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.

Contributors

Yates, William, active 1797.
Maclean, Charles, active 1788-1824. Treatise on the action of mercury, upon living bodies.
Maclean, Charles, active 1788-1824. Dissertation on the source of epidemic and pestilential diseases.
Carrick, Andrew, 1767-1837
Bristol Medical Library Society
University of Bristol. Library

Publication/Creation

Whitehall [Pa.] : Printed by William Young, bookseller no. 52, Second-Street, corner of Chesnut-Street, Philadelphia, 1797.

Persistent URL

https://wellcomecollection.org/works/yxu44ytg

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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.

"THERE are ſome modern Practioners, 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.

Philadelphia:

1797.

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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.

WHITEHALL:

PRINTED BY WILLIAM YOUNG, BOOKSELLER, No. 52, SECOND-STREET, CORNER OF CHESNUT-STREET,

Philadelphia.

1797.

PREFACE.

HAVING applied to practice, in the General Hoſpital, at Calcutta, thoſe medical Principles, vulgarly known by the Name of the 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* THOMSON & FERRIS, *Printers*, Calcutta, *or the Publiſher*, Philadelphia, *will be attended to.*

INDEX.

ERRATA.

Introduction, page 23d, line 13th, for *ſentiments* read *errors*.
Ditto 22d, for *effect*, read *affect*.
Page 24th, line 15th, for *molis*, read *moles*.

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 ſuc-

* 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.

ceeded 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, 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 know-"ledge. Raiſed to this eminence, the induſ-"try of a ſingle teacher, or author, may cor-"rupt thouſands; that of a few, whole na-"tions; 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.

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

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 founded 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 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 endowed "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 Ele-

" menta have lately been publiſhed there. A " friend at Genoa aſſures me, that ſeveral ſur- " geons 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 aſſert, from my own " knowledge, that old phyſicians have not refuſ- " ed 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 ani- " morum, atque ingentis feré plauſus, quibus " nuperimè ſingularis illa hypotheſis, cui novum " Univerſæ Medicinæ Syſtema celebriſmus An- " gliæ Scriptor et Medicus Bruno ſuperſtruxit, " ab iis optimæ ſpei adoleſcentibus excepta eſſet, " qui in florentiſſimo Ticinenſi Archigymnaſio ſa- " lutaris 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

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* Vide Beddoes' Life of Brown.

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 gradu-"al application of ſtimuli to the body, in all "the diſeaſes of indirect debility on the one "hand, and of direct on the other, opens a "wide field for the improvement of medicine. "Perhaps all the diſcoveries of future ages, will "conſiſt more in a new application of eſtabliſh-"ed principle, and in new modes of exhibiting "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 re-

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

† It would be injuſtice, upon this occaſion, to paſs over, without a tribute of applauſe, the laudable exertions of Dr.

marks, be now unneceſſary. 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 modifications 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

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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.

be conſidered as an atonement. There is ſomething ſo flagitious in the attempt to rob departed genius 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, 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 ſentiments to which they have been habituated, from their early years; fewer ſtill have candour 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 effect 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 Baitain, is evinced, by the reception of a late voluminous publication, of which the chief merit con-

fists 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 molis* 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 honour, which exclusively belongs to another. Science knows no personal distinc-

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

tions. 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 he 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 undoubted 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 indiſputably 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 ac-

count of partial blemiſhes, to reject the whole. To the candid, liberal, and enlightened, it will appear much leſs wonderful, that Brown ſhould have ſome times 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 debidebility.

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 diſ-

cuſſion, by which alone the doctrine muſt, finally, be either confirmed, or refuted.

As it is, for obvious reaſons, deſireable, that a knowledge 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 pow-

* 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.

ers in a due, deficient, or exceſſive degree, depend the different ſtates of the excitability.

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

V.—There are three ſtates of the excitability.

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 acceſs.

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 ſtimuli (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 accumulation 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 vegitables and vegitable 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 ſymptoms;—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 reflection, 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 the other familiar signs of increas-

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

ing excitement,—it is evident that the doſes are inſufficient, and ſhould be increaſed, 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 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 the words of Brown, the application of directly debilitating powers to) a body in a ſtate of exhauſtion, 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, malagnant 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 paroxyſm 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 therefore 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, DIEASES OF EXCESSIVE EXCITEMENT.*

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

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

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.

3dly.—The ſtate of diminiſhed excitement, from an *exceſſive* application of ſtimuli, correſponding 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, proportionate to the deficiency. (v. 1.)

