

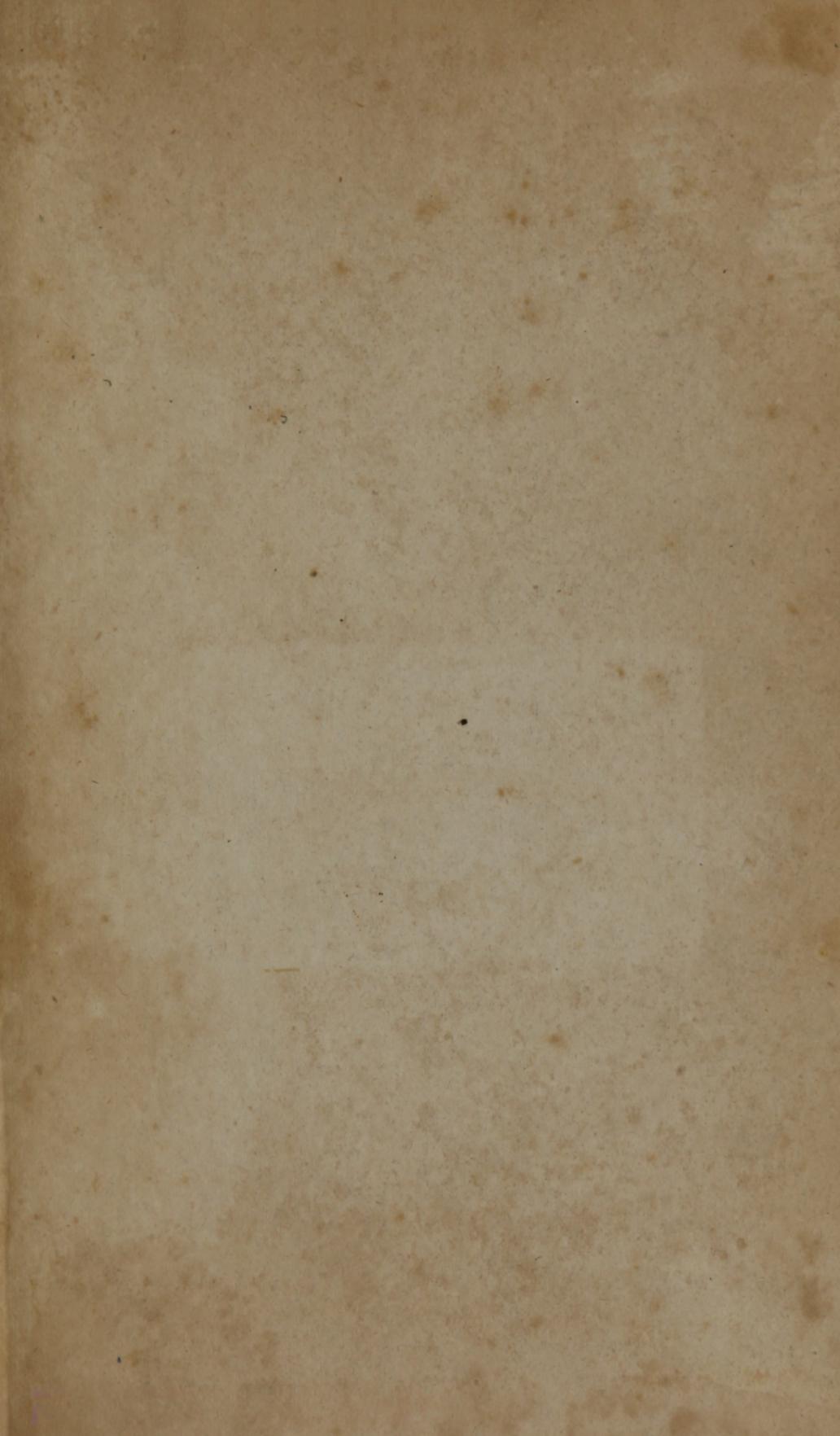
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AN
IMPROVED SYSTEM
OF
BOTANIC MEDICINE,
FOUNDED UPON
CORRECT PHYSIOLOGICAL PRINCIPLES;
EMBRACING A CONCISE VIEW OF
ANATOMY AND PHYSIOLOGY;
TOGETHER WITH AN
ILLUSTRATION OF THE NEW THEORY OF MEDICINE.

TO WHICH IS ADDED, A TREATISE ON FEMALE COMPLAINTS,
MIDWIFERY, AND THE DISEASES OF CHILDREN.

BY HORTON HOWARD.

IN THREE VOLUMES.

VOL. I.

SECOND EDITION; REVISED AND CORRECTED.

COLUMBUS, OHIO:
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PREFACE

TO THE FIRST EDITION.

IN presenting to the public a new work, upon the very face of which is stamped the impress of novelty and innovation, I have assumed it as granted, that a concise history of the circumstances and motives which led to its publication, would not only be interesting but useful to the reader.

From exposure in early youth, my health became much impaired, and my constitution weakened by sickness; insomuch that from the age of thirteen to twenty-one, I was a constant prey to disease and all its concomitant ills—its pain and anxiety—its gloomy forbodings, and the repulsive prospect of a slow decay. During this period I not only applied for medical aid to the best physicians of my native state, (North Carolina,) but I devoted a portion of my time to the study of medicine, in the hope of finding something to mitigate my sufferings, and also, at the same time, of acquiring the knowledge of a useful and honorable avocation for life. Stimulated by these earnest hopes and sentiments, I prosecuted my book studies, aided by the best physicians of my acquaintance, until I had acquired a competent knowledge of the practice of medicine. But alas! my fondest anticipations were but idle dreams; neither my books, nor my physicians, brought that relief—that grateful solace to my sick-worn frame, which I so ardently desired, and so anxiously sought from their aid!

By these means, however, I became acquainted with the members of the medical faculty, by which was laid the foundation of a most familiar intercourse with the profession, in almost all places where I have since resided. Moreover, I became acquainted with the appalling fact, that with all the knowledge which I, or the best medical practitioner possessed, and with the use of such remedies as were generally relied upon in the treatment of disease, it would be a matter of uncertainty whether I should cure or kill! With these sentiments indelibly impressed upon my mind, I abandoned the idea of following a practice which could only be pursued at the hazard of destroying life; and which could not, therefore, be termed, as ASCLEPIADES styled the patient observation of HIPPOCRATES, “a meditation on death;” but was absolutely an acceleration of its progress. My health was finally restored by a peculiar kind of regimen which will be particularly described in my medical work.

From these considerations, and from these alone, I abandoned the idea of following the practice of medicine as a profession; although I have practiced very considerably among my immediate neighbors, more especially in sickly seasons; but for which I have never charged, nor have I ever received, any compensation.

In the summer of 1825 the bilious fever prevailed epidemically, which swept off numbers of my acquaintances, amongst whom I lost a lovely daughter, whose death, I have no doubt, was accelerated by bleeding; which, at the instance of consulting physicians, I reluctantly consented should be done. Other branches of my family, as well as several of my neighbors, suffered by the same epidemic, all of whom recovered by the assistance of such medical aid as I was *then* capable of affording them; which indeed I had reason to believe was at least equal to any that could have been derived from other sources.

About the time of which I am now speaking, or soon after, I heard much talk of the botanic physicians, usually styled *steam, or patent doctors*; and as prejudice in the mind of the multitude often goes in advance of almost every great and good work, so it was in this instance; and myself with the rest, and particularly with the medical faculty, imbibed prejudices the most hostile, and feelings the most contemptuous, towards this infant institution of rational medicine. I still very sensibly recollect with what supercilious disdain I then looked down, as I thought, from my lofty eminence, upon the botanic practice and practitioners of medicine. For however I had, with many great physicians, felt and deplored the imperfections of the healing art, I could not for a moment suppose, that the improvement which it so imperiously demanded, would, or possibly could, originate at any other source than the fountain heads of medical science.

But I was not destined long to remain the slave of my prejudices, or the deluded victim of my own blindness and folly. A case occurred during the ensuing winter which overthrew the strong citadel of my prejudices, and opened to my astonished vision new and extraordinary views of the healing art, directly opposed to the opinions taught in the fashionable schools of medicine. A respectable neighbor of mine, was taken very ill with a pleurisy, attended by symptoms of obstinate bilious fever; and as I had successfully attended his family during the summer, he called upon me in his own case. I accordingly attended, resorting to the usual remedies administered in such cases; but finding it a complicated formidable case, and my business requiring my absence from home, I advised him to call in the best medical aid that could be obtained, which I thought his dangerous complaint imperiously required. On the morning of the day on which I contemplated leaving home, I called to see and take leave of him, and to my utter astonishment and indescribable horror, found a steam doctor preparing to take the sick man through a process of steaming, puking, &c. On seeing this, I turned upon my heel with the most disdainful and disgusting emotions,

with the intention of immediately leaving the house, and the sick man to perish, as I supposed he probably would, in the hands of this adventurous empiric of the botanical school. But by the earnest entreaties of my sick neighbor, and the solicitations of the ignorant steam doctor, as I then thought him to be, I reluctantly consented to stay and witness the operation and effects of the new mode of curing disease wholly with botanic medicine, aided in its effects by the use of vapor or steam.

I then carefully examined the symptoms of the sick man, found there was no abatement of their violence, and waited to see the result of the process to which he was, as I thought, presumptuously submitting. But after the operation was completed I again examined him, and felt myself astonished and confounded at the extraordinary effect which had been produced in so short a time. The fever was gone, the pain of his side was almost removed, the difficulty of breathing had ceased, the headache had departed, and his appetite for food returned. My prejudices, which alone had prevented me from giving this new system an impartial examination, were thus, in a moment, scattered to the four winds of Heaven; whilst I was overwhelmed with reflections of my own want of liberality and consistency.

I had now been an eye-witness to such sudden and salutary effects of medicines as I had reason to believe were unknown to the faculty of Europe or America. Impressed with these views, I came to a serious pause. I knew full well the inefficiency of the common means resorted to in the treatment of disease; I had but a few months before, lost a beloved daughter, and had again and again seen patients languish for weeks and even months, under less formidable attacks of disease than that of my neighbor, of whom I am speaking, whilst he seemed in a fair way to get up in a few days; which he actually did. I felt that I owed a duty to myself and to my family; and that to my Maker I was accountable for the neglect of that duty. I paused—I reflected—I weighed the whole matter seriously. I had seen the effects of the new medicines in but one case; but that was one of virulent character, and it yielded to the means employed, as if they acted by a charm; I came to the conclusion that it was my duty as a man, and as a Christian, to forego all my prejudices, and avail myself of the knowledge of these botanic medicines for the benefit of my own family.

I accordingly applied to Dr. HANCE, the practitioner who had attended my neighbor, and from him I received the knowledge of Dr. THOMSON'S System of Medicine. Sickness in my own family, as well as amongst my neighbors and friends in distant parts of the country, soon afforded opportunities which confirmed my highest opinions of the new practice; and I commenced, with zeal and energy, proclaiming my convictions to the world. I pursued this course because I believed that mankind would be benefited by the new system, and that it was my duty to encourage its promulgation.

During this time, however, Dr. THOMSON had become dissatisfied with his agent, and came into this country in order to make some permanent arrangement for the extension of his system. My zeal and assiduity in recommending his practice, had been wafted by the breath of the people to the ears of THOMSON, and he conceived the idea of committing to my care the general agency of his business. After repeated solicitations from him, and the most earnest persuasions of the friends of the system, I consented, with extreme reluctance, to become his agent.

I almost immediately took measures for prosecuting the business to an extent commensurate with its usefulness; and pursued it with a vigor and energy only equalled by the desire which I felt to make it useful to the world. But whilst I was thus zealously pushing the business entrusted to my care, the jealousy of Dr. THOMSON was aroused, and I was dismissed from the agency, at the end of about three and a half years from the time of accepting the appointment. I had, however, from the first, seen and deplored the imperfections of Dr. THOMSON's book, and the circumscribed limits of his *materia medica*; and under the influence of these impressions, I employed Dr. HANCE to revise the practical part of Dr. THOMSON's works, previous to their being re-printed. But with further reflection upon the turbulence of his disposition, and his self-conceit, I became satisfied that it would give him dissatisfaction, and therefore concluded not to publish the work thus revised: and subsequent declarations of THOMSON have fully confirmed the correctness of my conclusion.

I was not satisfied, however, that the knowledge of botanic medicine should remain in so imperfect a state. Societies for its improvement were instituted; and I endeavored to excite an emulation in the minds of its practitioners; and took much pains to collect a knowledge of every improvement, and every additional article of value, which experience should develope; all of which, I confidently anticipated, would enable me, at some future time, to present to the world a better system of medicine than had hitherto been offered to its acceptance and approbation.

And it is under these circumstances, and with these views, that I now present to the public, in the following work, the result of my collections and labors. It is not pretended nor supposed that the work has arisen to the acme of perfection; but it is confidently believed that it will be found superior to any other which has preceded it; and as such I commit it to that test which will decide its merits, and give its decision at the bar of public opinion.

I also deem it an act of justice to the public and to myself, as well as to Dr. WILLIAM HANCE, to state that he has assisted me in the collection of materials, and in their selection and arrangement for this work. His zeal in the improvement of medical botany; his deep research and laborious investigation; his new, peculiar, and as I conceive, correct

views of the principles of medical science, the very foundation upon which the healing art is based, have been of great service, nay, of indispensable utility to me in the preparation of the following pages. My time and attention for some years past have been necessarily too much engrossed in diffusing the knowledge of the botanic system, to permit of my devoting so much of them as seemed necessary, to the research, investigation and consideration of a subject so interesting to the family of man. And it is no more than a just tribute to the merits of Dr. HANCE to say, that the continuance of his labors may be still more beneficial to the world. And I should feel myself guilty of injustice to his character and to that confidence which the public has justly placed in his talents, did I omit acknowledging, in this manner, that he is more justly entitled to the authorship of this work than myself. True I have been at all the trouble and expense of collecting the materials, and preparing the work for publication; in other words, of bringing it into existence; and from time to time, have verbally or in writing, communicated my views of the various subjects on which it treats, (which have generally been in accordance with his own;) and I wish it to be distinctly understood, that it is upon these considerations alone, that I claim the authorship as my own.

It may also be proper to state, that in accordance with my expectations in recommending the institution of botanic societies, much useful information has been elicited; and many of my agents, knowing that a work of this nature was in a train of preparation, have kindly furnished me with many valuable medical recipes, and extraordinary cases of cure. These, with the names of those persons, so far as their consent has been obtained, will be given in their proper places.

The knowledge of many valuable Indian remedies, have been procured for this work, at considerable expense to the author.

HORTON HOWARD.

COLUMBUS, OHIO, 3rd Month 15th, 1832.



PREFACE

TO THE SECOND EDITION.

IN presenting the second edition of this work to the world, we improve the opportunity of tendering to the public our sincere thanks for the very liberal patronage which has enabled us to dispose of the first large edition, in the short space of a few months.

We shall also avail ourselves of the present occasion to revise such parts as appear defective or ambiguous. The urgent demand for the work, even before it was put to press, and the increased anxiety which was manifested during its progress, impelled us to use all possible despatch in preparing the original manuscript; hence, trivial errors and inaccuracies of language became almost unavoidable. These, in the present impression, we shall endeavor to correct, as well as to make such other improvements as our leisure has permitted us to devise or our minds to suggest.

The improvements in the first volume principally consist in the corrections of language; in the avoidance of unnecessary repetitions, both of terms and matter; and in entering more into detail upon some particular subjects. Those of the second, will likewise be mostly confined to emendations of language, together with the description and method of treatment of an additional number of diseases; and the introduction of a few more cases; whilst the *materia medica* will be enriched by some new and valuable articles of medicine.

Since publishing the first edition we have also become sensible of the great propriety of uniting to this work the volume entitled, "*A Treatise on the Complaints peculiar to Females; embracing a System of Midwifery,*" &c. &c., and have accordingly done it; so that the present edition will consist of three successive volumes. In that division of our subject which will now constitute the third volume, besides other improvements, it is in contemplation to devote a portion of it to the treatment of the *Diseases of Children*; by which its value will be much enhanced.

In conclusion we will just observe, that although we make no pretensions to literary merit, yet we hope the present edition will be more acceptable than the former, to persons who possess some taste for literature; whilst, at the same time, it will be substantially improved.

HORTON HOWARD.

COLUMBUS, 4th Month 28th, 1833.

INTRODUCTION.

As in the following work disease will be treated in a manner different from most other medical publications, at present extant; and as it embraces some new principles, and combination of principles, peculiar to itself, we deem it proper, as introductory to the more important parts, to advert to some of the objects at which we shall aim, and the views by which we shall be governed in its general composition and arrangement.

Our grand leading object will be, to simplify the theory and practice of medicine, so as to adapt both, as far as practicable, to the common capacity of families; thereby enabling them, in most cases, to become their own physicians. The civilized world, at least, has been too much and too long dependent upon the professors of medicine; and it is high time that the prejudices which have held mankind to this dependence, should be broken and annihilated. And there are no means by which this can be accomplished, but to reduce medical works to something more "plain, intelligible, and systematic; showing medicine, as it ought always to have been shown, divested of all mystery; needing for its successful application to practice, no extraordinary powers, no legerdemain; nothing but common sense, with common study and observation."* None but works bearing such a character, can become every popular or useful; and a work of this description we propose and stand pledged to give to the world.

A very important objection to most of the hitherto published works on medicine, is the too common use of what are styled *technical* terms, by which they are rendered unintelligible to families in general. The extensive employment of such terms in books intended for common use, is certainly improper; but as it is impossible to convey definite ideas upon every subject treated of in medicine, without resorting to the use of some technical terms, we shall occasionally employ them; always, however, endeavoring to introduce them, when practicable, in such a way that the reader will be assisted by the phraseology in gathering the meaning of the word. A glossary will also be annexed, to which the reader may refer when necessary.

*THOMAS EWELL.—Medical Companion, page 20.

We shall be the more liberal, however, in the use of technical language, because we believe it ought to be more generally understood; and in assigning a reason for so doing, we need only advert to the fact just expressed,—the impossibility of conveying definite ideas on medical subjects, without it. The only reason why people in general are not sufficiently familiar with technical terms to comprehend all that is really necessary respecting medicine, is because this necessary part of *every* man's and woman's education, has been made through the medium, or under the cloak, of science, too abstruse and metaphysical for the great mass of mankind to comprehend. "Professional pride and native cupidity," says a late writer,* "contrary to the true spirit of justice and christianity, have, in all ages and countries, from sentiments of self-interest and want of liberality, delighted in concealing the divine art of healing diseases, under complicated names, and difficult or unmeaning technical phrases. Why make a mystery," continues he, "of things which relieve the distresses and sufferings of our fellow beings?" A great responsibility must certainly be resting upon those who have been thus instrumental in concealing, under a dead language, or by affected mystery, the knowledge of any thing so important to the world. A correct understanding of the best means of preventing sickness and restoring health, is only second in importance to a knowledge of the Christian religion. Every family has, or may have, a bible; and why not have a book on medicine adapted to their capacity?

