to avoid the influence of the ſun, or viciſſitudes of the weather. Inſtead of a conſtant confinement for ſeveral months, they would only think it neceſſary to refrain from going abroad during the hotteſt part of the day ; or

to take precautions againſt the morning and evening fogs. Thus the dread inſpired by the apprehenſions of infection, would happily be baniſhed from their minds; and that alone would be a powerful mean of protecting them from diſeaſe. It is not ſuppoſed, however, that the cuſtom of ſhutting up is uſeleſs. The utility of it is evident; and it is as evidently founded upon a principle very different from that of avoiding contagion. By confinement, the inhabitants of Aleppo avoid expoſure to heat, and the viciſſitudes of the weather, which are the real ſource of the plague. But their confinement, if regulated upon principle, need neither be ſo conſtant nor anxious.

ANOTHER advantage that would reſult from rejecting the doctrine of contagion, in peſtilential diſeaſes, is that the quarantines uſually exacted of ſhips, coming from places ſuſpected of contagion, would no longer be conſidered neceſſary. The hardſhip, or rather cruelty of ſuch ordeals, is too evident to require a comment. Could the contagion be conveyed in the manner ſuppoſed, the injury to individuals muſt of courſe be ſuffered, on account of the community. But if it be proved that this cannot happen, the reſtriction muſt appear exceedingly abſurd. Is it probable, that London being exempted from peſtilential diſeaſes, for many years paſt, will be imputed to the wonderful ſtrictneſs, with which Mediterranean ſhips have been made to perform this forty days farce?

ABOVE all, the adoption of this theory, by recalling phyſicians from a wrong tract of inveſtigation, would probably be the means of enabling them to apply principles to the cure of all epidemic

diſeaſes, hitherto ſo often fatal, which would render them little more dangerous, than common fevers are at this day.—Inſtead of waſting time in tracing contagious matter from city to city, they would endeavour to diſcover what are the particular ſtates or viciſſitudes of the atmoſphere, which produce epidemic diſeaſes; what are the cauſes of theſe viciſſitudes; and what are the beſt modes of counteracting their effects upon the human body.

THIS ſubject is highly worthy of inveſtigation. For though it may be ſaid that, as the ſtimulant powers, which are found to cure epidemic diſeaſes, afford a proof that they depend upon a very great degree of indirect debility, and that therefore a minute acquaintance with the powers which occaſioned them is not neceſſary to guide the practice; yet it muſt alſo be admitted, that every link, in the chain of knowledge, is a valuable acquiſition.—There is not a fact in nature, from which ſome uſeful inference may not be drawn.

OBSERVATIONS ON THE CURE.

WHATEVER be the powers that produce epidemic diſeaſes, it is evident, from thoſe which are found to cure them, that they all depend upon a high ſtate of indirect debility. Fevers and dyſentery have of late, every where, yielded to the powers of mercury, and other ſtimuli of the moſt diffuſible kind. That is, thoſe medicines have been found more ſucceſsful, than any that were ever uſed before. If eight grains of calomel, and

four grains of opium, repeated every two, three, or four hours, will cure a fever, or a dyſentery of a certain degree, will not the ſame medicines produce the ſame effect in plague, if given in quantities proportionate to the force of the diſeaſe? Ought not the phyſicians of Aleppo to give a fair trial to a medicine in plague, which has been found ſo ſucceſsful in other epidemics? As plague, however, is a diſeaſe, by all accounts, of a very high degree of exhauſtion, it may ſometimes be neceſſary to go the length of, from fifteen to twenty grains of calomel, or even more, in repeated doſes. The duration of the action of each doſe, ſhould regulate their repetition; but that does not ſeem to be yet accurately aſcertained. It appears, as far as I have been able to obſerve, that the intervals between the doſes of mercury, ought not to be longer than two or three hours.—In exhibiting this medicine, it is a fact worthy of remark, and deſerves to be particularly remembered when large doſes are required, that by a ſudden ſubduction of it, the patient is apt to have a very ſore mouth, a violent ſalivation, and ſome times an alarming diſcharge of blood from the ſauces. When any of the ſymptoms unexpectedly occur, it will be found, that the patient has ſuddenly left off his medicine, or has taken it in ſuch an irregular manner, as to produce ſimilar effects. This will often happen, from the imprudence of patients, in the hands of the moſt ſkilful phyſicians; but it perhaps more frequently occurs, from an ignorance of the fact. Although it has already been noticed in my "Treatiſe on the Action of Mercury," yet it appears proper to inſiſt upon it, in a more particular manner, when that medicine is propoſed to be given in a diſeaſe, that will require its exhibition in unprecedented quantities. Sup-

poſe a caſe of plague to require the exhibition of a ſcruple of calomel every two or three hours, if it was ſuddenly left off, an alarming hemorrhagy would in moſt caſes enſue. It would be of conſiderable advantage to the practitioner, to know that this effect was produced by the too ſudden ſubduction of the high ſtimulant power, which had been for ſome time previouſly applied to the body; and that it may be prevented by the regular exhibition and gradual reduction; or removed by the re-application of the ſame power, or the ſubſtitution of others equivalent in force. Viciſſitudes in the application of ſubſtances, uſed in medicine, will produce diſeaſe, as well as viciſſitudes in the ſtate of the atmoſphere, or in the force of any other exciting power. But an application of the ſame powers, in a due degree, will remove the diſeaſes which an exceſſive or deficient application, or alterations in the force of them may have occaſioned.

The terms exceſs and deficiency, in the application of external powers to living bodies, do not relate to the ſum of ſtimulus uſually applied in a ſtate of health, but to the ſtate of the excitability at the time.