XXXI.—There are, therefore, no diſeaſes of exceſſive excitement. From whence it follows that thoſe, which have been ſo denominated by Brown, muſt be diſeaſes, either of direct, or indirect debelity (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 bronchiœ 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, (altho' 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 diſcharge 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 cures, 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 occurence, 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 ſymp-

toms 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 fomentations, and poultices, in phlegmon; 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 the 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	
Diſeaſes of exhauſtion, in their various degrees.	11 — 29	Degrees of ſtimulus to be applied, to produce the greateſt poſſible excitement.
	10 — 30	
	9 — 31	
	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 13 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 eaſy 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 drops 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 conti-

nued 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 much 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 ſaliva 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 of excitement. It will ſhew the very great quantity of the moſt powerful ſtimuli that may be neceſſary, in ſome diſeaſes of that ſtate, in order to effect a cure; and is alſo an example 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 and 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 ſalava 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 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 one hundred drops of tincture of opium, ordered every two hours.—9 P. M. his pulſe was 80, he had ſix ſtools, and frequent vomitting, particularly after taking the Maderia 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 to be continued every two hours. The port wine became diſagreeabie to him, and Medeira 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 ſalava was conſiderable. He had ſlept during the day. The ointment was omitted. A draught of two hundred drops 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 of September, calomel and opium, of each two grains, every ſecond hour, and a draught of eighty drops 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 of calomel were rubbed in, and the pills were continued.—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 quantity 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 colomel 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 1 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 inurable, 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 NORTHUMBERLAND.

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 diſ-

continued 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 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

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

† The coſuſion 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,

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 foreneſs 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.—19th, his pulſe was ſtronger, an eruption 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.—21ſt, he was ſtronger, and declared himſelf in every reſpect better; the only complaints that remained were a foreneſs of the mouth and fauces,

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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.

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 haraſſed 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 to the 27th, his medicines were punctually adminiſtered; his cough, ſpitting, and clammy ſweats were diminiſhed; 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

* 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.

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.

EXTRACTED 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 mid-night 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 mizzen-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 cabbin; 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 it, with much earneſtneſs; and the by-ſtanders, knowing that to be the common practice, joined in urging a compliance. I replied, that, however common the 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 catharticus amarus, ſo as to produce one ſtool. Nothing more was done. He had not an unfavourable 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 :—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 pow-

ders, 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

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

cleaner, and moiſt.—He had one ſtool after having taken two glyſters. He remarked that he had, for the firſt time, a diſtinct paroxyſm 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, and 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 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 approached 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 cafes, both of dyfentery and fever, I have given caftor oil, jallap, and other cathartics, with a view fimply to increafe the excitement. In fo far as they effect that, and thereby invigorate the functions of life, they are proportionally as ufeful as opium, æther, mercury, brandy, wine, or bark. But the purging I conceive to be proportionally as injurious a confequence, and as much a mark of indirect debility, as the headach, ficknefs, and vomiting, which follow an exceffive or irregular ufe of thefe fubftances. This fubject is confidered at greater length elfewhere.

CASE VII.

John Brown, aged 28, was admitted into the General Hofpital, at Calcutta, on the 10th of July, 1796, with typhus fever—He had befides a fore leg, and chancres. His fever, although apparently flight, was very obftinate. In the courfe of two months, he was feveral times almoft cured, by fmall and frequently repeated quantities of opium, mercury, wine, and bark, varied according to circumftances. But, feemingly in confequence of internal local affection, he as often relapfed, without any apparent caufe. His fever,

from continued became remittent, and from remittent intermittent. 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 exceſ-

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* That tartar emetic is a ſtimulant of 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 prejudices 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.

ſively purged and griped through the night†. He had no fever. Two grains of opium, and four grains 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 fauces, and ſome purging. In this caſe, the medicines were by no means correctly 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 fauces, does not take place, while the mercury is regularly taken, but when it is either ſuddenly laid aſide, or given at improper intervals.* The

† 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.

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

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 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.

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, altho' 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 exemp-

tion 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 exeitement 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 doubt anſwer equally 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 DOLLAWAL, 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 colomel 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 immediate-

ly, 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 flowneſs 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 rea-

ſon, 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 evceſſive 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 turgid; 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 calomel 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

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* 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 with-held. For, by ſuch a treatment, the excitability muſt be ſtill farther exhauſted.