Had physicians made it their business to enlighten the world upon this highly important subject, instead of "darkening counsel with words without knowledge," mankind unquestionably would not only have been familiar with all necessary technical terms, but they would also have been acquainted with, and known how to employ, the best means of removing their maladies. But is this the case?—No: There is scarce any thing of inferior importance in the common concerns of life, which they are not better acquainted with.

It is a principal object of the following work, to restore to the human family the lost knowledge of the means of removing their maladies; which information should be as universally disseminated as the knowledge of the bible or of religion; and we scarcely doubt that in time it will be so. The illiberal part of the medical faculty, who have profited by the ignorance of the people, will, no doubt, throw every obstacle within their power in the way of its consummation; but we think the day is now dawning, which was alluded to, as in

*Dr. GUNN, of Knoxville, Tennessee.

prophetic vision, by the brief biographer of Dr. JOHN BROWN, "when instruction concerning the cause of health and disease, will be acknowledged to form a necessary part of all rational education." And we, at least, are satisfied that public opinion, to a great extent in the United States, if not in many parts of Europe, is in unison with this sentiment.

"It has hitherto been the case," as the same author justly observes, "that the faculty have contrived to retain a privilege which the priesthood have lost." Only a few years since, it was generally believed that all the concerns of religion legitimately appertained to the clergy; and the bible, which was regarded as the means of salvation, was printed in a dead language, and was considered as fitting only to be entrusted in the hands of the priests. They then exercised the same despotic sway over the minds of the people, in matters of religion, that the medical faculty now do in medicine. But the time has arrived when the people will have books on medicine which they can understand, and a mode of practice which they themselves can apply and comprehend. They will no longer be obliged to go to the doctor for every dose of medicine which the exigencies of sickness may require, any more than they are necessitated to go to the clergy for a knowledge of the scriptures or the means of salvation.

The bible, which, with all its benefits and blessings, is within the reach of every family, informs us that the "grace of God, which bringeth salvation, hath appeared to all men;" or, in other words, that the means of saving the immortal soul are bestowed upon or offered to all; and so there is no doubt that the means of saving the body from pain and sickness are, to a great extent, provided for us, without the necessity of applying to a physician. And a system of medicine, in accordance with these sentiments, is already before the world, for its adoption or rejection, which many have already embraced; rejoicing in the certain confirmation of being now released from the thralldom of medical bondage and scientific imposition, which, for ages, has been increasing, and seems, in this enlightened day, to have arrived to a degree of oppression, only equaled, inversely, by the superior scientific attainments of the profession.

We hope it will not be supposed that these grave assertions are lightly made; for we have ample testimony from members of the faculty themselves, of the gross deception which they are practicing on the credulity of the people. "If you wish to know," says Dr. GUNN, "how much artifice is in vogue in the science and practice of medicine, ask some physician of eminence to give you in plain common English, the meaning of those mysterious and high-sounding names you see plastered on bottles, glass jars, gallipots and drawers in a drug store,

or doctor's shop." After explaining many of those hard and difficult names, the same author observes: "These I think, are fair specimens of the useless technical terms and phrases with which the science of medicine has been encumbered by a policy hostile to the interests of every community; in which the reader will easily distinguish, if he will look one foot beyond his nose, not only that big words and high-sounding phrases are not superior wisdom, but that three-fourths of the whole science of medicine, as now practiced and imposed upon the common people, amounts to nothing but fudge and mummery. In fact, it has always seemed to me, whenever I have reflected seriously on this subject, that all these hard names of objects of common and daily contemplation, were originally made use of to *astonish the people*; and to aid what the world calls learned men, in *deception and fraud*." If members of the faculty write thus of their own profession, can they attach much censure to us for repeating their assertions, and enforcing them upon the attention of the world?

In the following pages we propose taking a transient view of anatomy and physiology, sufficient, perhaps, to enable the reader to form a general idea of the most important organs of the human system, and of the functions which they perform. It is for the mass of mankind that we write; and there are few whose leisure or inclination will permit them to acquire any considerable minute knowledge of those subjects; and, therefore, we have deemed it not improper to present a mere outline of those curious sciences. Persons who wish to obtain more extensive information of this kind, may find numerous works, of perhaps equal merit, on both of these subjects, and each containing something peculiar to its author; to any of which he may refer at pleasure.

We cannot, however, omit, in this place, noticing the popular but delusive sentiment almost universally adopted in civilized communities, that a knowledge of anatomy is indispensable to form an accomplished physician. And we might, perhaps, be considered as making an invidious assertion, should we charge the medical profession with inculcating such sentiments into the minds of the people, for the purpose of increasing their own importance and wealth. But we trust that the deceptive artifices already noticed, will be sufficient with the reflecting part of community, to awaken suspicion at least, that such is the fact.

We are not disposed, however, to believe that all, or any considerable portion of the faculty are aware of the iniquity of such a practice; or that they are even guilty of it. The selfishness of man will almost always furnish an excuse sufficient to quiet the conscience in the prosecution of whatever is popular, especially if it be at the same time productive of personal aggrandizement or pecuniary gain.

In order that the reader may the better comprehend why anatomy is of no practical utility in the healing of disease, we will propound a simple question, covering the whole subject, and then submit a plain unsophisticated answer thereto:

In what (we would inquire,) does the knowledge of the healing art consist?

We answer—Simply in knowing what medicines are most efficacious in removing disease, and the best method of preparing and using them. This includes the whole substance, root, body, and branch of medical science or learning. The physician who possesses this knowledge, has all that necessarily appertains to the science or art of medicine, and without which the most accurate anatomist could lay no claim to the title of physician.

If we suppose the knowledge of medicine is to be acquired by the simple powers of reason alone, unaided by experience, (which, however, all will admit to be impossible,) we should then expect it necessary to know upon what it was that life and health, depended; and then, what peculiar quality of vegetable matter was best calculated to restore health, and the particular vegetables in which it resided. But can anatomy teach us this knowledge; or, after becoming acquainted with suitable medicines, does it teach us how to use them? No: nor it never can: It is not in the nature of things for it to be so.

As just observed, the powers of reason must fail, and anatomy being inapplicable to demonstrate the knowledge of medicine, we will inquire what presents the most rational method of ascertaining the best means of restoring health? We presume all will agree, that experience is the most rational, as it is, indeed, the only possible method of attaining to any degree of certainty in the knowledge of medicine. If we suppose ourselves divested of all knowledge of remedies suitable for restoring health; with disease and death exciting our sympathies, and urging us to the employment of some means to relieve the sufferings of our friends and fellow creatures, we might reasonably expect that, in our attempts to afford relief, we should promote the havoc of death, rather than to arrest the progress of disease. Under such peculiar circumstances, nothing but EXPERIENCE could remove our embarrassment, and give us the assurance, in our efforts to relieve the afflictions of a fellow-man, that we were not using an instrument of death instead of a remedy friendly to health and life.

We will now ask, what advantage could the most perfect knowledge of anatomy afford us in the prosecution of our inquiries after the means of curing disease, when guided by reason alone? or what benefit could we possibly derive from

it, in the progress of a more laborious experiment? None: we answer, none!

It is a fact avowed by medical writers, that the knowledge not only of anatomy, but of all the collateral branches of medical science, affords little or no aid to the improvement of the *materia medica*. Even chemistry, which is the only branch legitimately applicable to this object, is known to be insufficient to disclose the medicinal qualities of vegetable matter. "Medical chemistry," says Dr. DE PUY, "is so limited in its application to the vegetable kingdom, that notwithstanding all that has been, or as yet can be done, by heat and mixture, towards separating and ascertaining those principles of vegetables on which their active powers depend, we must still have recourse to *prescription for a knowledge of their effects on the human system*, which we cannot obtain, *a priori*, by chemical analysis."*

If then, those sciences considered so essential to medicine, afford no means of arriving at the knowledge of the most necessary part, how are we to obtain an understanding of the virtues of medicinal substances, or of their salutary effects upon the human system? We answer, again, by prescribing for, and administering them to the sick; in other words, by experiment. Let it, however, not be inferred that we suppose a perfect knowledge of medicine can be acquired by the experience of one individual. No; it requires more time, and more sagacity, than has ever been allotted to one man, to consummate the knowledge of the healing art. This important science can only be perfected by collecting the experiments of individuals of different countries and climates, and judiciously comparing their results; all of which should be confirmed again and again by further experience, before they can be recommended with proper confidence in practice.

"Experience," says the author just quoted, "respecting the virtues of medicines, is necessarily slow, and sometimes deceptive; hence, it is often long before the real medicinal properties and extent of the powers of a remedy are correctly ascertained." And by whom, we will ask, is this "experience" acquired, and these "properties" and "powers" ascertained? The true answer to this inquiry is as humiliating to the lofty pretensions of medical science, as it is degrading to those who make a boast of it. For science, much as it may have benefited the world, by adding to the intellectual treasures and pleasures of man, must, with all its splendid drapery and trappings, very often yield to the experimental knowledge of some illiterate rustic!

Even Dr. THACHER declares, (in the first edition of his Dis-

*Transactions of the Physico Medical Society, New York, vol. I. p. 57.

pensatory,) "that we are indebted to the bold enterprise of illiterate pretenders, for some of the most potent articles of the *materia medica*." We quote from memory only, as the copy of a subsequent edition, which is before us, does not contain the remark; and why the doctor should have expunged this true observation from his valuable work, is not explained. We are left free to conjecture, however, that the great success of his "*noted empiric*," Dr. THOMSON, in wielding some of those "potent articles," induced THACHER to conclude that such an expression reflected too much honor on empiricism, and lowered the dignity of the medical profession. Whether we have conjectured aright or not, as to Dr. THACHER's motives in expunging the foregoing sentiments from his book, we are satisfied that the world is indebted to persons unlearned for the discovery of most of the great and valuable principles and truths upon which the whole fabric of science is based.

And however humiliating it may be to the literary aspirant, it is nevertheless true, that science often misleads its votary by a too fine or subtle a reasoning, which the bold, untutored experimenter avoids, by going without any circumvolutions, to the root or primary principle of unknown things. And in so doing, he often overturns old and long established forms—forms that have, perhaps, been sanctioned by the usage of ages; and which, therefore, the man of science dare not oppose, to arrive at some truth which the dogmas of science have kept hid from its most devoted students.

The all-essential part of the healing art, (and without which this art would not exist,) consists in the knowledge of the most simple, safe, and efficacious remedies. The author whom we have several times quoted informs us, that "many of the most *useful medicines* have not received a formal and *scientific* introduction into the *materia medica*, until they have served for a length of time in some subordinate station, and have gradually become distinguished amongst the confused group which compose the recipe of the vulgar." We will further add, that we believe every "useful medicine has been confined to that humble sphere to which professional [*scientific*] pride seldom stoops, and which is too frequently disregarded by medical men as unworthy of notice." This is the language of Dr. DE PUY; and if we may credit his testimony, in connection with what almost all know to be facts, we shall be satisfied that the knowledge of medicines has its first origin with that class which the learned are often pleased to style the vulgar. Here it is that their virtues are originally known and tested; and as they become distinguished in the "confused group," they are often caught up by some professional character, and heralded to the world as a great disco-

very of his own; when, in fact, he is only the instrument of making its virtues more generally known, or more extensively useful.

We cannot dismiss the present opportunity, without craving the reader's indulgence, whilst we introduce the sentiments of Sir GILBERT BLANE, M. D. who has been said to be the "most learned and classical physician of the age;" and who, we may well suppose, is acquainted with his subject, as in his dedication he informs the reader that the volume from which the following extracts are made, was "the fruit of more than fifty years' meditation and experience, the greater part of which had been employed in the service of the state," and in that of the king's person and family. "Practical medicine," says he, "seems more indebted to the sagacity of those who, in a rude state of society, discovered active and useful medicines, than to the early labors of the learned."* The correspondence of these ideas with those of DE PUY, is too obvious to need any comment. Again, he says: "Physiological and pathological researches, even the most correct, have had little share in suggesting active and useful remedies; the greater part of these having been discovered in *dark ages* by fortuitous incidents, or in more enlightened ages by analogical reasoning."†

Again, the same author, as if he could scarcely place too low a value upon medical learning, says: "And when it is further considered, what a mass of *credulity* and *error* has actually accumulated in medicine, from the presumptuous attempt to grasp at" wrong "objects, and make hasty and dangerous applications of them to practice; when we cast our eyes upon our shelves, loaded with volumes, few of which contain any *genuine profitable knowledge*, the greater part of them composed chiefly of matter, either nugatory, erroneous, inapplicable, or mischievous, in which the dear bought grain is to be sought in the bushel of chaff, may it not be questioned, whether such researches have not tended more to retard and corrupt, than to advance and improve, practical medicine?"‡

And what benefit, we will now candidly ask, can the knowledge of anatomy afford, in prosecuting our inquiries after the most suitable remedies for restoring health? The most minute and perfect knowledge of the organs of the system, and of the functions which they perform, cannot possibly give us an understanding of the means of removing, with medicine, a single malady. It is truly difficult to conceive, how an acquaintance with the structure of the human frame can lead to the knowledge of suitable remedies to remove its diseases. It may possibly enable us to know what organ or organs are diseased;

* Blane's Medical Logic, page 159. † Ibid, 188-9. ‡ Ibid, 179.

but no correspondence can be pointed out between a disease, or an organ diseased, and its proper remedy; for it is only by observing the effects of a remedy, that we are enabled to point out its adaptation to any particular complaint.

Yet, notwithstanding this, popular opinion, strengthened by the devices of the faculty, requires that a physician should possess a knowledge of anatomy; and it might, with equal propriety, insist upon cooks acquiring the same knowledge, to enable them rightly to understand the best method of removing hunger. Yet the physician in the one case, and the cook in the other, (though the first may know how to cure disease and the latter to remove hunger,) cannot tell by what peculiar means, or in what particular manner, either medicine or food is disposed of in the human system, to accomplish its proper object. But both may be done, as Dr. SAMUEL THOMSON very justly observes, "by an infinite variety of articles best adapted to those different purposes."

The physician, however, may remove disease, and the cook hunger, by means not the "best adapted to those different purposes," and thereby put to hazard the living power of the system. And, therefore, those kinds of food which *experience* has shown to afford the most easy, agreeable, and natural stimulus to the various organs, under all the varying circumstances of life, are always to be preferred; and "those medicines," says Dr. THOMSON, "that will open obstruction, promote perspiration, and restore digestion, are suited to every patient, whatever form the disease assumes, and are universally applicable;" the proper knowledge of which can only be acquired by experience and patient observation at the bedside of the sick.

Although a physician may possess the most perfect knowledge of every disease that he may be called upon to cure, and may be acquainted with, and be able to describe in the most accurate manner, every part or organ affected by the disease, as well as to define its proper function, yet all this does not confer upon him a knowledge of the best means of affording relief: This *sine qua non* of the healing art, must be acquired by personal observation, aided by the experience of others. Indeed a man may possess the greatest possible knowledge of anatomy, and of all the collateral branches of medical science, and yet be a miserable physician! Disease arises from causes producing one general or common effect, viz: reduction of force of the living power, and injury of the animal machinery; and, of course, are to be treated and cured by remedies acting upon general principles, unaided and uncontrolled by the science of anatomy, physiology, chemistry, or pathology.

We do not wish to be understood, however, as passing a sweeping condemnation upon the study of these sciences as being utterly useless. We are only endeavoring to exhibit, in its true colors, the popular prejudice which has produced the erroneous belief that those sciences, and particularly anatomy, are absolutely necessary to make a successful physician. An acquaintance with those branches, like all other general knowledge, has a tendency to expand the mind, and enlarge our views of things—to increase the intellectual treasures and pleasures of the *man*; but to the *physician*—the medical practitioner in the treatment of disease,—it certainly avails nothing. Dr. RUSH was undoubtedly sensible of this, or he could never have uttered the sentiment, that those physicians generally become the most eminent, who have soonest emancipated themselves from the tyranny of the schools of physic. We might also add, that many of the most successful practitioners in our country are self-taught, having never been admitted into the splendid halls of science, and some scarcely into the common walks of literature.

The impression that the ancient physicians were at least as successful as those of the present day, in the treatment of disease, has been produced, as we believe, by good evidence; and yet their knowledge of anatomy, as well as of the collateral branches of medical science, as they are taught at the present time, was undoubtedly very limited and highly inconsistent.

It may be contended that a knowledge of anatomy is essential to the proper understanding of pathology or the description of diseases, and to the operative surgeon. This we are ready to admit. But we consider pathology, in its scientific acceptance, as an intricate study, encumbered with a mass of abstruse, useless lumber, of no consequence to understand; and if understood, inapplicable to any of the practicable purposes of the healing art.

In the practice of surgery, a knowledge of anatomy is not only useful but essentially necessary. But for all practical purposes, as the "illustrious CHESSELDEN" observes, anatomy "needs not many tedious descriptions nor minute dissections; what is most worth knowing is *soonest learned*, and least the subject of disputes; while dividing and *describing* the parts, more than the *knowledge of their uses requires*, perplexes the learner, and makes the science dry and difficult." These were the sentiments of one of the most celebrated anatomists of his age; and we have no doubt that every candid physician and surgeon, at the present time, would, with a little reflection, accede to their correctness. But alas! alas! the moral feelings of many are so much depraved that they will often,

especially when popular opinion is running in their favor, openly encourage or secretly connive at whatever may have a tendency to promote their wealth, power, or importance, however detrimental it may be to the interest of society at large! In support of these assertions, we need only to cite the reader to the bitter persecutions raised against all the great reformers of medicine, amongst whom we will only mention HARVEY and BROWN formerly, and THOMSON of the present day. We wish, for the honor of humanity, that the treatment which these eminent benefactors of the world have met with from the medical faculty, whose errors they were exposing, could be lost in oblivion: but it cannot! It will remain unobliterated on the page of history, as a lasting monument of the selfishness, the folly, the baseness, and the depravity of the human heart!

We wish it, however, to be distinctly borne in mind, that although we admit, with all its force, the fact that the knowledge of anatomy is necessary for the operative *surgeon*, yet we as certainly know that by a proper course of medical treatment, many painful and dangerous surgical operations may be prevented—the amputation of many limbs, and the excision of many cancerous and other tumors avoided. Indeed, we are morally certain, that by a more rational and correct course of medical treatment than has hitherto been known to the medical faculty, much pain, sickness and danger may be prevented, and many persons thereby saved from premature death.

The *mere* man of science, perhaps, may startle at the views which we are here disclosing of the inutility to the *physician*, of scientific attainments. He may possibly conclude that we wish to level all distinctions of learning; demolish the halls of science and literature, and even to deny the advantages which have resulted from these sources to the world. But we ardently disclaim such an intention. To science and literature we should rejoice to see every necessary encouragement offered, not only by private contributions, but by legislative munificence, so long as each is directed to its own legitimate object. We do not wish to see either encouraged by encroaching upon the just rights of any class of citizens, nor made the engine of vindictive tyranny. Our grand design is to strip the science or profession of medicine of all the glitter, the show, and the splendor so fancifully attached to it, not only by the weak and credulous, but by individuals of every rank of society and gradation of intellect, and exhibit it to mankind in its true native color and simplicity.