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 abdominial viſcera, they appeared to be ſound. The ſcrotum was gangrenous. In one of the arms, there was the 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 excitement, 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 flimſy 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 peripneumony, there is an inflammation of the lungs; and "in order to cure the diſeaſe, the impetus of "the blood in the lungs muſt be leſſened 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 deb ility, 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 aſſerſion, 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

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

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.

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. Altho' 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 cirumſtances, 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 an 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; friƈtions 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 tinƈture of opium * in each, were given, every ſecond hour, during the night. The calomel was occaſionally alternated with camphor, and the tinƈture 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 bet-

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

ter; at one time, the purging rather decreaſed, 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 fillineſs 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 apparant 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.

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* 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.

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 twenty 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 diſeaſed, 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 either 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 contiuued* ; he was allowed eight glaſſes of

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* 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 ſhorter intervals.

wine in the 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 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.

* 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.

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. the 17th, the pills were omitted, and the other medicines continued.—18th, he had not taken any of his medicines the day before. Complain-

ed 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.—20th, 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 the hepor 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 his ſtools; ſickneſs and vomiting more frequent; he complained much of heart-burn; 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

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

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 ſcybala 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, 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 proporti-

ons, while in venereal cafes, it is by much too freely given. Half a grain of calomel, or lefs, given every two or three hours, will in a fhort time effect a cure in ordinary cafes of chancre, gonorrhœa, or even a certain degree of fyphilis. In thefe cafes, there is feldom any great degree of organic lefion, at leaft of thofe organs which are moft effential to life. It is only when fome of the primary organs are in a ftate of local difeafe, that a great and long continued application, of high ftimulant powers, becomes neceffary, in order to re-produce health. Of this, dyfentery is one of the moft familiar and fatal examples.

The diminution of the medicines that was made at one period, upon the profpect of the patient being better, was injudicious. Although, in fuch a cafe, no plan would probably have fucceeded, a perfeverance in the regular application of high exciting powers, would have given him one chance of recovery.

The offenfive ftate of his breath, of which he complained on the 18th of November, was evidently occafioned by the fubduction of the medicines. This is a fymptom of indirect debility, as well as falivation, purging, fweat, or any other effect of an irregular application, or fudden fubduction, of mercury. That thefe effects are fo frequently produced, by the ordinary mode of ex-

hibiting that medicine, ought not to ſurpriſe us. It is alſo obvious 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 pain 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 tak-

ing 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 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 two 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 rub-

bed 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 be 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

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

required, before he could join his ſhip at Diamond 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 conſtitutes 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

* Aikin's Letters to his Son.

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 foreneſs 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 hypotheſis; but a clear induction of 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 the 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 in 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 patient.

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 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 fortnight's 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 throat were very 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 contined. 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 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 con-

* 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.

tinued.—11th, his breath was very fœtid, and tongue much ſwelled; which evinced that he had beenirregular 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 ſore, and he complained of weakneſs; one drachm of ointment was rubbed in three times in the day, and 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 me-

* 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,

dicines. By that ſymptom, I could detect his irregularites. He continued, for ſome time, 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 ſhew 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. This 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 regularity, 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 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 infu-

* 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.

ſion of ſenna, with two grains of tartar emetic, in ſmall doſes, frequently repeated through the day. Draughts, with eighty 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 ſalcatharticus 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,

* 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.

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, 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 100. He was ordered to have a mixture of ſal catharticus amarus; and the draughts were repeated. 30th, he had a ſevere paroxiſm 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

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

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 ointment to be 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 14th of

December, when I difcontinued attending him, he had no complaint, excepting the foreneſs 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 to 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 much greater than 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 principals might indeed be "both ingenious and juſt, for aught they knew, "but that they were dangerous in their applica-"tion 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 re-

flection, 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 irtervention 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 exhauſtion*. 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,

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

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 the accumulation, or to the ſuſceptibility 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

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

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 re-application 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 a 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 applicati- 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 mere-

y general, and in its origin of ſlight degree ; at
rſt ariſing from the ſubduction of nouriſhment,
nd the mental ſtimuli, and afterwards increaſed
y an exceſſive, or irregular application of other
xciting powers, and a continued negation of
ood ſufficiently nouriſhing. Accordingly, the
radual re-application of food ſufficiently nou-
iſhing, and of the mental ſtimuli, is alone, for
ne moſt part, ſufficient to cure the diſeaſe. It
upon the principle of the gradual re-application
nouriſhment, that vegetables have been found
firſt preferable to animal food. And this fact
was, if the above reaſoning be right, that led to
ne error, committed in the text, of conſidering
urvy as a diſeaſe of accumulation.