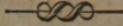
It is high time that the “pillars which support this fabric of false philosophy” which has so long dazzled the eyes of the world, should be overthrown; although their fall might, and

undoubtedly would, "subvert in their ruins the time-honored prejudice of ages!" The day has certainly arrived when medicine, like religion, should be placed before the face of the world, stripped of all its mysteries—all its absurdities, and professional intricacies, and appear in its genuine simplicity and rationality; open and undisguised before all who wish to examine and comprehend it.

It may be considered perhaps by some, that our introduction is too lengthy: we readily admit that it is unusually long; but we think the subjects embraced in it are of sufficient importance to justify the attention which we have bestowed upon them. Moreover, it seemed very proper to give a few of our views of the present condition of the medical profession, and of some of the prejudices which have elevated it to its present standing and influence in and over society. This appeared the more necessary, in order to present a general and connected view of medical science as it now exists in the world, which it is essential all should inquire into and understand, that the impositions of regular medical quackery might the more easily be detected, and its destructive, tyrannical influence be the more certainly guarded against and overthrown.

In the following work we shall endeavor to make every thing plain and systematic; adapting it to the capacity and comprehension of persons of every rank and station. We are well aware of the prejudices with which we shall have to contend; and that without some actual demonstration of the innocency and efficacy of our principal medicines, but few will be disposed to use them. In cases where life and health are at stake, mankind are not so ready to be trying new experiments, notwithstanding all that has been said about their credulity and willingness to be duped. But should our work fall into the hands of any who are unacquainted with the botanical practice, or who are distrustful of using our remedies, we seriously and candidly entreat them, if unwilling to try them in alarming cases, to try them in milder ones; and we are satisfied that their salutary effects will give confidence. Repetition will further confirm the confidence thus acquired, and finally give full assurance of their vast superiority over every thing known in the healing art as taught in the fashionable schools of medicine.

PART I.



OF ANATOMY, PHYSIOLOGY, &c.

As has been anticipated in our introductory remarks, we shall take a cursory view of anatomy, in order that those whose opportunities or inclination may not permit them to peruse any of the voluminous works on this interesting subject, may have the means of acquiring some general knowledge of the structure of the human frame. We say general knowledge, because we shall not descend, in the least degree, into the minutia of this science; but will leave that for the more curious reader to gather from other works devoted expressly to this object.

Nor shall we treat of physiology in the usual method of discussing that science, either in its general principles or in detail; but shall endeavor to notice, with sufficient clearness, so much as may be necessary to establish the correctness of our new physiological theory of medicine. In doing this, we shall attempt to give, in detail, a comprehensive view of what we believe to be the only correct principles upon which the practice of medicine can be based. We shall also treat upon the pernicious custom of administering poisonous medicines, and point out some of the dangerous consequences which so often result from the old unsystematic method of adapting some specific mode of treatment to every different disease.

In order to bring more conspicuously into view the value of the new physiological practice and its medicines, we shall devote some attention to their efficacy, and arraign their merits in juxtaposition with the old remedies, so that their comparative merits may be seen and understood by all who shall give themselves the trouble to read.

Other subjects naturally or incidentally connected with this part of our work, will also receive appropriate attention in their proper places, whilst we shall endeavour to arrange the whole in what we conceive to be a systematic manner.

CHAPTER I.

OF MAN AS A PHYSICAL BEING OR ANIMAL.

MAN, whether we regard the materials of which he is formed, or the organs by which he is constituted, is a compound being. He is at once composed of a variety of different materials, which are wrought into various organs, all of which are necessary to perfect the symmetry of the body, and sustain animal life.

This doctrine, although familiar in the walks of philosophy, is, nevertheless, but little known to those who devote only a small portion of time to reading. We hope, therefore, to be excused if we indulge for a moment in a few remarks on this subject.

As a physical being, man, in common with all other organized bodies, depends upon certain primary elements or materials, so blended together as to produce the different varieties of matter of which his body is composed. And it is upon this wise constitution of things, that the rich and useful variety of nature depends, and without which, an uniform sameness—an uninterrupted similarity, would pervade the whole material world. The elementary principles or materials of every living or organized body, exist ready formed by the hand of nature; whilst each body possesses the power or faculty of selecting from them the proper materials and manufacturing them into the peculiar substance of which it is composed.

It seems most probable, in our view, that the animal creation was formed, each in its kind, perfect in all its parts; and, at the same time endowed with the power of reproducing its species in a peculiar manner: whilst the vegetable tribes, we think it equally probable, had their origin from the seed, which was invested with the faculty of abstracting from the elements the proper materials, and assimilating them together, or manufacturing them into the particular plant which each kind of seed was designed to produce.

In this chapter we shall confine ourselves solely to the consideration of man as a physical being or animal; and for the purpose of greater perspicuity we have divided this, as we have all the other chapters, into sections, each treating upon some distinct part. There may appear to be something like repetition in some parts of our arrangement; but we are chiefly anxious to have our new physiological theory well es-

established and understood; and have, therefore, adopted this plan as the one best calculated to answer our purpose by bringing each part of our subject more conspicuously into view.

SECTION I.

OF THE MATERIALS OF WHICH MAN IS COMPOSED.

THE ancient physicians and physiologists maintained that man, as well as all other organized bodies, was composed of the *four elements*, earth, air, fire, and water. This doctrine originated with EMPEDOCLES, a celebrated philosopher who flourished about four centuries before the Christian era.*

Modern improvements in chemistry have, however, demonstrated that at least three of those substances, by the ancients denominated elements, viz: air, earth, and water, are themselves compounds of elementary matter; and hence, modern philosophers have transferred the term, elements, from those natural substances to which they were formerly applied, to the more simple materials of which these are composed: denying that any thing is properly an element but the most simple matter to which bodies can be reduced. Agreeably to the latest discoveries in chemistry, twenty elements enter into the composition of man. Of these, eleven are solid; two are fluid; three are gaseous or gases; and four inconfineable. Amongst the fluid elements, water, and amongst the inconfineable ones, caloric or the matter of heat, are still retained; although water, if not caloric, is a compound substance, and ought not, therefore, according to the late doctrine, to be considered a primary element. These remarks will also apply with equal propriety to several other elements.

The solid elements, as enumerated by MAGENDIE, are phosphorus, sulphur, carbon, iron, manganese, potash, lime, soda, silica or sand, and alumina or pure clay.

The liquid elements are, muriatic acid, water; the gaseous are, oxygen, hydrogen, azote; the inconfineable are, caloric, light, and the electric and magnetic fluids.

Different numbers and portions of the elementary substances united together, form what are termed the proximate materials or principles of animals. These are, albumen, fibrin, gelatin, mucus, the cheese-curd principle, urea, osmazome, and the colouring matter of the blood. There are also some others, less distinguishable, such as the acetic, benzoic, lactic, formic, oxalic, and rosacic acids; and the sugar of milk and

* Good's Book of Nature; New York edition, p. 36.

diabetic urine; picromel, the yellow colouring matter of the bile, &c. &c.

Albumen enters largely into the composition of both the solids and fluids of the animal body. In its properties it resembles the white of an egg, which consists almost exclusively of albumen. It is coagulated by heat, as we see the white of an egg is by cooking; by which it may be distinguished from all other animal fluids.

Fibrin is a principle constituent of the blood, and is the basis of the muscles or flesh; and is therefore one of the most abundant of the animal principles.

Gelatin exists copiously in many of the solid parts of the body, but not in any of the healthy fluids. It is found in greatest quantity in the shin, cartilages, tendons, membranes, and bones. Gelatin is what produces the jelly after boiling the skin or legs of animals, and when properly prepared forms glue.

As these are the principal proximate principles of the animal body, we deem it unnecessary to our purpose to give any description of the others, as it could be but little interesting, and still less an advantage to the common reader.

Before closing the subject of this section, we think it proper to advert to the nice distinctions which modern philosophers and chimists have made respecting the elements of man—distinctions which, however correct, present no advantages in treating of the compound nature of the human system. Air, drink, and the various articles of food, are the materials which supply the waste of our bodies and continue our existence, and may therefore be very properly denominated the proximate elements of man. These are the substances which supply man with nourishment and growth, from the first moments of conception to the period of maturity, and sustain him through life. From these proximate elements, nutriment, and whatever else is necessary to existence, are drawn; from *food* after being properly prepared by the process of digestion in the stomach; and from *air* after undergoing some peculiar process in the lungs.

SECTION 2.

OF THE ORGANS BY WHICH MAN IS CONSTITUTED.

In the former chapter we took a very brief notice of the materials of which man is composed—of the elements, both primary and proximate, and of some other substances, by MARGENDIE, denominated proximate principles or materials. We

must now turn our attention to the various organs into which these elementary substances and principles or materials are wrought in the formation of the human system. This is what is properly termed anatomy; which, in its more general or extensive signification, implies "the dissection or dividing of organized substances, to expose the structure, situation, and uses of parts;" and is divided into animal anatomy or zootomy, and vegetable anatomy or phytotomy. In the sense, however, in which the term is here used, its signification extends no farther than to the doctrine of the structure of the human body. And even in this we must be very brief, only bringing some of the most important parts of the system in review before the reader.

The most obvious general divisions of the human body are, the head, trunk, and upper and lower extremities; which are covered by the common integuments, or skin, hair, and nails. These general divisions are again subdivided into, or rather composed of muscles, glands, blood-vessels, absorbents, nerves, ligaments, tendons, cartilages, bones, and brain and spinal marrow.

The head presents externally, the face, including the eyes, nose, and mouth; the ears and temples. Internally, its contents principally are, the brain and commencement of the spinal marrow and nerves. The brain being the organ of sense is frequently styled the grand sensorium.

The trunk is divided into two cavities, called thorax or chest, and abdomen or belly; which contain the thoracic and abdominal viscera, consisting of lungs and heart in the thorax; and stomach and intestines, liver, kidneys, and their various appendages, and in females the uterus or womb, in the abdomen. The thorax and abdomen are divided from each other by the diaphragm or midriff, through which passes from above, the œsophagus or gullet, the aorta or great artery, &c.; and from below, the vena cava or great vein, and the thoracic duct which is formed by the union of the innumerable tubes of the lacteal absorbents which arise from the intestines. The thorax is also divided into two cavities by the mediastinum; each containing one lobe or division of the lungs; whilst the heart may be said to occupy a third cavity.

There are also a great number of other organs, subdivisions, vessels and distinctions of vessels in the human system, which in this bird's-eye view cannot be noticed; all of which have their various and peculiar offices to perform for the purpose of compounding the various elements of man, and which are necessary for the preservation of his health and the duration of his existence.

There are likewise some imaginary divisions of the body, which, as they are sometimes useful in pointing out the loca-

tion of the organs, or the seat of disease, we will here introduce.

If we suppose two lines drawn parallel with each other, and transversely across the abdomen, the one about two inches above, and the other about the same distance below the navel, we then have the abdomen divided into three grand divisions. Then if we imagine two other perpendicular lines drawn from the upper transverse line downward, one on each side the navel at a short distance from it, we shall have the two lower divisions divided each into three regions. The upper division also includes three regions, viz: the central portion, which is included between the ends of the false ribs, is termed the epigastric region, and on either side are the right and left hypochondriac regions. The centre of the middle division is styled the umbilical region, and on either side are the right and left lumbar regions.* The middle of the lower division is the hypogastric region, and on each side of it is the right and left iliac regions.

There are, therefore, nine of these regions, viz: the Epigastric and two Hypochondriac; the Umbilical and two Lumbar; the Hypogastric and the two Iliac regions.†

These different regions are generally occupied by the principal viscera, in the following manner. The stomach occupies the principal part of the epigastric region, and a considerable portion of the left hypochondriac. The liver fills nearly the whole of the right hypochondriac region, and extends through the upper part of the epigastric region into the left hypochondriac. The spleen or milt is also situated in the left hypochondriac region. That portion of the intestinal canal which is composed of the small intestines is generally found in the umbilical, the hypogastric, and the iliac regions. The kidneys are situated in the back part of the lumbar regions.

SECTION 3.

OF THE USES OF THE ORGANS.

HAVING NOW very briefly enumerated some of the principal organs and parts of the human system, we will proceed as briefly to point out some of their chief uses.

The uses of the BONES are partly to give shape, stature, and firmness, to the body; supporting it erect by the aid of the muscles, which, in this sense, may be considered as the braces

*Wistar's Anatomy, vol. 2.

†Wistar's Anatomy, vol. 2. *Note.* "It is to be observed that the lateral regions of the middle and lower divisions of the abdomen are named differently by different authors."

of the living frame; partly to protect from external injury those parts which it is of most consequence to preserve, as the brain, spinal marrow, and heart; and partly for the purpose of levers for the muscles to act upon, whereby animal motion is produced. The number of bones in the human body is estimated at two hundred and forty-eight; the head containing sixty-three; the trunk fifty-three; the upper extremities or arms, sixty-eight, which includes the four *sesamoid* bones, (not always found,) in the thumbs; the lower extremities, sixty-four, which also includes the four *sesamoid* bones, (not always found,) in the great toes. Bones are chiefly composed of lime.

The uses of the **MUSCLES** are partly to perfect the form or symmetry of the body; but principally and most essentially, to act upon the bones and thereby produce animal motion.

The number of muscles in the human system is estimated at four hundred and five, and are all in pairs excepting nine; the number of pairs being reckoned at one hundred and ninety-eight.

The muscles consist of distinct portions of flesh, termed fibers, which are susceptible of contraction and relaxation; upon which property the power of motion depends. The muscles are covered or rather surrounded by a very thin, delicate substance termed cellular membrane, which also in a less distinguishable form, surrounds every fiber; and likewise it connects the muscles together, and unites them to the skin. The muscular fibers are essentially composed of the fibrin of the blood, which may be ascertained by slicing lean beef very thin, and digesting it in several successive portions of water. By this means the soluble parts are dissolved and the fibrin is left, precisely similar to that obtained from the blood.

The **GLANDS** are a system of organs dispersed amongst the muscles or contained in the abdomen, and are composed of blood-vessels, nerves and absorbents; and are designed for the secretion or alteration of some peculiar fluid. They are divided, according to their fluid contents, into mucous, sebaceous, lymphatic, salival, and lachrymal glands. The mucous glands secrete (that is, separate from the blood) mucus; the salival glands, saliva; the lachrymal glands, tears, &c.

The **MUCOUS** glands are situated in the nose, and all the internal surfaces which need moisture, such as the fauces or back part of the mouth; in the throat, stomach, intestines, bladder, &c.

The **SEBACEOUS** glands are situated in the face, palate, arm-pits, pubes, &c. They secrete an oily or fatty substance.

The **LYMPHATIC** glands are situated in the arm-pits, mesentary, groin, &c. These glands are formed by contortions or folds of the lymphatic vessels, and do not appear to secrete any kind of fluid. They may perhaps change the

lymph in some way or other, during its passage through them.

The SALIVAL glands are situated about the angle of the jaw, and root of the tongue. Their use is to secrete saliva or spittle, which is poured into the mouth by the salival ducts, most profusely during the act of chewing, to facilitate mastication and digestion.

The LACHRYMAL glands are situated a little above the outer angle or corner of the eyes. Their use is to secrete the fluid substance termed the tears, the use of which is to moisten and, as it were, wash out any extraneous matter from the eye.

The BLOOD-VESSELS are distinguished by the names of veins and arteries, and also include the heart. The heart is situated nearer the left than the right side of the thorax, and is a strong muscular body, of that class denominated hollow muscles. This organ is generally regarded as the salient or starting point of the blood, whence it is propelled through the arteries to every part of the body. The heart is divided into two cavities called the right and left *ventricles*, connected with which, at the base or broad part, are two other hollow muscles denominated *auricles*, or, in more familiar language, deaf-ears.

The heart is the grand focus in which the blood is constantly concentrated, and from which it is as constantly distributed to all parts of the system; passing twice through this organ in making one complete revolution in the body, in the following order, viz: The blood as it returns from all parts of the system, is emptied by what are termed the ascending and descending *vena cava*, into the right auricle of the heart, and from thence passing into the right ventricle, the contraction of the heart propels it through the pulmonary artery into the lungs. From the lungs the blood, now essentially changed, again returns through the four pulmonary veins into the left auricle, and thence passing into the left ventricle, the contraction of the heart propels it through the aorta and its numerous branches to every part of the body.

The branches of the aorta are ramified into innumerable small vessels, a part of which, termed capillary vessels, terminate in the skin at the external surface, and in the lining membrane of the internal surface of the different cavities; whilst the residue of the extreme arterial vessels communicate or unite with the veins. Hence the arteries convey the blood from the heart and distribute it through all parts of the system; and the veins convey it back again, to be thrown into and purified by the lungs.

The blood, after being conveyed through the extreme arterial branches to every part of the body, is then received by the veins which every where correspond with the extreme arteries, and these veins, as they proceed towards the heart,

continually intercept each other, forming tubes larger and larger, until they are all concentrated in two large trunks, called *vena cava*, one of which has its branches from the head and arms, and the other from the body and legs. The blood thus collected into those two veins is poured into the right auricle, thence into the right ventricle, whence it is destined to pass another round through the system; and thus continue in circulation night and day, asleep or awake, during the whole period of existence.

The quantity of blood in man is estimated at from 24 to 30 pounds; but this cannot be considered as exact, because the quantity varies from numerous causes.*

ARTERIES are distinguished from veins by their different structure, and by the pulsation which attends all but the minute branches. In the dead subject the arteries remain open, whilst the veins, if empty, collapse or fall together. The number of pulsations which takes place in a minute is influenced by the age of the individual and by disease. They are most frequent in infancy, and least so in old age. At birth they are reckoned at from 140 down to 130; at adult age, 80 to 70; at old age, 65 to 55. Disease generally increases the pulse; though the reverse often happens. The pulsations of the arteries correspond exactly with the beating or contraction of the heart.

There is also another set of vessels associated with the veins in the circulatory function, termed LYMPHATICS or LYMPHATIC DUCTS. The lymphatics and lacteals, which absorb the chyle, constitute what is denominated the ABSORBENT SYSTEM. The termination of the greater number of both those sets of vessels is in the thoracic duct.

The existence of lymphatic vessels in the system "is known in a general manner; but their utility in the animal economy has scarcely been perceived."† Their most apparent use, however, is to collect from all parts of the body, a peculiar fluid termed lymph, and pour it mostly into the thoracic duct, whence it is discharged into the left subclavian vein, and thence immediately into the heart, there to mingle again with the common mass of fluids.

Although the termination of the lymphatic ducts is a demonstrable fact, yet their origin, according to some writers, is as obscure as their utility. Dr. WISTAR, however, says that "these tubes originate upon the surfaces of all the cavities of the body; and of the cellular membrane, in all the various parts into which it penetrates; upon the internal surface of the stomach and intestines; and probably upon the skin."‡

*Magendie's Physiology, p. 369, Philad. Ed. 1824.