With reſpect to the excitement and excitabili-
, a more elegant and juſt arrangement of the
opoſitions might, no doubt, have been made.
his defect, however, is not of material import-
nce ; as the principles of the doctrine are ſtill
fficiently intelligible ; and every one, who un-
erſtands them, as they now are, will be able to
dge what they ought to be.

An early and ſincere admirer of this doctrine,
r whoſe judgment I entertain a reſpect, hav-
g expreſſed ſome doubts in regard to the non-
iſtence of diſeaſes of exceſſive excitement, and
equeſted me to re-conſider the ſubject, a defer-

ence 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 diſcern it. And the general facts, or principles, which are inductions from partiular 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 "excеſſive 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 degeee. 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 de-

* 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

lirium, fever, &c. which ariſe from exceſſive expoſure to the ſun, from opium, æther, mercury, or any other ſtimulant power, applied in too 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, theapplication of tartar emetic; ſalivation, the uſe of mercury; purging, the exhibition of cathartics; ſweat, of ſudorifics; nor veſication, the application of a bliſter, or of fire, to the ſkin.—On the contrary, theſe ſymptoms always appear ſomtime after the application of the exciting powers; and may be prevented by a gradual reduction, or cured by a judicious re-application of the ſame powers, or

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diſeaſes. They are ſubjects which ſeem to be yet but little underſtood, although their importance to health and to morals are evidently great.

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 right 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 proving, 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 brandy. 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 up-

on 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

hey 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 application 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

* 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.

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 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*

* 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.

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 noſological 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 is this. THEORY 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 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 its reputatation. 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,

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* 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.

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 of comprehending the terms, can diſbelieve the fundametal 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 falſhood of a doctrine, whoſe principles embrace 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.

A

TREATISE

ON THE ACTION OF

MERCURY,

UPON

LIVING BODIES;

AND,

ITS APPLICATION FOR THE CURE OF DISEASES OF INDIRECT DEBILITY.

BY CHARLES MACLEAN.

PHILADELPHIA:

PRINTED BY WILLIAM YOUNG, BOOKSELLER,
No. 52, SECOND-STREET, Corner of CHESNUT-STREET.

M,DCC,XCVII.

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.

A

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 diminiſh 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, 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, and 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, ignotâ re-"gione, perditis viæ veſtigiis, in umbrâ noctis "erranti, perobſcura quœdam, quaſi prima diur-"na, 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

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* Elementa Medicinæ.

† *All*, according to the preſent ideas.

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. 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 immediatly rubbed on the patient's body.

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

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

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 inſtinctively, 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 ſyptom of yellow fever. His face was a little ſwelled, and his gums ſlightly affected by the mercury. During convaleſcence, he took wine and bark freely.

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* 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.

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 intermittent "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. Af- "fections produced in irritable habits, by the "tranſplantation of teeth, have alſo been cured

* 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 ſalts. 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.

" by mercury; and hence, theſe diſeaſes have, " in my opinion, very erroneouſly been ſuppoſed " venereal."

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:

" At it muſt be allowed that mercury, like ev- " ery other power, can have but one uniform " operation upon living bodies, it may fairly be " concluded, that all the diſeaſes, which it cures, " are of the ſame kind. And as ſome of theſe are " certainly diſeaſes of debility, the reſt muſt be " diſeaſes of debility alſo*. I infer therefore,

* This propoſition, although of eaſy comprehenſion, does not ſeem to be generally underſtood. It means that all diſeaſ-

" with as much confidence as analogical reaſoning " can juſtify, that mercury is uſeful, in every diſ- " eaſe of debility †. But I would not be under- " ſtood to prefer it in every caſe, nor totally " to rely upon it in any. For, even in lues " venerea, where it is generally a certain cure, " it often requires the aid of other ſtimuli, par- " ticularly opium, wine, and bark; or to be al- " ternated 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

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es, which can be cured by the ſame powers, muſt depend upon a ſimilar ſtate of the body, by whatever powers that ſtate may have been 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.