†Ib. p. 277, Philad. Ed. 1824.

‡Wistar's Anatomy, vol. 2, p. 370.

As to their utility, "many conjectures," says Magendie, "equally ill-founded, have been made upon this subject." One thing, however, is certain; these vessels take up and remove something which has been carried out from the sources of nutrition and deposited by the arteries, and returns it again to the heart, there to mingle with the common mass.

The nerves have their origin in the brain and spinal marrow, and are a system of organs which "convey impressions to the brain from all parts of the system, and the principle of motion and sensibility from the brain to every part of the system." But in what peculiar manner these functions are performed, has never been satisfactorily pointed out.

The nerves which have their origin in the brain are termed cerebral, and are the organs of sensation: Those which have their origin in the marrow of the spine or back-bone, are termed spinal, and are the organs which communicate the power of motion to the muscles.

The nerves all issue in pairs; of which the brain furnishes nine, and the spinal marrow thirty or thirty-one. It is by means of those arising from the brain, that we taste, smell, see, hear, and feel. When an impression is made upon any organ, as for instance the tongue, (the organ of taste,) the nerves convey the impression to the brain, and we are instantly sensible of the impression. The same result follows the impression of sound made upon the organ of hearing; of odors upon the organ of smelling; and so of the rest.

THE BRAIN AND SPINAL MARROW, which, from their superior importance, would seem to have claimed earlier attention, constitute together but one organ; the spinal marrow being only an elongation of the substance of the brain through the hollow or channel of the spine or back-bone. The brain proper, or cerebrum, is contained in the superior part of the cavity of the head formed for this organ. Between the cerebrum and the commencement of the spinal marrow, in the lower and back part of the cavity of the head, lies the *cerebellum* or little brain, which name is given it by anatomists only to distinguish it from the upper and larger portion of the same organ. The spinal marrow issues from the *cerebellum*, and passes downward through the whole length of the spine. From the brain and spinal marrow, as before observed, all the nerves have their origin, and extend themselves into such a multitude of ramifications or branches, that the point of a pin cannot be applied to any part of the surface without producing sensation or pain.

The use of the brain is to receive and make us sensible of impressions made upon the organs of sense; and is the grand focus and fountain of perception and sensation, ideal and corporeal. In other words, the brain is the grand laboratory or

workshop of the mind, where impressions are manufactured into ideas, and ideas are compared, associated, selected, &c. according to the talents, taste, judgment, or desires, of the individual. But the manner in which the brain performs its important functions remains yet unknown. Various theories have been proposed, and have been ingeniously and ably advocated and defended by physiologists and metaphysicians; but all that has hitherto resulted from inquiries on this obscure but interesting subject, amounts to little more than idle speculation.

The LUNGS are situated in that cavity of the trunk termed the thorax, which is separated from the abdomen by the diaphragm or midriff. The thorax is lined with a smooth, shining membrane, denominated the *pleura*, which is the seat of and gives name to the disease called pleurisy. This membrane is comparable to two distinct bags placed in the thorax, in contact with each other; the two sides in contact forming a septum or partition from the inner edge of the spine to the breast-bone, termed the *mediastinum*, which divides the thorax into two cavities. The lungs are divided into two portions, styled lobes, one of each being suspended by the trachea or wind-pipe in either cavity of the thorax.

The most obvious, perhaps only, function of the lungs, is that of respiration, which, as defined by MAGENDIE, is that change of property which the blood undergoes by exposure to contact with the air in these organs. The more common name for respiration is breathing, which consists in nothing more than simply inhaling the air into and expelling it from the lungs.

The LIVER is an important organ, and supposed by some to be auxiliary to the lungs in *decarbonizing* the blood. It is situated immediately below the midriff in the abdomen; and is divided into two unequal portions or lobes, the larger one being situated wholly in the right hypochondriac region, and the smaller one partly in the same, and partly in the epigastric region. The liver is a glandular body whose office is to secrete bile, a fluid of vast importance in the process of digestion, and in regulating the action of the intestines.

Without stopping to inquire how the BILE is secreted from the blood, it will be sufficient in this hasty sketch to point out its most important uses in digestion. They are:—

1. "To separate the *chyle* from the *chyme*: thus chyle is never observed in the *duodenum* before the chyme is mixed with the bile: and thus it is that oil is extracted from linen by the bile of animals.*

*Oil is capable of being mixed with bile, by which its nature is changed, perhaps in a manner not wholly dissimilar to the process of digestion.

2. "By its acridity it excites the motion of the intestines: hence the bowels are so inactive in persons with jaundice.

3. "It imparts a yellow color to the *excrements*: thus we observe the white color of the *fæces* in jaundice, in which disease the flow of the bile into the duodenum is obstructed, or entirely prevented.

4. "It prevents the abundance of mucus and acridity in the intestines, &c."

The STOMACH and INTESTINES, including the ŒSOPHAGUS or gullet, and MOUTH, constitute the alimentary canal; as it is through this tube that all our aliment or food passes in order to yield its nutritious parts to the blood.

The stomach is situated immediately below the diaphragm, in the epigastric region. Its use is to receive the masticated food from the mouth, and retain it there until the process of digestion is so far performed as to render it proper for the food to pass into the first intestine, called the duodenum. The food thus partially digested is called chyme.

The chyme being poured into the duodenum, it there meets and combines with the bile and *pancreatic* juice, by which the process of digestion is completed. The digested food is now called chyle.

The INTESTINES are furnished almost through their whole length with minute absorbent vessels, termed lacteals, which take up the nutritious particles from the chyle and pour them into the thoracic duct. The grosser parts of the food which will not serve for nourishment, or which cannot be sucked up by the absorbents, pass on through the intestines, and are at length discharged by stool. Hence the use of the intestines is, to furnish a lengthy tube in which to expose the digested food to the action of the nutrient vessels, for the more convenient extraction or solution of its nutritious parts.

The contents of the intestines are propelled through them by what is termed the *peristaltic* motion. This motion is probably somewhat similar to the motion of the œsophagus in swallowing; and any diminution in the force, or frequency, of it must necessarily cause costiveness of the bowels.

DIGESTION is one of the most important functions performed in the human system; and any considerable deviation from its regular action, has a ruinous influence on health. And in consequence of the great number of organs concerned in the digestive process, its operation is liable often to be disturbed; suffering more or less from every disease to which the human frame is liable. We believe that JOHN HUNTER was the first who remarked that the stomach was the centre of sympathy in the system; and of this fact there appears to be but one opinion with physiologists of the present day. We have no where, that we recollect, seen any reason assigned for this

phenomenon; but we think it may be found in the association of so many organs in the performance of one common function, and in the mutual dependence and connection of the stomach upon and with every other part of the system, and *vice versa*.

It is only by considering the great end of the digestive process, that we shall be capable of fully appreciating its vast importance in the animal economy. By this process our food and drink* is prepared to yield its nutritious particles to the blood, from which all the other fluids as well as the solids are made, and upon which our very existence depends. Whenever, therefore, the digestion becomes too feeble, the living power must also become weak; and a long continued weakness of the digestive organs must produce disease and ultimately, death!

SECTION 4.

OF THE POWER WHICH KEEPS THE ORGANS IN MOTION; OR
THE DOCTRINE OF LIFE.

HAVING taken a concise view of the compound nature of man, both as to the materials of which he is composed, and the organs by which he is constituted; and having also briefly pointed out the different uses of many of the organs and parts that we have described; we will now turn our attention to a consideration of the power that keeps the organs in motion; which phenomenon essentially constitutes life.

We have shown that each organ of the system is charged with the performance of an office or function. Now, the performance of a function implies both an action and the power to act; as without action there could be no performance; and without power to act there could be no action. There must, therefore, be either a power invested in, or furnished to, the organs, by which they are enabled to act. It is of this power we now intend to speak, and which may be termed the *living power*, *vital power*, or *power of life*. These terms will, therefore, be used synonymously, and must always be understood as referring to that power or principle by which the vital actions are kept up and life sustained. We are not sure that we have made choice of the best terms in the language for expressing in the clearest manner the idea of that vital force which keeps the living machine in motion; but the most careful consideration which we have been able to give the subject has elicited in our minds nothing better.

* Magendie's Physiology, p. 250, Phila. Ed. 1824.

Several different theories explanatory of life or the living principle, have been offered to the world; but none of them, we think, is so nearly correct as the one proposed by Dr. JOHN BROWN. By some, life has been considered as an immediate emanation from the Deity. Others have considered it as being derived from air, fire, and light: and some from air, and some from fire or heat only. HIPPOCRATES, and the greater part of the ancient philosophers were of the latter opinion; and Dr. THOMSON, of the present day, has hit upon the same idea. TOURTELLE, in his work entitled the "Principles of Health," endeavors by many facts and arguments to establish the doctrine, that heat or fire is the vital principle which animates the whole living world.*

But without stopping to controvert any of these erroneous theories, some of which will be more particularly noticed in the course of this work, we will briefly give our own views of what constitutes the power of life, or rather of the source from whence it is drawn. This power is doubtless derived from food, drink, and air; the two first received into the stomach; the last into the lungs. There is, therefore, no power inherent in the organs to keep up those actions upon which life depends. And in this respect, man may be justly compared to a complicated machine which is kept in motion by the application, in some certain manner, of a moving power, and which finally becomes worn out by continual action.

This view of life and the animal machine, corresponds with the proposition of Dr. BROWN, "*that life is [not a natural, but] a forced state; that the tendency of animals every moment is to dissolution; that they are kept from it, [not by any power in themselves, but] by foreign powers, and even by these with difficulty, and only for a little; and then from the necessity of their fate, give way to death.*"† The correctness of Dr. BROWN's theory is too self-evident, as well as too generally admitted, to be insisted upon here. But the manner in which the "powers" that give an impulse to the human machine, are applied to the organs, remains undefined. The vital power is drawn from the air, and from our aliment, including drinks, and is concentrated in all its force in the blood.‡ The various organs of the system are so constituted as to be susceptible of impressions from this power, which appears to be applied to or diffused through every part and portion of them by the agency of the purple flood. In fact, may we not conclude with the Hebrew lawgiver, that the *blood is the life*.— There is certainly more truth in this declaration of MOSES,

* Principles of Health, vol. 1, chap. 3.

† Brown's Elements, Sec. 72.

‡ Hence the impropriety of depriving the body of any portion of its blood.

than modern physiologists have been willing to accord to it. Before we close this chapter, we trust that we shall have conclusively shown, as just now observed, that the whole vital force or power which keeps the animal machine in motion is drawn from the air and from our food, and in the form or through the agency of the blood, is diffused through every part of the system. The blood indeed is really and absolutely composed of the stimulant and nutritious parts of the air we breathe and the food we eat, by which the organs are enabled to perform their functions, and without which life must instantly cease.

As to the nature of the living power, or the peculiar mode of its action upon the organs; whether it is a chymical agent and its action chymical, or whether it is something entirely different from this, we are not prepared positively to say; but be it what it may, it is subject to laws peculiar to animal life. It is, however, a matter of little consequence, in a medical point of view, what is the nature of this power, or the mode of its action; as all must be sensible that without its constant application, life must cease. Of food and drink we can bear the deprivation but a short time, and of air still shorter.—These are the substances from which the power of life is drawn; or, they are the stimulants which, in the healthy state, keep the animal machine in motion and drive us on through life.

SECTION 5.

OF THE WASTE OF THE POWER OF LIFE.

WE have shown that the living power is not an innate nor a self-existing power in the human system; but is derived from substances which, in their natural state, seem to bear no relation to, or correspondence with, the living machine. We may also observe, that the wise Author of our existence has so constituted the material world, that we are under the necessity of making some degree of bodily exertion in order to procure a part of the materials from which the vital power is drawn. These materials do not grow spontaneously, nor can they be cultivated ready prepared for use. Our bodies also require something to protect them from the inclemencies of the weather; to which also the Creator has superadded a sense of decency that requires us to keep them covered. He has likewise made a share of our happiness dependent upon bodily exercise.

Now it is by the aid of the vital power that we are enabled to make the exertion necessary to procure and prepare food for our subsistence; materials to cover our bodies, for comfort and decency; and to do whatever else may be necessary for health and happiness. These exertions are the result of muscular motions or actions.

There are also internal actions carried on by the vital organs, to which they are impelled by the living power; such as respiration; the circulation of the blood and other fluids; the digestive process; the glandular secretions; the peristaltic motion, &c. Now it must be evident that as the living power is not a self-existent power, but depends upon other matter foreign to the body which it animates, it must waste and become deficient, by the constant demand upon it to sustain both bodily or muscular, and internal, organic or vital exertion.—Likewise the fact, familiar to all, that we are under the necessity of eating, drinking, and breathing, to supply the calls of nature and sustain life, confirms, beyond contradiction, the correctness of our proposition, that the vital power is continually wasting away: And any increased excitement of the vital organs, or of the muscular motions, exhausts still more rapidly the living power, and proportionally weakens its vital force.

The living power may also be weakened, impaired, and annihilated by other means than the ordinary demands of the system. Any thing which has an enervating influence upon the body produces this effect: either by using the vital power in excess, or by exerting such an injurious influence upon a part or the whole of the living machinery, as to disqualify it for the performance of the proper functions. The use of ardent spirits, stimulating the heart and arteries in excess, without adding any thing to the living power as food, &c. does, may be regarded as using the living power in excess, and, at the same time, impairing the tone of the organs, whereby they are rendered incapable of performing their office.

Eating too much; drinking too much; sleeping too much; neglecting proper exercise; excessive indulgence in sensual pleasures; all produce an enervating effect upon the system, either by exhausting the living power, or by preventing its accumulation; and ought, therefore, to be shunned as dangerous to health and life.

The passions, particularly those termed the depressing ones, and mental exertions, indulged in to excess, waste or wear out the power of life and shorten existence.

Finally, when, the organs by long continued use, so far lose their tone as to be incapable of performing their functions; that is, incompetent to the task of manufacturing food, drink,

and air, into the proper material for supplying the ordinary waste of the living power; or of performing any other vital operation; we say, when the organs thus fail, life then ceases and death closes the scene!

SECTION 6.

OF THE WASTE OF THE SUBSTANCE OF THE ORGANS.

WE have heretofore compared man to a machine which is kept in motion by the continual application of a forcing power; and we think the comparison a good one. The animal, like the inanimate machine, wears out by continual use or friction; both are liable to get out of order, and need repair—both require the constant application of the moving power to keep them in motion; and, as a necessary consequence, both ultimately go to decay.

But there is one very striking difference between the animal and inanimate machine. The animal machine is so constituted as to remove by the operations of its own organs, whatever becomes worn out by the attrition of its parts, thus keeping it cleansed and purified; and at the same time, by another action, supplying from the proper source, the very waste or loss occasioned by the removal of the worn-out matter. For however imperceptible may be the waste of the organs from friction, it must nevertheless be the case. Friction will wear any material substance with which we are familiar; even the continual dropping of water, it is said, will wear a stone.

In addition to the waste of the organs* by friction, they are constantly losing something by what is termed the excretions; which includes several different processes carried on by the emunctories. These processes remove from the body the worn-out matter in order that the wheels of life may not be encumbered with it, and also make room for the new supplies which are constantly furnished by nutrition and respiration. The excretions, however, do not cease for the want of new supplies of nourishment; for during either sickness, or long fasting, the emunctories continue their functions, and often before death takes place, reduce the body to a mere skeleton. Thus it is by the excretory processes that the fleshy person becomes lean, and the sick emaciated. The excretions are—

* By this term, as here used, we mean the whole body.

1. *By Cutaneous Transpiration.*

Perspirable matter, or sweat, is the product of cutaneous transpiration, the separation of which from the blood, in suitable quantity, is a process of immense importance to health.

The nutritious and stimulant parts of our food, drink, and air, having undergone the proper changes and being formed into blood, are immediately dispersed through the system, and deposited in suitable portions in every organ. Even the bones, hard and impenetrable as they appear to any fluid substance, receive a portion of the nutritious matter contained in the blood. This deposit, after a time, ceases to answer the necessary purpose in sustaining life, when it must be removed, in order that its place may be supplied with fresh materials. It is commonly supposed that the matter which has thus become useless, is taken up by absorbing vessels and again thrown into the blood, by which it is conveyed to the surface of the body and deposited upon the skin, either in the form of insensible perspiration, or of sweat. Cutaneous transpiration is the greatest, as well as most important excretion from the human system.

2. *By Pulmonary Transpiration.*

The vapor exhaled from the lungs in breathing, is the result of pulmonary transpiration.

This vapor is most visible in a cold morning; and appears to be analogous to the perspirable fluid thrown upon the skin. It is deposited on the surfaces of the air cells in the lungs, whence it passes out during the expulsion of the air in breathing.

3. *By Urine.*

The urine also carries off from the system matter which has become useless; such as water, salts, and earths. The urine is separated from the blood in the kidneys, and no doubt, like the perspiration, removes from the system matter which has become worn-out in it, that a new supply may find room to play its part in the active operations of life.

4. *By the Alvine Discharges.*

The term alvine is applied to the discharges from the intestines by stool. They consist of the alimentary matter which the lacteals do not take up, together with a mixture of bile, mucus, and excrementitious matter poured into the intestines by the excreting vessels that terminate at their internal surfaces. Hence we take the opportunity of remarking, that the

vessels* which carry off the worn-out matter from the system, are found to diverge both ways, to the internal surface of the intestines, and to the external surface or skin. Now, if the perspiration is free or uninterrupted, the determining powers are said to be to the surface; but if otherwise, then they are said to be inward.

The regular discharge of the fæces or stools, like the exact performance of every other living function, is of the highest importance to health. The regularity of the stools depends upon what is termed the peristaltic motion of the intestines. If this motion be accelerated, the digested food passes too rapidly through the intestines, and does not permit the lacteals to absorb the whole of its nutrient and stimulant powers; and hence debility and emaciation of the body. It is also sometimes the case that the intestinal exhalents, of which we just made mention, in consequence of the determining powers being inward, pour into the intestines a superabundance of fluid, causing liquid stools, which also has a very debilitating influence upon the body. Liquid stools are also produced by acrid or irritating substances being introduced into them, as drastic purges, &c., which excite the exhalents, and induce debility; and therefore ought, especially in typhus fevers, to be avoided as pernicious.

The peristaltic motion may likewise become too slow, and give rise to costiveness; producing, if long continued, a train of formidable symptoms, difficult oftentimes to remove. Costiveness, however, is commonly regarded as a symptomatic, rather than as a primary disease. It is an almost constant and never-failing attendant on dyspepsia or indigestion. But whether it be a primary or a symptomatic affection, its removal breaks up a catenation of other disagreeable symptoms, which, if suffered to continue, are distressing to the patient, and highly injurious to health.

SECTION 7.

OF THE MEANS OF SUPPLYING THE WASTE OF THE POWER OF LIFE.

WE have previously anticipated the sources whence the living power is drawn; and shall now enter more minutely into the subject; indulging, at the same time, in some physiological speculations illustrative of the new theory.

* Commonly called exhalents.

We shall first take notice of food and drink; as it would seem that from these both stimulus and nourishment were drawn. Food is taken into the stomach, where it partially undergoes the digestive process, and then passes into the duodenum, where the process is finished. The food is now become prepared to yield to the lacteals its nutritious and stimulant particles, which are poured into the blood. There also appears to be a stimulus imparted to the system from the food before even the first process of digestion can take place in the stomach; which any one may be sensible of by observing his feelings after a meal which was preceded by keen hunger; as he will be sensible, immediately after eating, that his strength and vigor are augmented. This we suppose must be caused by what MAGENDIE terms venous absorption; a phenomenon we need not here explain.

When the digested food or chyle has become incorporated with the blood, it is ready to impart all its stimulant qualities to the system, and thus replenish the waste of vital power of which we have just spoken. Here, in the blood, the stimulant matter is carried and applied to every part and portion of the system, imparting life, strength and vigor to the whole man.

From the air, it would seem, that we derive a more powerful and constantly necessary stimulus than from food and drink. We can bear the deprivation of air but for a very limited period; of food and drink much longer, without destroying life.

It remains, however, to the present moment, a subject of dispute, whether the air *imparts* something to the blood, or *abstracts* something from it—whether it imparts a stimulus, or abstracts a sedative.

The venous blood, as it is termed, or that which is returned by the veins from all parts of the system to the heart, previous to its entrance into the lungs, is deprived of those qualities which fit it for sustaining the living power; or, as others say, containing something which unfits it for those purposes. But we shall assume it for granted, that the blood in its passage through the system has imparted its stimulant powers to the organs, and returns to the lungs to obtain a new supply from the air; without disputing, however, that it may also contain something unfriendly to life which it is necessary to discharge through the lungs.

The blood in its way to the heart, receives a quantity of chyle from the thoracic duct, which, as yet, remains unassimilated or unconverted to the nature of the vital fluid, or of the body which it is designed to support. In its passage through the heart and pulmonary artery, the chyle becomes

intimately blended with the blood which enters the lungs of a deep or black purple color. Here it undergoes a highly important change; without which, life, in a very limited period, would become extinct.

How this change in the qualities of the blood takes place or is effected, has not been satisfactorily accounted for. It is known to enter the lungs of a dark purple or modena hue, "and we find it return," says Dr. Good, "spirited with newness of life, perfect in its elaboration, more readily disposed to coagulate, and the dead purple hue transformed into a bright scarlet. What," continues he, "has the blood hereby lost? How has this wonderful change been accomplished?"

We trust that we shall be excused whilst treating upon this most important function of the living machine, if we dip a little into the scientific speculations of the age; although we have small hope of settling the question upon any permanent basis. Dr. Good observes, in reference to the queries just quoted, "These are questions which have occupied the attention of physiologists in almost all ages, and were as eagerly studied in the Greek schools as in our own day. To the present hour, however, they have descended in a mantle of Cimmerian darkness; and though the researches of a more accurate chemistry have disclosed volumes of facts heretofore unknown, and the ingenuity of theorists have laid hold of them, and applied them to an explanation of this curious subject in a great variety of hypotheses, I am afraid we are still almost as much at sea as ever; and that there is no inquiry in the whole range of physiology, in a more unsatisfactory state, than that concerning the ventilation of the blood in the lungs."*

The most probable hypothesis, however, which has been offered in explanation of this bewildering subject is, that the blood during its passage from the extreme branches of the pulmonary arteries to the corresponding branches of the pulmonary veins, in some manner or other comes in contact with the atmosphere inhaled into the numerous air-cells of the lungs, the walls of which are every where invested with those vessels, forming a beautiful net-work. This contact of the blood and air, produces a mutual change in the properties of both; the blood imbibing the vital qualities of the air, which is supposed to be *oxygen* gas; the air abstracting the useless morbid parts from the blood, thought to be *carbon*.

The carbon is supposed to give to the venous blood its dark purple color; and its abstraction from it to restore it to the scarlet hue of the arterial blood. But the theories that have been started to account for the change of color which the blood undergoes in its transformation from venous to arterial

*Good's Study of Medicine; Class Pneumatica; Physiological Proem.

blood; and how, in its passage through the system, the venous blood acquires its dark hue, are as various and unsatisfactory as those respecting any other part of the process of respiration. But like many other physiological questions, it is of little consequence whether it is ever rightly settled or not.

It would seem, however, from the best investigation which we have been enabled to give this subject, that the inhaled air actually imparts a stimulant power to the blood, the unremitting motion of which is indispensably necessary to sustain life from the first moments of conception to the latest period of vital existence. It would also appear that respiration had a direct influence upon the circulation; the quickness of one always seeming to bear a relative proportion to the speed of the other. One is never accelerated without the other; and both may be increased at pleasure by active exercise, as running, leaping, &c.

We are still further convinced that the blood derives a stimulant power from the atmosphere, by the effects which the system experiences after breathing the air of a close room several times over; as by this means its vital or stimulant qualities become deficient or even totally exhausted. Hence it often happens in tight rooms which are much crowded, that some become weak and debilitated, some sicken and others faint: And too long confinement in this way would produce death, as it did with the English prisoners confined in the Black Hole at Calcutta. By breathing the same air over and over again, it loses something which chymical experiment has proved to be oxygen gas; this, no doubt, has been consumed by the process of respiration, and may, therefore, be regarded as the vital or stimulant portion of the atmosphere. If the oxygen, which becomes exhausted by breathing, has not mingled with the blood, what has become of it? We know that it is yet undecided as to the manner in which this gas is consumed, though we think it is most reasonable to conclude that it is incorporated with the vital fluid.

But we have, as we think, still stronger evidence that something is actually imparted by the air to the blood, during the process of respiration, in the fact that combustion also destroys or consumes the stimulant qualities of the atmosphere. It is a well established fact, that both these processes consume the oxygen of the air; and neither can be performed without its presence in some proportion or other. But although combustion, in pure oxygen gas, goes on with increased splendor and brilliancy, and by inhaling it the vital power is momentarily excited to greater vivacity and vigor, it is nevertheless unfit for the purposes of respiration and support of animal life. This highly stimulating gas, like rich food, requires with it a portion of some inert material to render it suitable for respi-

ration. The proper mixture for this purpose is found in atmospheric air, which consists of about 21 parts, by measure, of oxygen, and 79 of nitrogen, with slight traces of carbonic acid gas; which last, however, is not regarded as a constituent part of the atmosphere, but as merely adventitious or accidental. These proportions of the two gases are no doubt the most suitable to health, and are found to be the same in all seasons and climates, and at all elevations at which it has been tested; and has continued without any variation since the composition of the atmosphere was first discovered, which was about the year 1775.

We are well aware of the facts and force of the reasoning which are adduced in support of a theory of respiration which is opposed to the one that we have espoused; but we do not deem it necessary, nor does it comport with our design, to go into an examination of the theory or of the facts which are offered for its support. We will let it suffice in this place, to quote the sentiment of a modern writer* of high character, who has remarked that the deficiency of precise data prevents the establishment of one of them in preference to the other; but that the arguments preponderate in favor of the one which we have endeavored to support.

But waiving all theoretical reasoning, we have every thing necessary to our present purpose, which is to establish the fact that respiration is a principal means of supporting animal life. We know that the blood in making a complete revolution in the body, passes through the lungs; and that there it undergoes an important—an indispensable change, without which life must, in a very short time, cease. We also know that this change is produced by respiration—by the air drawn into the lungs in the act of breathing. These facts, we think, are certainly sufficient to establish the proposition that the power of life is in part drawn from the air we breathe. And upon this source are we continually dependent day and night, asleep or awake, during the whole period of our existence.

Hence, too, we may learn the vast importance of breathing a pure atmosphere, and why an impure one proves so destructive to health. Foul air contaminates the blood and other fluids, and reduces the vital force of the living power, because it does not afford the necessary supply of stimulus to the purple flood. It is also probable that an impure air does not absorb the carbon or whatever other useless or extraneous matter with which the blood may have become charged during its revolution through the system.

*TURNER'S Chemistry; article Respiration.

We now indulge the hope that sufficient evidence has been adduced to establish our proposition, that the power of life is concentrated in all its force [in the blood. Into this fluid the nutrient and stimulant portions of our food are poured, through the thoracic duct; and into it is also transfused the vital power derived from the air, and by it is borne and given out to every part of the living machine: Or rather, perhaps we might say, that the nutrient parts of our food, combined with the oxygen of the air, compose the blood, from which is drawn the power that moves the human machine.

We feel unwilling to close this subject without expressing our confident belief, that it has been clearly shown, that "life is a forced state; that the tendency of animals every moment is to dissolution; that they are kept from it, [not by any powers in themselves, but] by foreign powers;" that those powers are drawn from food, drink, and air; the last of which is more constantly and imperiously necessary than either of the others; and is, therefore, to be regarded as the most essential "foreign power" employed in *forcing* that state which is termed life.

SECTION 8.

OF THE MEANS OF SUPPLYING THE WASTE OF THE SUBSTANCE OF THE ORGANS.

FROM infancy to mature age, there is a progressive increase of bulk in the organs, and consequent growth of the body.—During this stage of existence, a greater amount of matter is deposited by the blood than is taken up by the absorbents and removed by the exhalents out of the system. It will be recollected that every thing intended for the nourishment or growth of the body passes into the blood, from which it is supplied to all parts of the living economy; and during the progress from infancy to manhood, more matter is deposited by the blood than is removed by the absorbents; whence an increase of bulk or size of the body.

But even during this period, as well as through after life, a part of what is thus taken into the system and deposited for its nourishment and growth, is worn out and removed from it. If the loss thus sustained be not speedily supplied, as in case of sickness, or of abstinence from food, the body shrinks and becomes emaciated. The waste which is thus constantly taking place can only be supplied by the daily reception of such articles of food and drink as can be converted into a substance

of the same kind and nature with that from which the waste takes place. Whilst the body is in a healthy state, the organs possess the power of manufacturing our aliment in such a manner as to render it suitable for supplying, as circumstances may require, both the growth and waste of the body.

It is supposed that the constant change of matter which is continually taking place in the system, entirely renews the body in the course of some certain period; that is, that what now composes our bodies will, in the course of time, be entirely removed, and new matter take its place. By the ancients this change and renewal of the materials of which the body is composed, was conjectured to take place once in seven years. That the composition of the human system is constantly varying, admits of no reasonable doubt; but that the whole entire body is periodically renewed, admits of much doubt.—It is, however, a most curious phenomenon that so many different substances should be forming in the animal system, such as flesh or muscle, ligament, cartilage, bone, &c., and at the same time be wasting away to make room for new matter.

The compounding and decomposing the materials or proximate elements of which our bodies are composed, is undoubtedly, to some certain extent, continually going on within us. This double process is indispensably necessary to our existence; and essentially constitutes vitality or life. It is this which distinguishes organic from inorganic bodies, and preserves animals from putrefaction and decay; though it has been heretofore supposed that the *principle of life* was the preserving power in animal matter; because at the common temperature of the body, putrefaction commences very soon after death. Vegetable substances are also subject to the same destructive principle, though they are enabled much longer than animal bodies, to resist those laws which are forever at war with organized nature. But it is a well known fact, that certain substances will preserve both animal and vegetable matter from putrefying in the dead state; and why may not the vital organs manufacture something to act upon the living fibre in the same or some similar way? Moreover, the organs of the living machine are continually separating the worn-out useless matter from that which is sound and serviceable; which certainly is an additional means of preventing putrefaction and decay.

In one of our lectures we advanced the idea that the *effect* produced in the vital operation of compounding and decomposing the elements of man, was essentially what constituted the living state or condition of the body, termed life.—This state invariably ceases whenever the necessary supply of food, drink, or air is, for a certain period, interrupted or

withdrawn; or whenever the organs concerned in compounding and decomposing those materials become incapable of performing their offices.

This view of what constitutes life, enables us to dispense with the necessity of supposing a *vital principle*, *principle of life*, *living principle*, &c.; terms which have been hitherto employed to express our notions of the unknown *something* which produces the various phenomena of animal existence. We say the *necessity* of *supposing* a vital principle, because physiologists have not, with all their research, been able in any other manner, or by any known law or mode of natural action, satisfactorily to account for many of the phenomena which are observed to be peculiar to life. The admission of a vital principle is at best but a substitute for the ignorance of those who employ it; for it accounts for nothing—explains nothing; but rather plunges the subject into still greater darkness and difficulty.

If the human system were a mere primary or simple substance, and not a compound one, it must then necessarily follow that in order to produce the essential phenomenon of life, as we have heretofore described it, a *living principle* must be inherent in it. But such a fact as this, if it existed, would be a most singular anomaly—an unheard-of circumstance in the works of nature! It is of Nature's works we write; and it is to her laws we refer every change and every phenomenon of the living system as well as of the whole material world. We wish however not to be misunderstood in assigning these things to the laws of nature; we do it with all proper and necessary deference to the GREAT FIRST CAUSE, which created the whole, and endowed matter with certain fixed principles or laws by which its action is governed.

The fact must certainly be familiar, at least to the chimist and philosopher, that a *simple* substance contains but one simple principle; and this, so long as it remains insulated from other matter, is inert and incapable of producing phenomena of any kind whatever. It is only by being combined with other matter containing a different principle, that actions either vital or chymical can be produced, or the operations of nature carried on; the laws of nature being the rules which produce these actions, and which govern them when produced. And we do not see why animal bodies should be any more exempt from those laws than other matter. They are a part of the physical world—formed from the great mass of elementary materials—have a progressive growth—a mature age—a gradual decay. Death and decomposition close the scene, when they return again to the common mass.

CHAPTER II.

OF ANIMAL HEAT.

ALTHOUGH we have placed the terms animal heat, at the head of this chapter, we do not wish it understood that we think the heat of an animal is in any respect different from the heat of any other body. We use the term in common with other writers, merely to express the heat of animals, without designing to distinguish animal, from any other heat. Its generation in the system is of vast importance to health, over which it exercises a most controlling influence. We have, therefore, devoted a chapter to its consideration.

SECTION I.

OF THE PRODUCTION OF ANIMAL HEAT.

THE means by which heat is generated in the human system, is so obscure that physiology has not hitherto developed, with satisfactory certainty, the seat nor the mode of its production. And whether we shall be able to suggest any thing more conclusive, remains yet to be tested.

The most popular and best defined theories, however, fix the seat of its production in the lungs: but the manner in which it is there generated remains unsettled. By some, it is attributed to the alternate changes of venous to arterial, and of arterial to venous blood; whilst others are disposed to ascribe it altogether to the influence of the nervous system.

It would be inconsistent with our plan, to attempt a formal refutation of those contradictory theories; and we must, therefore, content ourselves with a few observations in illustration of our own views.

For the secretion or formation of every other material necessary to promote the operations of the human system, an organ or organs have been assigned; but no organ has yet been detected whose office it could rationally be suspected was to generate heat, a substance indispensably necessary in the animal economy. Indeed, from the very nature of this invisible fluid, we should not expect that any one organ in the system could be the instrument of its production. If it

were the case, as some suppose, that animal heat was generated wholly in the lungs, or any other central organ, the source of its production must experience a high degree of heat, whilst more distant parts would be comparatively cold.

But, in opposition to this, it is maintained that the vital organs are but very little if any warmer than other parts are; and it is in these we should expect to find the source of heat; as, indeed, it is usually attributed to the lungs.

Heat is an inconfineable substance; and unlike all the other fluids which can be formed in one part of the system and conveyed in proper canals or tubes to all other parts, it must be generated in every place where its presence is required. If it were exclusively produced in the lungs, it must be transmitted by the blood to the extremities; but ere this could be accomplished, the heat would be dissipated, because the walls of the arteries could not restrain its radiation.

It will be readily inferred from what has already been said, that animal heat is not generated in any particular organ, but universally throughout the system. But how, or upon what principle is it produced? This is a question which, in all its bearings, the utmost researches of chemistry and physiology have not hitherto been able satisfactorily to answer. It is known, however, that friction produces heat, though upon what principle is not understood; and amidst all the operations going on in the human system, and particularly the circulation of the blood through the minute vessels which seem almost to compose the very fibers of the flesh, there must be a vast amount of friction, and, of course, a corresponding production of heat.

Should any be disposed to doubt the probability that the friction of a fluid substance can produce heat, he may remember that the blood is an *animal fluid*, very different in its composition, as well as physical and chymical properties, from any other.* Its principal constituents are albumen and fibrin, two substances which are the basis of the solids of the body. Indeed the blood is the matter of which the body is composed, in a state of fluidity; and like the solids is susceptible of the influence of the living power, by which it is kept in motion. In becoming solid, the blood appears to give out its watery part, which goes off by the lungs and skin, carrying with it those parts of the solids which are worn out and ready to pass away to make room for a new and necessary supply.

We may also observe, that every circumstance which accelerates the motion of the blood, and which of course increases the amount of friction, elevates the temperature of the body; and upon what known principle or mode of action

* See John Hunter's celebrated Treatise on the Blood, &c.

could this fact be so rationally accounted for as by attributing it to the agency of friction? Hence a person laboring under the effects of debility or disease, without fever, although he may not be sensible of any reduction of animal heat, is, notwithstanding, aware of his inability to resist the effects of the external cold. The more strong and vigorous an individual is, the more active and energetic will be the circulation, and the less will he be affected by cold; whilst the more weak, feeble, or debilitated he is, the more will he be influenced by this agent.

It would seem, therefore, from what has been adduced, that heat, in order to be uniformly diffused throughout the system, must be equally generated in every part. And what known operation of the animal economy appears so likely to produce it, as the friction of the blood passing through its proper vessels; and particularly in its passage through the almost imperceptible ones which terminate the arteries and form the commencement of the veins?

And now, as we have previously remarked, no organ having been detected in the system, whose office could rationally be assigned to be the *generation of heat*; and as from the inconfinable nature of this substance it could not, like the fluids of the body, be conveyed from any central, or single organ, to the remote parts of the system; and as friction appears to be the only known process of producing heat which operates uniformly over the whole body; we, therefore, humbly challenge physiologists for an acceptance of our theory; at least until something better than any former one is offered to the world.

SECTION 2.

OF THE USE OF ANIMAL HEAT.

ANIMALS, like all other organized living bodies, require a certain portion of caloric or heat to promote their growth and sustain life; and some, both of ancient and modern times, have supposed, from the important influence which it exercises over the animal functions, that it was really the principle of life. This indeed is the theory of Dr. THOMSON, whose opinions have been so extensively disseminated in the United States. But the incorrectness of this ancient and exploded doctrine has been elsewhere shown,* and will be

* See HANCE'S Address and Lecture, delivered before the Botanic Society, Columbus, 1830.

further occasionally noticed in the progress of this work; which will supersede the necessity of dwelling upon it here.