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

" to frequent paroxyſms) ſhe was cured of two
" attacks of gout, by mercury, opium, and the
" warm bath; but mercury was the principal
" power applied. On the 8th of Auguſt, 1790,
" ſhe complained of an inceſſant menſtrual diſ-
" charge, alternating with a diſcharge of blood
" from the piles. Theſe ſymptoms ſhe ſaid had
" commenced 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 wa-
" ter, accidulated with elixir of vitriol, or ginger
" tea. She had a troubleſome cough, and pain
" in her ſide, which ſhe ſuppoſed to ariſe from
" the affection of the liver. This idea ſhe was
" rather encouraged to entertain, that an op-
" portunity 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 de-
" ſired 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 of vitriol, or ginger
" tea. Auguſt the 9th, the ointment and lau-

" danum 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
" liver was affected ; and the medicines were
" ordered 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 diſ-
" charge 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 mercury 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 excitement 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 ſufficient- " ly excited, to overcome diſeaſes of debility†. " A man in health, or in a ſtate of high vigor, " is much ſooner affected, than a perſon in a low, " languid condition. In the caſe of John " Hurſt‡, William Smith§, —— Cummins‖, " and Paul Harris¶, the quantity of mercury

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* 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,

" uſed before ſalivation was produced, ſeemed " to be inverſely as their vigour. This propo- " ſition is farther confirmed by a fact well known " to practitioners—that by premiſing blood-let- " ting, more 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,

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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.

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 Willian Kirk, the addi- " tional ſtimulus of the warm bath ſpeedily ac- " compliſhed 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 ap-

proaching 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 ſimilarity "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 diffi-"cult to accompliſh; and in others, I was afraid, "although perhaps 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 diſeaſes, 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 effected*, a recovery "commenced. But as the mercury was uſed "externally 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 effectual? And would it not be ad- "viſeable 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

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* 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, where the mouth cannot be affected, ſo as to produce an increaſed flow of ſaliva.

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 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 occurred 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 let me not be miſunderſtood. It is the bleeding alone which I condemn in ſo unqualified a manner. The cathartics, ſudorifics, &c. employed

* 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, "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-"lomel, 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.

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 very 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 œconomy, 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 European ſoldiers and laſcars*, being ſubject to

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

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 practiſed upon other occaſions, "to uſe opium, camphor, mercury and "other ſtimuli, both internally, and externally, "until the diſeaſe was cured, or a ſalivation pro-"duced. In every caſe, in which the mouth was "affected, a recovery with certainty enſued*. "Bliſters and wine were uſed, with great ad-"vantage, 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†.

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* 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 dopoſited, as uſual, at the India Houſe. But I am informed, that it has either

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 the 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 Philadelphia, it muſt have ariſen from the former having been exhibited in deficient quantities, while the latter was given more freely.

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been miſſaid, 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.

It will often happen that the prejudices of practitioners, as well as of the multitude, will render the choice of one medicine more eligible 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 indi-

rect 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*.

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

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

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fect 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, between 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.

come 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 imprac-

ticable to conform to preſcriptions, with the neceſſary 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.

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* 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.

VIII.

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

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* 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 reapplication of the ſame power.

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 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*.

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* In a word, infinitely the worſt in the Calcutta General Hoſpital, and perhaps in all India, I opened, during the moſt

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,

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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 diſſolved. 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 principles, was attended with undeniable ſucceſs.

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.

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.*

WHITEHALL:

PRINTED BY WILLIAM YOUNG, BOOKSELLER,
No. 52, SECOND-STREET, CORNER OF CHESNUT-STREET,
Philadelphia.

1797.

" Science has much to deplore from the Multiplicity of
" Diſeaſes.—It is as repugnant to truth in Medicine, as
" Polytheiſm is to Truth in Religion. The Phyſician who
" conſiders 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 con-
" ſiders Water, Dew, Ice, Froſt and Snow, as diſtinct Eſ-
" ſences: 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 altho' 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 innova-

tion? And is it not for the ſame reaſon, that erroneous doctrines generally remain longer undiſproved, in proportion to the extent of their influence upon practiſe? 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 hipotheſis, 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 par-

ticular 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 cantrary 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, toge-

ther 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 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

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* 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.

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 the 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 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 appied. 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

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

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 ſmall pox, meazels, &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, 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, per-

ſons 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 philoſphy. 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 dieaſe, 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 endeavour 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 diarhœa 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, altho' the epidemic be the moſt general diſorder. The diſſimilarity of ſymptoms, which occaſioned this difference of opinion at Philadelphia, 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 of 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

* 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 co-exiſt.

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 cantagious, 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 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 into the black hole? If not, whence was it imported, or where generated?