The most obvious uses of animal heat appear to be that of giving a proper consistence to the solids and fluids of the body. A due quantity of it, attenuates the juices, and softens and gives pliancy to all the vessels of the system; by which means both the fluids and the vessels are qualified for keeping up the circulation with healthful ease and regularity.—By the softening effects of heat, the sensibility of the nervous system is also augmented, and its influence over the system increased, whereby perception, both corporeal and mental, is rendered much more acute.

If a sufficiency of heat be not generated in the system, the fluids become thick and viscid; the vessels stiff and unyielding; the circulation languid and feeble; nutrition interrupted or annihilated; the removal of worn-out matter from the system deranged and checked; and a state of disease ensues. The same result will likewise follow if the heat be by any means reduced or carried off too rapidly from the system; which will take place by exposure to cold, commonly styled “catching cold.”

Too great a reduction of animal heat also impairs the nervous influence, preventing the prompt communication of external impressions to the brain, and of the power of motion to the organs. The mental faculties are likewise by the same means impaired, and the living power deprived of its proper influence over the living machine.

To be sensible of these facts, it is only necessary for an observing person to notice his sensations with reference to these subjects, when benumbed with cold.

SECTION 3.

OF THE WASTE OF HEAT.

THE matter of heat, styled in the modern nomenclature *caloric*, is an inconfined substance, passing with more or less rapidity through all bodies according to their density, penetrating, in general, those which are most solid with more celerity than such as are more porous. Hence the matter of heat is never at rest, but is continually passing and repassing through matter, seeking an equilibrium or level; as any number of bodies in contact or near to each other, with temperatures ever so diversified, will respectively acquire the same degree of heat; the colder bodies becoming warmer, and the warmer bodies colder.

The human body is also subject to the same law; and as heat is constantly being generated in its tissues, it must also as constantly be passing off; and, indeed, for the very reason that it is thus perpetually being removed, it must be continually generated.

Animal heat is reduced in different ways, and by various causes:

1. By exposure to a medium colder than our bodies.

It is an established fact, as just observed, that heat pervades all bodies in contact alike. This property is one of its peculiar characteristics; it being so extremely subtle that it cannot be confined within any limits, or by any known substance. If we heat a rod of iron red hot, and then plunge it into cold water, it very soon imparts its heat to the water, and both become of equal temperature; the iron becoming colder, and the water warmer; or if the hot iron be laid in the open air, the effect is the same, its temperature being soon reduced to that of the atmosphere.

Just so with man, whose temperature is generally above the surrounding medium or air; he is constantly losing his heat, and at the same time as constantly generating more to supply the waste. The quantity of heat lost in this way, is always in proportion to the coldness of the atmosphere or medium which surrounds us; and also depends, in some measure, upon the state of the skin whether tense or relaxed, dry or moist. The knowledge of these facts enables us to comprehend how a person exposed to a current of cold air, or the influence of any other cold substance, either externally or internally applied, loses his heat and becomes the subject of disease.

2. By the perspiration and its evaporation from the surface of the body.

Every fluid contains a necessary portion of what is denominated its caloric of fluidity; that is, a sufficient portion of the matter of heat combined with the fluid to keep it at all temperatures above the freezing point in a state of fluidity. Hence, the separation of fluids from the body carries off not only the caloric of fluidity, but also the amount of heat necessary to raise the fluids to the temperature of the body from whence they are removed.

Perspiration is thrown upon the surface, ordinarily, in the form of an impalpable vapor, denominated insensible perspiration. This matter is constantly evaporating from the skin, by which means an additional quantity of caloric or heat is removed from the system. In such climates and situations as have a temperature above the human system, this latter process of abstracting the surplus heat is indispensably necessary to existence. Dr. FRANKLIN was the first who suggested the

principle upon which this cooling process depends. He illustrated his subject by comparing the human body to a kind of vessel used in some countries for cooling water. This vessel is perforated all over with a great number of minute holes, through which the water very slowly percolates, and by continual evaporation from the surface of the vessel abstracts warmth from it and from the water, which is thus made cool.

In some hot and arid countries, water is carried upon horses or camels, in bags exposed to the burning rays of a vertical sun, which instead of warming the water, as might naturally be expected, has a contrary effect, making it cooler than it otherwise would be. These bags being made of leather, are sufficiently porous to admit the water slowly to ooze through them, by thousands of imperceptible pores, whilst the great heat of the sun causes a rapid evaporation from the surface of the bags, which removes the heat and reduces the temperature of the water.

It is a well known fact, that water when heated to the boiling point cannot, by the fiercest or most violent boiling be made any hotter. The more intense the heat, the more rapid is the evaporation; the vapor carrying off the additional heat as fast as it is infused into the water, and thus preventing the temperature from being increased by the most vehement fire. We adduce this philosophical fact in illustration of the proposition, that the temperature of the human body is reduced by the evaporation of the perspirable fluid from its surface.

If an evaporation could be produced from the surface of cold water, equal to that which takes place from water in the state of violent boiling, it would be almost instantly converted into ice. To be satisfied of this, we only need imagine the vast quantity of heat which must be removed from water when vehemently boiling over an intense fire, the warmth of which cannot be increased after it has arisen to the boiling heat. And thus it is with the human body when exposed to the influence of a hot atmosphere; the increased evaporation from the surface carries off the augmented heat, and prevents its too oppressive accumulation. In India, according to some writer, ice is actually produced by generating artificial cold, upon the principle of evaporation of which we have been speaking; but the means employed to cause the necessary exhalation we do not now recollect.

3. Though not in strict accordance with the subject of this section, we will advert to another cause which, if it do not waste the heat, checks its production in the system.

Excitements of every kind are necessarily followed by a proportional languor. Thus, long continued or violent exertions waste the power of life, and must always be succeeded by lassitude proportioned to the waste. The vigor of the

organs is now impaired, and their functions are more feebly performed; the circulation becomes slow and languid, and the generation of heat declines; whilst the liability to suffer from exposure to cold, or to cold and dampness conjoined, is more than doubly increased. Hence, persons who have labored to exhaustion, above all others, should be careful about exposing themselves to a current of air, or of sleeping in cold and damp situations.

The exercises of the day having diminished the force or quantity of the living power, creates the necessity of rest to restore it during the night. Whilst asleep, the functions are performed in a more slow and feeble manner, or entirely cease; animal heat is less rapidly evolved; the living power accumulates; the organs recover their tone, and the whole vital energies are concentrated, ready to meet the exigencies of the coming day.

CHAPTER III.

OF THE PERSPIRATION.

THE perspiratory excretion holds a pre-eminent influence over the integrity of the living system. A sudden check or long retention of it in the body, is sure to produce more or less serious derangement of the animal functions; and there is no disease, perhaps, in which it is not in some degree affected.

Perspiration is distinguished into sensible and insensible; but as all that makes this distinction, is the difference in quantity, it is unnecessary to take any further notice of it here.

SECTION 1.

OF THE SOURCE OF PERSPIRATION.

THE perspirable fluid or sweat is secreted from the blood, which, by this process, is kept in a state of purity. Its constituent parts appear to be water, an animal gas, azotic or nitrogen gas, the subcutaneous oil and serum of the blood.

The organs which separate the perspirable fluid from the blood, are the minute extremities of the *cutaneous* arteries; that is, the arteries which approach the surface, and perhaps expose the blood to the action of the atmosphere in a manner somewhat similar to the lungs. During the rounds of the circulation, all the blood, no doubt, in turn, is presented to the cutaneous vessels which separate the useless parts and remove them from the system.

SECTION 2.

OF THE USE OF PERSPIRATION.

THE perspiratory process is one of immense importance to the living machine. Its principal uses are:

1. To remove from the system the worn-out materials which are no longer useful; thereby cleansing and purifying the living machine; relieving it from a mass of morbid putrefactive mat-

ter, which, if retained in the system, would be an interruption to the play of its organs; a source of irritation to its fibers; an unfailing cause of disease. By this process the blood and all the other fluids are purified, and kept in a condition most conducive to sound health; and it may be justly regarded as the principal natural outlet or emunctory for the surplus matter which is continually accumulating in the blood.

The removal of poisonous or other irritating extraneous matter from the body, depends upon this admirably calculated function of the human system. We have heretofore pointed out the direction which every thing entering the body takes in its passage through the system. Whatever is received into the stomach passes to the intestines, and thence through the lacteals and thoracic duct into the blood; whilst gaseous substances, which enter by the lungs, pass directly from these organs into the vital fluid. Hence, solid and liquid poisons usually enter the body through the mouth and stomach; and gaseous ones by the lungs. How then, when they have thus penetrated the system, does nature expel her internal foe?—If the poison be a liquid or a solid substance taken into the stomach, the irritation of the poison, or an emetic, may immediately produce vomiting, and throw it out before any part of it is sucked up by what MAGENDIE styles the venous absorption of the stomach; and thus save the system from further ill consequences. But if it be a gas taken into the lungs, or the poison enters the circulation before vomiting takes place, it must then be removed from the system through the grand emunctories of the blood, the perspiratory organs; that is, it must pass off by perspiration. Without this most admirable provision of nature to cleanse, to purify, to drain off extraneous matter, the organs must become incommoded or impeded in their movements, as the wheel of a mill with back-water, or corroded, like the wheels of a watch with *aqua fortis*.

SECTION 3.

OF THE EFFECTS OF CHECKED PERSPIRATION.

WE have already measurably anticipated the effects of any check given to the perspiratory function; but still, in accordance with our original design to make every thing plain, even if we should hazard the charge of repetition thereby, we shall assign a short section to its consideration.

A failure of the perspiratory organs, in any degree, to perform their functions, causes a retention in the system of matter whose presence is exceedingly injurious, which must have

a strong tendency to run into putrefaction, whereby all the fluids will become contaminated; their stimulant qualities weakened; and all the secretions so necessary to keep up the vital actions of the system, will be vitiated and corrupt.

It is asserted by almost all writers who have treated upon this subject, that the greatest number of diseases to which we are liable, originate from checked perspiration; and who, after perusing what we have said respecting this important function, will not receive their testimony? Good health can never be enjoyed whilst this excretion is impaired; and hence the propriety of washings, bathings, frictions, &c., to soften and relax the skin, in which are situated the organs that separate the perspiring fluid from the blood.

CHAPTER IV.

OF HEALTH.

WE are now to treat upon a subject from which, setting aside morality and religion, and those joys which are purely intellectual, most of the pleasures of existence flow. Without health, the world is little better than a gloomy solitude—a dreary waste—a tasteless scene; and though we may be surrounded by the most splendid monuments of human art—the most cheerful and consoling friends—and a profusion of every thing calculated to give a relish to existence, without health we shall find ourselves destitute of that enjoyment which their presence might otherwise inspire. Even the most luxurious beauties of nature are dimmed in the eye of the sick; the most exquisite joys of life cease to have their accustomed influence; and time, which in our healthy moments passes away almost unheeded and unknown, in sickness seems to wear out existence with its lengthened hours.

SECTION I.

OF WHAT CONSTITUTES HEALTH.

HEALTH, the invaluable prize and reward of a virtuous, regular, and temperate life, consists in an easy, agreeable, harmonious action of all the vessels, and an exact performance of all the functions in the human system. Whilst this state of the body continues, the appetite craves a suitable supply of food; digestion is regular and easy; the blood is supplied with an appropriate quantity of chyle, which nourishes, supports, invigorates and strengthens the body. The secretions being dependent upon the quantity and quality of the blood, are healthful and abundant; all the excretions take place in suitable order, thus removing from the system the worn-out matter, and cleansing and purifying the whole body; promoting health, strength, vivacity and vigor.

The restoration and preservation of health is the great end and object of the medical art; and when we consider its vast importance to the world, we shall not wonder that it has been so much studied, though we may well be astonished that it

has so little advanced. The day of its promotion, however, is dawned, and already we are permitted to bask in the beams of the morning sun, which we trust will continue to ascend until its rays shall illumine every dark maze of disease, and enlighten the paths of the hopeless wanderers who are in the road to death.

SECTION 2.

OF THE POWER WHICH SUPPORTS OR PRESERVES HEALTH.

THE reader who has perused the preceding chapters, and become acquainted with our fundamental principles, will have anticipated our views upon this subject. It must be evident that the preserving power of health can be nothing else than the living power of the system exercising its full and wholesome influence over the vital organs. This, at least, is the internal power or principle of the system, conjointly with which are many other circumstances depending upon the exercise of the reasoning faculties and the influence of the will. These are, principally, a suitable degree of exercise and rest; the rational indulgence of the propensities and passions; and in short, the due observance of temperance in every thing which can produce either a moral or physical effect upon the system.

CHAPTER V.

OF DISEASE.

HITHERTO we have treated of man, and considered his functions, and some of the relations of his functions, only in a state of health.

We are now to treat of a state of the system different from this, and which it is the grand object and aim of the science of medicine to remove. This state of the system is termed its pathological or diseased state.

Disease, when it pervades all the organs of the system, as in fever, &c., is termed general; and when only one, or a part of the organs are affected, it is termed local or partial. Both general and local disease is termed primary or *idiopathic*, when it arises independently of any other affection; and sympathetic, when in consequence of some other complaint. When peculiar to a certain class of persons, or a certain country, diseases are said to be *endemic*; and when the same disease attacks a great number of persons at the same time, or during the same season, in a town, city, district, or country, it is said to be *epidemic*.

SECTION I.

OF THE VARIOUS THEORIES OF DISEASE.

SINCE the earliest ages of medicine, theories have been progressively succeeding each other in the march of this science; but without materially enlarging the knowledge or improving the practice of this "divine art." Some new truths, however, have resulted from each of them, which, like "beacons on the solitudes of time," have illumined the dark path of medical investigation. But those truths that occasionally have burst upon the world, and which for awhile captivated by their novelty or beauty, have frequently been associated with so many errors and inconsistencies as often to produce even a distrust of what was correct.

In tracing the history of medicine from the infancy of its existence down to the present moment, we find arising a succession of men whose splendid talents and glittering theories

eclipsed the glory of those who had preceded them. Indeed the history of this science is but the repetition of theories, the existence, durability, and fame of which, if we except Dr. BROWN'S, depended more upon the character of their authors, than upon any intrinsic merit in themselves. But it does not comport with our present design, to trace all the various theories which have been offered to the world. CULLEN, BROWN, RUSH, and THOMSON stand most eminent as medical theorists in later times; and to these we shall principally confine our observations.

But it has been, and may very properly still be queried, what authority is there in theories? They have been made not only the sport of speculative writers, as a defence of some favorite practice, but also the stepping-stones to power for medical aspirants. It was the establishment of his own theory in opposition to that of BËRHAAVE, that elevated CULLEN in the medical school at Edinburg; and it was by similar means, that BROWN attempted to put down CULLEN; in which he failed only for the want of more discretion. It was a succession of men eminent for their hypothetical views, that elevated the school at the Scotch metropolis and gave it pre-eminence over all the colleges of Europe; and he who will trace the history of medicine must find that literature and speculative science, instead of sound practical learning, has been the whole cause of raising the reputation of all the schools which at different times have been regarded as the models of the science in Europe. It has been truly observed, however, that "theories are but the butterflies of the day; they buzz for awhile and then expire; each however in its turn promising itself immortality." It is humiliating to the proud dignity of man, and the grandeur of his lofty mind, to find, after ages of laborious toil and the most critical observation, that he must still be liable to disappointment—to see the fabric which he has raised, sapped and overthrown. We are constantly called to witness medical theorists, as Dr. ROBINSON very classically observes, "arising, like Roman gladiators, on the arena of combat, to cut each other down;" or "to show that a false pathology or a corrupt practice had pervaded the system from the origin of the science."

The contradictory schemes which have been proposed as standards for medical practice, might well excite language such as Dr. BLANE has put into the mouth of medical sceptics, who, he says, allege "That the history of this pretended art in all ages, so teems with the fanciful influence of superstitious observances, the imaginary virtues of medicines; with nugatory, delusive, inefficient, and capricious practices; fallacious and sophistical reasonings, as to render it little more than a chaos of error, a tissue of deceit unworthy of admission

among the useful arts and liberal pursuits of man.”* It is certainly a most melancholy consideration that the state of medical science should produce such reflections as these, and yet be forced to admit that they are just. How much indeed is it to be wished, that the deplorable condition of that science upon which our health and even life so much depends, could not sooner have been improved, and thus much earlier have been admitted to that rank which its great importance claims. In the minds of the multitude, nay even in those of exalted pretensions, it certainly has been classed very high; but what must in reality be the rank of a science which is “beset with every species of fallacy,”† uncertainty and doubt.

Dr. CULLEN says, the *autocrateia*, (healing power of nature,) which in some way or other was admitted by every sect, had corrupted the practice of all physicians, from HIPPOCRATES to STAHL. And Dr. BROWN, in the preface to his Elements of Medicine, remarks that “fifteen years of his life, devoted to study, had passed away without the acquisition of any advantage, and without that which of all things is most agreeable to the mind, the light of truth; and so great, so precious a portion of the fading and short-lived age of man was lost. This led him,” he says, “with many eminent men, and even with the vulgar, to deplore the healing art as altogether *uncertain* and *incomprehensible*. It was only betwixt the fifteenth and twentieth years of his studies, that, like a traveler in an unknown country, wandering in the shades of night, after losing every trace of his road, a very obscure gleam of light, like that of the first break of day, dawned upon him.” And can the reader believe that the dawn of true medical science first burst through the dark bewildering gloom in which it was enveloped, and illuminated the philosophical mind of Dr. JOHN BROWN? It certainly did. But many of his medicines acted contrary to the principles of his theory, which, together with the fact that the medical chairs at Edinburg were held by his persecutors, had almost extinguished the feeble light before its rays could illuminate the distant horizon.

We are well aware that most authors affect to discard the theory of BROWN; but there are no practical writers that do not allow his principles to find their way into their own works.

“The great and good Dr. RUSH,” speaking of CULLEN’S Nosology, said that it had led physicians to prescribe for the *names* of disease, instead of their proximate cause: and who, we will ask, can comprehend the terrible and frequently fatal consequences of such a perversion of science. And, notwithstanding the simplicity of his own theory, and the beneficial effects which he no doubt anticipated would result from it,

* Blane’s Medical Logic, page 12. † Ibid, page 22.

Dr. RUSH exclaims, "I am insensibly led to make an apology for the instability of the theories and *practice* of medicine.—Those physicians generally become the most eminent, who have the *soonest emancipated themselves from the TYRANNY of the schools of physic.*"*

Examples to the same effect might be multiplied; but the philanthropic mind sickens in contemplation of the tremendous consequences resulting to the world from the false theories and corrupt practices which have degraded medical science, and pauses to inquire if it must always remain so. Is mankind, through all time, destined to suffer under the iron scourge of learned empiricism? Are first principles attainable in the application of medicine contrary to the other sciences? The goodness of DEITY responds a negative to these important interrogatories—the recent discoveries of Dr. THOMSON respond a negative—the experience of hundreds, nay, of thousands, in the United States, responds a negative to them also.

The theory of Dr. BROWN, from which no doubt Dr. RUSH framed his, we are disposed to regard as more rational, consistent and systematic, in its application to both the healthy and the pathological states of the system, than any which, at the time of its promulgation, had been offered to the world. And notwithstanding the powerful opposition made by CULLEN, who was then living in the full tide of his fame, and aided by the whole College Faculty of Edinburg, BROWN'S principles were so well supported by rational and physiological arguments, that in a few years they spread throughout England and the most enlightened parts of the continents of both Europe and America. And it is but justice to acknowledge that our first favorable impressions of Dr. THOMSON'S theory were owing to a previous acquaintance with and partiality for Dr. BROWN'S. We know that both these great men have erred; BROWN is too complex, and THOMSON too simple; not that we would condemn simplicity, however, when it comes up to nature, or prolixity when it does not exceed it. Dr THOMSON'S theory is superior to BROWN'S only in its more simple and successful application to practice; and we deem it but justice to those celebrated individuals, to acknowledge that their theories are the pictures whence we drew the first rude sketches of our own physiological views of life, pathological ideas of disease, and therapeutical conceptions of medicine; subjects so intimately connected and blended in this part of our work as to be scarcely separable.

Dr. CULLEN, in his system, assigns the morbid operations of the body to changes in the state of the solids, induced by the nervous system; and to rectify those variations was, there-

* Robinson's Lectures.

fore, the primary object at which he aimed in the restoration of health. He held that an immaterial or vital principle superintended the laws of life, which principle he supposed to act wisely, but to be governed at the same time by the law of necessity. But here it must be obvious that he is deficient in accounting for the origin of the living principle, as well as for the means by which its influence is exerted over the nervous system or moving powers of the body; or the manner in which morbid influences control the same powers. His system indeed fails, as all others have done, by *supposing* a power or principle which does not exist, and then endowing it with certain prerogatives by which to explain the operations of the living organs both in the morbid and the healthy state. Without wishing to detract any thing from the fame of our predecessors, we may be permitted to observe that there should seem to be but little ingenuity in framing systems by such rules; and yet we are not sure of having steered clear of a like imputation ourselves. It was our grand object to account for every principle and mode of action, both morbid and healthy, on the rational consideration of *matter acting upon matter*, and not of that which is *immaterial* acting upon that which is *material*. We are well aware that it may be urged against our position, that the mind which is regarded as immaterial, exercises a very controlling influence over the body. But who cannot readily see that the manufacturing (if we may be permitted to use the expression) of the mind is an animal function, the disturbance of which is the real cause of its morbid influence over the body. We will only observe in this place, that if we have imputed any operation either vital or morbid to imaginary principles, instead of accounting for it upon the fundamental doctrine just adverted to, of matter acting upon matter, it ought to be imputed to our not having followed out the deductions fairly deducible from our premises; the only excuse for which, is a desire for brevity.

Dr. CULLEN's system, like almost all others, failed, at least in his hands, in its application to practice. "As a practitioner," says Dr. PARR, who was an admirer of CULLEN, "he was often feeble and indecisive; nor do his doctrines always lead to the most active and successful measures." This seems to be the natural fault of theorists, who depend more upon speculative notions than sound experience; and regulate their practice rather by theoretical rules than ascertained results of medicine.

The theory of Dr. BROWN refers disease to two causes, viz: excess or deficiency of *stimuli*. Those which arise from an *excess* of stimuli, are said to be caused by an increase of vigor; and those which arise from a *deficiency* of stimuli, are caused by debility or want of vigor. Diseases arising from the first

cause, Dr. BROWN styled *sthenic*; and from the last *asthenic*; thus dividing them into two classes, and directing his means of cure to produce contrary states of the system.

We disagree with Dr. BROWN in his theory of disease, so far as to believe the distinction into two classes is unfounded in fact, and even inconsistent with his theory of life. For if we even admit that disease may be caused by an excess of vigor, that cause, the moment diseased action takes place, ceases to exist; because a vigorous and a diseased state of the system are incompatible with each other, and could not possibly occur at the same time. To say that there is an excess of vigor, is equivalent to saying that the power of life is in *excess*; a circumstance which we hold to be impossible in a state of health, and which must be much more so in disease. We perfectly agree with BROWN in his theory of life, and so far in that of disease as includes the asthenic class; that is, those depending on debility, but no further.

Dr. RUSH's theory of life is the same with that of BROWN; and his theory of disease varies in nothing important. He considers disease as an *unit*; that is, he makes no general division of diseases, but accounts all a state of *morbid* excitement; which, like BROWN, he estimates as being either excessive or deficient. His principle of cure is to equalize the excitement by stimulation or depletion, according as this may be deficient or in excess. Hence, we take the liberty of observing, that RUSH's theory is essentially the theory of BROWN, and the practice of both, in principle, precisely the same; whatever credit, therefore, may be ascribed to RUSH for simplifying the theory, it is but justice to ascribe the origin of it to BROWN. The theories of both these individuals, however, appear to fall short in accounting for the cause which produces the two great classes of disease in the one theory, or the two adverse states of morbid excitement in the other; a chasm which the reader will find filled up in ours.

The recently propagated theory of Dr. THOMSON, so far as respects its application to practice, we regard as coming nearer the truth than any which had preceded it. By the aid of this we have been enabled to supply some of the deficiencies of BROWN, and by filling up the chasms with something of our own, and by correcting the errors of both, we have been enabled to give the world something approaching at least towards a correct theory or system of medicine. In this, however, we have not confined ourselves to what is simply included within the term medicine;—we have gone into an investigation of those powers which operate the living machine, and of the secret causes which sap the foundations of health and life. We shall have briefly detailed the hidden

impulses which are in constant operation in man, both in health and disease, from his cradle to his grave.

We are constrained to observe, that however short Dr. THOMSON'S theory or practice may fall of perfection, they have certainly done more to reform the medic art than any thing else had previously done; and we cannot avoid fancying that his system will remain for ages a splendid monument to his memory, and of the superior power of genius in an untutored mind. He has, notwithstanding his many imperfections opened the avenues which lead to the fundamental spring of true medical science, from which issues a strong and limpid stream, bearing on its bosom a healing balm for most of the maladies of man—the bounteous gifts of NATURE'S GOD.

The more the theory of Dr. THOMSON, with its rational and scientific improvements, are studied and understood, the more their beauties will be developed and admired; and the better we shall be enabled to comprehend and explain many of the hitherto obscure and mysterious facts in medicine, relative to the causes, effects, and cure of disease. Dr. THOMSON is justly entitled to the honor of introducing into practice the correct principle of operating upon the living power of the system, which he erroneously supposes is heat; and from this hint, or upon this foundation, (that is, the living power,) we have erected our own superstructure which we are vain enough to imagine may, with perhaps some variations, withstand the storms and tempests of time. The traveler upon a strange road is very naturally inquiring his way of those he meets; and if in the right way, each succeeding inquiry confirms his previous information and encourages him in the vigorous prosecution of his journey. Hence, we remark, that the accumulation of scientific, medical and physiological facts, instead of leading to an incessant change in practice, as false theories must necessarily do, will tend more and more to confirm a correct theory and a sound practice, by establishing them upon the immutable basis of truth. And although we do not correspond in theoretical opinions with Dr. THOMSON, yet we confidently trust that the more his system is understood, the stronger will be confirmed the true and real first principles* of this modern HIPPOCRATES—this intrepid, persevering, medical reformer—this mocker at the forms, the science, the systems, and the glory of the schools of medicine.

At one bold adventurous stroke he has scattered, like dust in the sun-beams, all former systems of medicine, of which,

* Alluding to his doctrine, that the vital power (which he thought to be heat,) must be increased to cure disease.

like "the baseless fabric of a vision" there will not, in time, be left "a wreck behind." But unlike other theorists, he first discovered a safe and simple mode of practice, and then framed a theory to correspond, as he supposed, with it: And hence his patients have not suffered as those of other medical reformers have done, by corrupting the practice to suit some favorite but false theory. For false theories, so many of them as have polluted medical science, could never, of themselves, do any injury to the sick: the bad consequences resulting from them have been caused by the attempts of physicians to adapt their practice to an erroneous theory. "And how many cruel and premature deaths, how many impaired and debilitated constitutions, have paid for the folly of theories!—follies which have almost always been fascinating. The study of a system is more easy than the investigation of nature, and in practice it seems to smooth every difficulty."

We are not disposed, however, to condemn the practice of theorizing; it has its usefulness, and when employed for explaining the known operations of nature, or the effects of obvious causes, is highly useful. In the investigations of nature the reasoning mind is prone to adopt some theoretical system to account for what it otherwise cannot comprehend or explain. But so often have the finest wrought, and apparently consistent theories of medicine failed in their application to practice, that many physicians now affect to discard, in every form, theoretical reasoning as a basis of medical practice.—These failures may principally be attributed to two causes, viz:—the want of some correct principle, starting point, or data, to reason or theorize from; and of medicines which act in unison with theory and the laws of animal life. It was principally from the latter cause that **BROWN'S** theory failed in its application to practice.

The theorist who has some correct data—some certain starting point—some positive principle to guide him, may go on successfully with his investigations; but without these to reason from and guide him through the dark mazes of uncertainty which he is about to explore, his utmost advancement will only serve eventually to make the gloom more visible.—The discovery of facts, which the most impenetrable darkness cannot prevent from occasionally bursting upon him, instead of serving as beacons to guide him forward in the path of investigation, only serve to admonish him that he is entering deeper and deeper into a labyrinth; and at best, can answer no other purpose than as way-marks by which he may wind his way out. Whilst he who is guided and sustained in the progress of his inquiries by established laws or principles, finds new light bursting upon him with every advance, until he arrives at the full splendor of meridian day. When

the mind is satisfied by conclusive evidence, that it has started from a positive point with established laws for its guide, in search of some interesting or important desideratum, it pursues the object with energy, and recurs to it with pleasure: but if it be not sustained by these encouraging considerations, the employment becomes insipid. And although so many attempts at systemizing the operations of nature have failed, we nevertheless consider the disposition of the human understanding to theorize and systemize, as a strong proof that it is the only rational method of properly understanding the phenomena of animated nature.

We attribute all things to the creative energies of a supremely intelligent GREAT FIRST CAUSE, who, as He comprehended all things, must rationally be supposed to have operated upon some fixed immutable principle; and would consequently have established some certain rules or laws for the government of the matter which He created, under all its varying circumstances, situations, shapes, and forms. Indeed, every natural change which we see taking place in the creation, is in obedience to the laws with which God has endowed matter; and he who would be a correct theorist, must study those laws and understand them, or he will unquestionably be misled. Dr. THOMSON, we conceive, has given a clue which, if properly studied and pursued, will lead to a correct knowledge of the laws of animal life. The origin and perfection of a theory in so intricate and important a department as that of medical science in all its bearings, is a task of too great magnitude to be accomplished during the short-lived age of a single man. But Dr. THOMSON has done more by his discoveries than any other man of the present age, to reform the abuses of medicine, both in theory and practice; and by these we have largely profited. The theories of BROWN and RUSH have been stripped of their ambiguities, and we confidently believe the foundation is laid upon which will be built a superstructure perfect in all its parts. And we feel constrained, in this place, to lay down as a general rule for investigating the laws and operations of nature, that every fact, circumstance, and principle should be made to harmonize into a perfect system.

If the facts and principles elicited cannot be consistently systemized, we should consider it as an evidence that we either have not a knowledge of all the facts or of the true principles, or that we are reasoning falsely from correct data.

Dr. THOMSON'S theory is briefly this:—That *life is heat*; and *cold is death*; or in other words, that heat is the vital principle which keeps the organs in motion; which was also a common belief amongst the ancients, and may likewise be

found in some respectable modern works.* He regards food as the fuel—the stomach as the fire-place—and digestion as the process which consumes the fuel, by which means the *fire* is kept up and the whole body warmed, just as the room or house is warmed by the fuel consumed in the fire-place: And hence he argues, that the more food well digested in the stomach, the more heat and nourishment throughout the system. He considers disease as being caused by cold or a failure in the necessary supply of heat, which produces obstruction in the system. In other words, he compares disease to a *battle* between *heat* and *cold*; heat being the principle of life, and cold the principle of death. Consequently, if the heat be victorious, health will be restored; but if cold prevail, death is the certain result. His practice, therefore, is to direct his remedies to produce a state of the system adverse to death; or in other language, to assist the heat to overpower the cold.

As we feel no disposition to enter into any controversy in this place, we forbear pointing out the defects of Dr. THOMSON'S theory; and shall leave this as well as our own, for the reader to glean from our physiological observations throughout this part of our work, and to a brief recapitulation which will be found at the conclusion.

SECTION 2.

OF THE CAUSE OF DISEASE.

OUR theory admits of referring disease to but *one proximate cause*, viz: *diminished energy of the vital force or power of life*.

No pathologist, if we except Dr. THOMSON, has heretofore reduced the cause of all diseases to a single point. Dr. BROWN referred them to two causes, the one being in direct opposition to the other; whilst RUSH seemed to approach something nearer to our own; but then again in prescribing the mode of treatment his theory resolved itself into the same principles with BROWN. Dr. RUSH called disease an *unit*; it was morbid excitement, and so far he might be esteemed as correct. He regarded the excitement as being sometimes deficient; so far correct; sometimes in excess; here his theory virtually and in fact, became BROWN'S.

Disease may be produced by a great many *remote* or *predisposing* causes; but the knowledge of these affords no indications of cure, and is, therefore, of little value excepting to ena-

* See TOURTELLE'S Principles of Health. Dr. CULLEN also approaches this doctrine.

ble us to guard against their future influence. For what advantage could it be to the physician to know whether a fever was caused by exposure to cold, by fatigue, by marsh miasma, or by contagion? Would he accommodate his treatment to either of those causes; or would he not rather adapt it to the complaint he wished to cure? The answer must be obvious.

The remote causes are those that produce the proximate cause, which is the same in all cases. Remote causes may also be called exciting causes, as they are the agents which excite the disease. Amongst these may be enumerated great bodily fatigue, or violent muscular exertion; want of natural rest; severe evacuations; intemperance in eating or drinking; long fasting; too close application to study; excessive grief, fear or anxiety; unwholesome diet; breathing an impure air; the application of poisonous matter to the body, either in a gaseous, vaporous, liquid, or solid state, &c. &c. The effects of these agents and circumstances, are uniformly the same, only varying in degree; that is, if they amount to the production of disease, they do it by diminishing the energy of the vital force; they debilitate and depress the living power which keeps the organs in healthy motion.

A vitiated atmosphere either does not afford a sufficient stimulus to the blood, or imparts something deleterious to it; and hence the origin of epidemics. The application of cold to the body appears powerfully to reduce the vital force, and is a most common and prolific source of disease. In short, whatever has a tendency to enervate the body or weaken its powers, necessarily diminishes the vital or living energy, and gives rise to every complaint to which human nature is liable; varying its effects according to the predisposition, habits of life, peculiar employment, or the *idiosyncrasy* of the individual.

SECTION 3.

OF THE TRUE DEFINITION OF DISEASE.

THE task which we have here imposed upon ourselves, the reader may perhaps think insipid, visionary, uninteresting, or useless. He may also, in the end, think it only a repetition in substance of the preceding section. But we trust, however, that if we do not convey any new ideas by this discussion, we may present old ones in a different view. We shall at least have the privilege of making some remarks which the caption of the preceding section seemed to render improper to introduce there, and by these means increase the rational evidences of the correctness of our physiological theory or system of

medicine. Perhaps we may also excite some interest in the minds of those who are disposed to investigate the science of medicine, especially that part of it termed pathology or the doctrine of disease. The pathological state of the system has furnished a fruitful theme for the mind and the pen, since the first origin of medicine.

But what is disease? that formidable enemy to man—that many headed monster—that insidious serpentine foe—that fell destroyer, (without respect to age, sex, or circumstances) of the human family, which shows itself under so many different appearances and names; and which, under all its different aspects and transformations, deceives the “very elect;” that is, those who have elected *themselves** to the exclusive responsibility of detecting and destroying the deceptive, wily enemy of the health of mortal man.

It may be inferred that this enemy is not health; but this answers not the inquiry. Every person knows that disease is “*any alteration from a state of perfect health:*” and yet, singular as it may appear, this is perhaps as good a definition as has hitherto been given in the professed works of science. We are often called, in those publications, to witness a formidable array of names, causes, symptoms, forms, and effects of diseases, and to trace them through all the various parts, tissues and organs, from those which terminate in health, aided by the simple powers of nature alone, to those which, in defiance of medicine, terminate in death. But all this does not explain to us the real nature or essential character of that monster which, under so many different characters and disguised names, is liable every moment to sap the foundations of health and human life.

All agree, however, both learned and unlearned, in conferring upon this insidious foe, under all its different characters and names, one general appellation by which they distinguish it under all its different forms and transformations; which general appellation is DISEASE. And if physicians could fully divest themselves of their prejudices, they would be enabled to contemplate disease, under all its various and apparently contradictory modifications, as essentially the same. We

* For this sentiment we would refer the reader to the laws of every State and Nation in which the Faculty could succeed in procuring their enactment, which secure to them the exclusive prerogative of practicing the healing art. It is certainly an impeachment of both the professional and moral character of the profession thus to entrench themselves behind the bulwarks of the law, instead of meeting their competitors on the open field of fair and honorable competition. We may add, however, that since the publication of the former edition of this work, the legislature of this state (Ohio) has, by an act of magnanimous independence, repealed the oppressive medical laws.

learned, when in our youth, from the writings of Dr. BUCHAN, that he did not regard disease as being composed of a single symptom, but as an assemblage of variously differing symptoms; and that the same symptoms, in modified forms, attend many different complaints:—That the different names given to disease generally originate from some one or more of the most prominent symptoms. Thus, when heat, violent agitation or motion of the blood, head-ache, &c., predominate, the disease is called fever; which is again distinguished, by peculiar symptoms, into different kinds of fever; and so of many other complaints. These different symptoms are only to be separately regarded as the evidence of a more severe suffering or affection of particular organs, than of other parts of the system. Hence, when a cause sufficient to produce disease is present, the malady will assume such a character as the peculiar state of the organs, or the idiosyncrasy of the person may chance to give it. It might also be observed, that different deleterious substances, when applied to the living organs, produce peculiar and different effects. This may be owing to the nature or composition of the different tissues making them more susceptible of morbid impressions from one substance than from another. It is well known, at least, that the application of particular deleterious substances to the animal organs, produces the same general effects in similar organs of every individual; though the effects may, and commonly do, vary in their details. Hence the origin of all contagious and epidemic complaints.

And however a malady may affect any particular organ or set of organs, or the whole system, it must be produced by a diminished energy of those “powers” alluded to by Dr. BROWN; the continual application of which is indispensably necessary to keep up a healthy action of all the organs, and thus preserve the living state. *Symptoms* are nothing more than the *effects* of disease, and not the disease itself: they are the *evidences* of a diseased state of the system.