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* 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 ſupuration. No quantity of wine will intoxicate a perſon, ill of typhus fever, without having firſt cured the diſeaſe.

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, can be applied to living bodies, 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 chil-" dren have been leſs obnoxious to plague, dy-" ſentery, and fevers, than the young and " middle 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 indi-

rect 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 "remarked," 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 Charles-"ton, 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.

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

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 chaſed it from ſhip to "ſhip, and from ſhore to ſhore; and finally con-"veyed it, at different times, in the city, alter-"nately by dead and living bodies; and from "theſe tales, all of which, when inveſtigated, "were proved to be without foundation, the col-"lege of phyſicians compoſed their letter.* It "would ſeem, from this conduct of the col-"lege, as if medical ſuperſtition had changed its "names, and that in accounting for the origin "of peſtilential fevers, celeſtial, planetary, "and demoniacal influence, had only yielded "to the term—*importation*†." But it does not appear that Dr. Ruſh, in his attempts to trace the origin of the contagion, was more ſucceſsful

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

† Vide an Account of the Yellow Fever, page 164.

than the college. He ſuppoſed it to ariſe from putrid, vegetable 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 caſe 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,

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 anunally 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 exteme; 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 mid- "dle 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 ſiezed 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 gene-

* Ruſh on the Yellow Fever.

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

ral 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 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 thereabouts—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 Conſtanti-"nople; the ſummer deſtroys it in Egypt." In fact, what epedemic 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 abandoned "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 from 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 intoducing 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 favourable 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 orign 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 probubly 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 peſti-

lential, 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 prevalance 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 poſſibitity 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 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 piſtilential 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, as 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 vegetables,

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

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 communicated 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 wafted, 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 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 viciſſi-

tudes 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 influ- "ence 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 impair- "ed 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 dai- "ly, 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 phœnome-

na 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 dyſen-"tery 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 atmoſphere, 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 peculiar and

* Page 181.

" univerſal ſallowneſs 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 ca- " ſes, by a yellowneſs in the eyes, during the laſt " ſummer," (1793) " and ſome time before vio- " lent, bilious fevers became epidemic, upon the " banks of the Potowmac."* A change ſo gradu- al and general in the appearance, both of animals and vegetables, can never be explained by admit- ting contagion, but is eaſily and ſatisfactorily ac- counted for, by ſuppoſing the ſtates or viciſſitudes of the atmoſphere to have been the noxious pow- er. " 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-

* Vide Ruſh, page 183.

"etation drooped or died from the want of moiſ-
"ture in ſome places, it revived with preterna-
"tural vigour, from unuſual heat, in others.
"Cherry trees bloſſomed, and apple, pear, and
"plumb trees bore young fruit, in ſeveral gar-
"dens in Trenton, thirty miles from Philadel-
"phia, in the month of October.

"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, 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

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* See Ruſh, pages 109—110.

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 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, pro-

bably 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 ſymptoms 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 importation is concerned. "The report of

" the College of Phyſicians has ſerved to con-
" firm me in an opinion, that the plagues which
" deſolated moſt of the countries in Europe in
" former centuries, and which were always ſaid
" to be foreign extraction, were in moſt inſtan-
" ces of domeſtic origin. Between the years
" 1006 and 1680, the plague was epidemic 52
" times all over Europe. It prevailed 14 times
" in the 14th century. The ſtate of Europe in
" this long period is well known. Idleneſs, a
" deficiency of vegetable aliment, a camp life
" from the frequency of wars, famine, an un-
" cultivated and marſhy ſoil, ſmall cabins, and
" the want of cleanlineſs in dreſs, diet, and
" furniture, all concurred to generate peſtilenti-
" al 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
" Europe, 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 proofs of ſuch importation
" were in moſt caſes as vague and deficient as
" they were of the Weſt-India origin of our late

"epidemic. The peſtilentitl fevers, which have "been mentioned, have been deſcribed by au- "thors, by the generic name of the plague."*

WHY do peſtilential diſeaſes *always* make their 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 epedemic 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 phænomena.

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

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* Page 265—166.

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 parlor 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 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 em- "ployed to viſit them; for though before ſhutt- "ing up, I was often, in ſpight of all my pre- "cautions, 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 contagion (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 manner 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 ſo 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 the 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 my 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 ſometimes an alarming diſcharge of blood from the fauces. When any of theſe 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 probably require its exhibition in unprecedented quantities. Suppoſe 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.

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