We now think the reader will be able to perceive that disease is, in reality, synonymous with its cause—*diminished energy of the vital power*, which, as we have previously shown, *sustains and preserves life*.

SECTION 4.

OF THE EFFECTS OF DISEASE, PARTIAL AND ULTIMATE.

THE first sensible effects of disease generally are, lassitude, weariness, debility, mental despondency, confusion of ideas,

pains in some parts of the body, the pulse is slow and feeble; there is often a general torpor or lethargy; sometimes restlessness or great anxiety; mental imbecility or perfect insanity; any or all of which symptoms are certain indications of the diminished energy of the power of life. And as this power continues to diminish, some one or more of the attendant symptoms become aggravated; though sometimes at the very onset they are at their height. Such attacks are always attended with a corresponding prostration of the vital power, and a proportionate degree of danger.

The living power continuing to decline, causes the functions to become still more irregular; the secretions are commonly more or less diminished; the excretions are generally impaired, though some of them may be accelerated; the organs lose more and more their tone; all of which diminishes still further and faster the living power of the system. These may be regarded as the partial effects of disease: They are the symptoms or evidences of its existence, and of the organ or organs affected by it; of the nature of the affection; and of the violence or mildness of it. Hence we become sensible of the too common error of prescribing for the *name*, that is, the *effect*, instead of the *cause* of disease.

If the power of nature fails, and the virtue of medicine proves unavailing, the vital force becomes weaker and weaker; the tone of the organs more and more impaired; the living functions languish; the flame of life grows feeble and dim; the extremities become cold and rigid; the eyes fixed in their sockets; the vital organs become incapable of performing their office, and the power of life is worn out,—exhausted,—annihilated,—and death, the ultimate effect of disease, closes the scene!

CHAPTER VI.

OF MEDICINE.

THE state of the system which constituted the subject of the preceding chapter, indicates the necessity of something to repair the wasted energies of life, and restore the tone of the enfeebled organs. And it seems almost instinctive in man, as in many of the inferior animals, to seize upon and appropriate some of the productions of nature to this purpose.

There is nothing of a sublunary nature, in which man is more deeply interested than in the knowledge of the best means which a beneficent CREATOR has furnished for the restoration of his creatures' health. But how far the popular practitioners of medicine, of the present or preceding ages, have been acquainted with those means, is a matter of both interesting and profitable inquiry.

Substances properly termed medicines, must act in unison and harmony with the laws of nature or animal life. This seems such a self-evident proposition, that it is greatly to be wondered how physicians could have been led to adopt ideas so much at variance with it. For it is a generally received opinion, not only by physicians but by the bulk of mankind, that whatever possesses not the power of doing much harm, can do but little good. In other words, what possesses the power, in a high degree, of restoring health, also possesses in a proportionate degree the power of destroying life! Or, to make the idea still plainer, if need be, the most powerful medicines are the most powerful poisons.

The learned and highly gifted Dr. S. ROBINSON, says of *medical poisons*, "It would seem a solecism in language, the bare combination of these terms; but such is the fact—poisons, the most violent and destructive, have been denominated the most valuable medicines."

It is indeed a sorrowful truth, that the most active and potent articles used by the Faculty as medicines, and upon which they place their principal reliance, are known and acknowledged to be, in an eminent degree, destructive to life—subversive of the very laws which they are intended to promote. How such substances as these could ever obtain credit as medicines, seems to be among the anomalies of human nature, and bids defiance alike to reason and the dictates of prudence and common sense.

Dr. THOMSON first submitted to the world the self-evident proposition, that food and medicine must harmonize with each other. They often, says he, "grow in the same field, and may be gathered by the same hand." There must be a perfect correspondency and congruity between food and medicine, as both are intended alike to have a beneficial and healthy influence upon the system—the one to continue a healthy action, the other to restore it when lost; but both, on the same principle or by the same mode of action—food by constantly supplying its portion of the living power in health, and medicine by furnishing the same in disease.

It is too inconsistent for belief, "that life and death can spring from the same source;" or in other words, "that the poison which destroys health, can restore it." Health and disease, and even the whole catalogue of diseases, only comprise a difference in the force of the living power, and a different condition of the organs upon which this power acts. How absurd then, when the living power is weakened and the tone of the organs impaired, to administer such articles as are known to produce the same effects upon the healthy system, and which must, in disease, increase the very disorders they are intended to counteract!

A correct knowledge of proper medicinal substances can only be learned from experience and a close observation of nature. The opportunities for drawing lessons of instruction from both these sources, and the qualification for profiting thereby, were eminently enjoyed by Dr. THOMSON; and unborn millions will yet have cause to bless that Providence which raised him up and sustained him in a most arduous struggle to establish his improvements in the world. When his enemies and persecutors shall have been long mouldered into dust, and their names and memories eternally forgotten, the name of SAMUEL THOMSON shall "stand as a splendid beacon on the solitudes of time, to point the traveler the road to glory."

It will be readily perceived that our indications of cure will lead to the general employment of stimulants and tonics, which must be of a nature readily to be assimilated or converted into the same material with the organs which they are intended to affect, or upon which they are designed to act; otherwise their influence is not in harmony with the laws which govern animal life. Hence, we think it obvious that remedial agents must be drawn from the *vegetable* kingdom; because no mineral substance, however it may have been changed by the labor of the chemist, can be assimilated by the living organs. Admitting these ideas, (and we think few will deny them,) what becomes of the boasted discoveries and remedies of the famous PARACELSUS, who first applied chemistry to develop

the remedial resources of the mineral kingdom. He, to be sure, is *now* denounced as a miserable quack; but it cannot be denied that he was the author of medical chemistry, the value and success of which is now so highly appreciated by the medical Faculty. And what is the result of all the pretended improvements of mineral preparations which have been so perseveringly studied since the days of PARACELsus, by the wisest and best of men? Nothing but refinements in error; improvements of the means which have, from that day to this, interrupted the march of true medical science.

It is not denied that the vegetable kingdom furnishes some of the most potent and terrible poisons with which we are acquainted; but we are under no more necessity of employing these for medicine than we are for food. The rich stores of nature furnish a great variety of vegetable matter, only a small portion of which is proper for food; and that is such as experience has taught us is agreeable to nature or the laws of health and life. The same may be said of medicine; and ought long ago to have been enforced upon its students, and upon mankind, with imperishable emphasis. But simple and self-evident as is this proposition, it was reserved for Dr. THOMSON, and our own day, to declare that poisons, in every form, and under all circumstances, are improper remedies, because they are deleterious to health and life. It had escaped the cunning of the wise; the penetration of the prudent; the researches of the learned; and the wisdom of philosophers, for four thousand years, but to manifest itself to an illiterate student of NATURE; as almost all other great and important facts have come to the world through similar channels.

The fact that the vegetable world furnishes some of the most active and fatal poisons, instead of arguing, as some have urged, against the propriety of drawing upon that kingdom for our remedial resources furnishes strong evidence in favor of it. Nothing but vegetable matter, or the product of it, can be assimilated; that is, made to answer the purposes of nourishment. It inherently possesses an active principle by which it produces its effects whether good or bad; and if it furnishes the most active poisons, it should also, by analogical reasoning, yield the most active medicines: Because, as has been observed of *antimony*, by Dr. COXE, "all the metallic preparations are uncertain, as it depends entirely upon the *state of the stomach*, whether they have no action at all, or operate with dangerous violence." The same remarks apply with equal force to all the metals as they possess no power of action in themselves, but depend upon the *state of the organs*. On the other hand, vegetables possess a principle in themselves, by which they are always capable of producing an effect upon the system. And no instance, perhaps, has ever been recorded, in which

the application of vegetables, whether as medicines or poisons, did not produce their peculiar and specific effects, unless they were impaired by age or from other causes.

We repeat again, that the vegetable kingdom furnishes, either directly or indirectly, all our food; and why not all our medicine? Or did a beneficent CREATOR place the means of sustaining our bodies in health, upon the surface of the earth within our immediate grasp, and the means of restoring our health when sick, within its bowels? Impossible! The goodness of DEITY could not do this—could not suffer this! So it follows, that whether we consult the nature of man, of disease, or of DEITY, the evidence and the result are irresistible that the vegetable kingdom alone furnishes the proper remedies for relieving our maladies.

The subject of this chapter will now be examined more in detail. And we hope to be pardoned for again referring to repetitions, and asking the reader's indulgence for any thing of this nature which might be thought censurable. It seems necessary in new works, which treat subjects in an unusual manner, or which embrace principles not generally admitted, to take every opportunity of exhibiting facts and arguments in every way and form that have a tendency to produce conviction in the mind of the reader.

SECTION 1.

OF THE MEDICINES USED BY THE MEDICAL FACULTY.

THE materia medica, as it is technically styled, has been destined to undergo as many revolutions as the theories of medicine have done; and has more often been attempted to be pruned of useless, inefficient articles; whilst others of more destructive character or dangerous powers, have been added to it.

Various writers have taken much pains to contrive what each conceived to be the most suitable arrangement of the articles composing the materia medica. Some have classed them according to their natural resemblance; others according to their real or supposed virtues; others according to their active constituent principles; whilst others have arranged them in alphabetical order. Each of these arrangements has its peculiar advantage as well as defect; but as we claim no affinity with them in practice, we shall pass as lightly as possible over this subject.

The articles composing the materia medica have been arranged, by MURRY, as follows, viz:—

- A. General stimulants.
 - a. Diffusable. { Narcotics,
Antispasmodics.
 - b. Permanent. { Tonics,
Astringents.
Emetics,
Cathartics,
Emmenagogues,
Diuretics,
- B. Local stimulants. { Diaphoretics,
Expectorants,
Sialagogues,
Errhines,
Epispastics.
- C. Chirical remedies. { Refrigerants,
Antacids,
Lithontriptics,
Escharotics.
- D. Mechanical remedies. { Anthelmintics,
Demulcents,
Diluents,
Emollients.

In these different classes is included upwards of two hundred articles; amongst which, from sixty to eighty are accounted *poisonous*. In the whole number, however, not more than forty or fifty, it is affirmed by Dr. EWELL, are needed in practice; though others enumerate eighty or a hundred, and some still more. But of the lowest number mentioned, but little over half, perhaps, are in constant daily use. The chief of these are—

Of the class of Diffusable Stimulants—Brandy, Ether, Camphor, Opium, Hemlock or Sicuta, Digitalis or Foxglove, &c.

Of the Permanent Stimulants, are ranked as Tonics—Mercury or Quicksilver, Iron, Zinc, Copper, Arsenic, Cinchona or Peruvian bark, Columbo root, Gentian root, &c.

Of those ranked as Astringents—Oak bark, Tormentil, Kino, &c.; also, Lead, Zinc, Copper, Iron, &c.

Of the class of Emetics—Ipecacuanha, and Emetic Tartar.

Of the class of Cathartics—Calomel, Jalap, Aloes, Gamboge, Rhubarb, Senna, Castor oil, Salts, &c.

Of Emmenagogues—Castor, Iron, Mercury, Bark, &c.

Of the class of Diuretics—Potash, and its different preparations, Digitalis, Squills, Cantharides or Spanish flies, &c.

The remaining classes comprehend many of the articles just named, as well as others which it is deemed unnecessary to enumerate.

SECTION 2.

OF THE EFFECTS OF SOME OF THE FOREGOING MEDICINES ON THE ANIMAL ECONOMY.

HAVING exhibited a method of classifying medicines which, from its simplicity, is perhaps most popular, and enumerated some of the articles embraced in a few of these classes, merely for the purpose of giving the common reader a brief idea of the language and arrangements of the fashionable works on the materia medica, we now turn our attention to the consideration of the effects which some of them produce upon the human system. In doing this we shall confine ourselves to such as are known to be most dangerous; without wishing to be understood, however, as believing that every article of the materia medica possesses dangerous powers, or condemning all as useless or inert. Many articles, especially of the classes of tonics and astringents, are safe and valuable medicines; but it cannot be so said of all.

It is desirable that mankind, even if they persist in using, by direction of physicians, the different popular preparations of Antimony, Arsenic, Foxglove, Hemlock, Nightshade, Nitre, Opium, Quicksilver, &c. should understand the true nature and effects of those poisonous drugs; and then if they become sufferers thereby they may be sensible of the cause of their suffering. By the symptoms arising from the accidental or intentional taking of any of those articles, whether as a medicine or for self-destruction, (which will hereafter be detailed,) most persons of observation may determine with considerable certainty, what kind of poison has been administered or taken. The general mode of treatment will be found in a succeeding part of the work.

It is also worthy of special remark, that many articles used in the old practice of medicine, although they may scarcely be regarded as poisonous, act in so partial a manner upon the system as to be often attended with danger. Thus we see that certain remedies act upon the stomach, or upon the intestines; others are supposed to act specifically upon the liver; others upon the absorbent system; others upon the blood vessels or circulatory system; others upon the kidneys; others upon the skin; and others upon the uterine system. Now, it is well known that in certain diseased states of some of these organs, many medicines, which otherwise would be considered useful, are to be regarded as highly dangerous and even fatal.

Our remarks apply with still greater propriety to such articles as are acknowledged to be poisonous. And how often have physicians been heard to lament the impropriety of administering the best medicines to remove the principal malady,

because some peculiar affection or circumstance indicated that dangerous or even fatal consequences might result from it; an unerring indication that the remedy would act contrary to the laws of nature in that case, and therefore improper or unsafe in all others. The remedies of Nature's own providing, act upon general beneficial principles; and the best medicine which the peculiar symptoms of any case indicate, may be administered with confidence, because there need be no fear of doing harm. The medicine which is not a *friend* to the system in the *worst* case of disease, must be an *enemy* to it in *all*. And how it ever entered the minds of physicians that such articles as we are about turning our attention to, could be useful as medicines, is beyond conception, and affords but an additional example of the proneness of the human heart to err in despite of reason and common sense.

ANTIMONY. This metal is procured from mines in Hungary, Transylvania, Germany, France and England. Tradition says, that **BASIL VALENTINE**, a German monk, gave it to some hogs, which, after purging, it very much fattened; and thinking it might produce the same effect on man, gave it to his brother monks, who all died in the experiment; whence the name, *antimony*, is derived from *anti-monk*.

"The antimonial metal," says **Dr. THACHER**, "is a medicine of the greatest power of any known substance; a quantity too minute to be sensible in the most delicate balance, is capable of producing violent effects, if taken dissolved, or in a soluble state." [*Dispensatory p. 392.*] But, notwithstanding its extraordinary powers, a vast amount of it is used as medicine; particularly in the forms of **James' Powders**, and **Emetic Tartar**.

The baneful effects of antimony in its crude or metallic state, have not, to our recollection, been detailed by any author whose works we have perused, or had access to; but those attending the exhibition of tartar emetic, the most common form of its administration, have more frequently been noticed.

For children, emetic tartar is unsafe: "when great debility of the system is present, even a small dose has been known to prove fatal." "As an emetic, it is chiefly given in the beginning of fevers and febrile diseases; but when great debility is present, and in the advanced stages of typhoid fever, its use is improper, and even sometimes fatal." "In larger doses, this salt is capable of acting as a violent poison." [*Hooper's Dictionary—Art. "Antimonium Tartarizatum."*]

Dr. ROBINSON says, "Tartar emetic, as has been found after death, produces the most deleterious effects upon the stomach; and yet is given to remove disease, and called an excellent remedy; but is now denounced by those who are disposed to

purge the *materia medica*,—as may be seen in the Transactions of the Royal Society, for 1811-'12." Tartar emetic even externally applied, produces powerful effects. By its corrosive qualities it destroys warts if applied to them in powder or dissolved in water. Another property which it also has, when rubbed on the skin, is that of producing a crop of pustules very like to the small pox; and with this view it is used for rheumatism, white swelling, &c.

"The preparations of antimony," says ORFILA, "are often administered carelessly, because no danger is thought to attend their use. Experience, however, proves that tartar emetic, if it does not excite vomiting, may produce death when given in the quantity of a few grains: instances, indeed, have occurred, in which an extreme prostration and debility have succeeded the administration of a *single grain* of this poison, when it has occasioned no evacuation. Sometimes, on the contrary, and particularly in infants, it excites vomiting so copious and painful, as to require an immediate arrest."—"Mixed with lard and other substances," says the same author, "and applied as an irritant to the surface of the body, tartar may produce poisoning and death!"

To show the great uncertainty and danger attending the employment, not only of antimony, but of all other metallic medicines, we will introduce, before leaving this subject, the following quotation from COXE'S Dispensatory, 3d edition, page 171: "All the metallic preparations are uncertain, as it entirely depends on the state of the stomach, whether they have no action at all, or operate with dangerous violence."

ARSENIC. This destructive metal exists in great abundance in the mineral kingdom, combined with almost all the other metals. It is found principally in Italy, Hungary, Germany, and the United States. In the town of Warwick, New York, there is a huge vein of this metal in a mountain range, sufficient, it is said by a traveler, to poison the whole world. It exists here in that condition or state of combination, termed arsenical pyrites, or arsenical iron. [See Hooper's Dictionary, art. "Arsenic."]

Arsenic is used in various arts, as well as in medicine, being prepared in a variety of different ways. The presence of arsenic in iron, in a very small proportion, has a very pernicious effect, rendering the iron brittle when at a red heat. The preparation of arsenic which most frequently proves destructive to human life, is denominated, in the modern nomenclature, arsenious acid.

ARSENIOUS ACID, also called white arsenic, and by the chemists, *oxide* of arsenic, but more commonly known by the name of ratsbane, acts upon the human system as a deadly poison, in quantities so minute as to be insensible to the taste

when diffused in water or other vehicles, by which it has often been given with criminal intentions and most fatal effects.

Arsenic has long been used externally in the treatment of cancerous affections in the form of plasters and powder; and in either way is a burning, pungent caustic, possessing very dangerous powers. "Arsenic," says THACHER, "has long been known to be the basis of the celebrated cancer powder. It has been sprinkled in substance upon the ulcer; but this method of using it is excessively painful and extremely dangerous; fatal effects have been produced by its absorption. This fact I have known in several instances, when DAVIDSON'S agents, and others, have undertaken to draw out cancers, when the patient would absorb enough of this poison, which seating upon the lungs, caused death by consumption, in the course of one year."

Arsenic has been much used in this country, in agues or intermittent fevers, under the name of FOWLER'S solution, or Ague drops; and also, according to the testimony of Dr. DUNCAN, in Great Britain. And "though the most *violent* of mineral poisons, arsenic, according to MURRY, equals, when *properly* administered, the *first* medicines in the class of *tonics*." "Such are the powers of this medicine, that two grains of it are often sufficient to cure an intermittent that has continued for weeks." [*Thacher.*] But let the intolerable morbid feelings; the shocking depression of spirits; the more or less serious affections of the lungs; and the many other aches and pains, tell at what expense such cures have been often purchased.

So deadly is the effect of arsenic, that "in mines it causes the destruction of numbers who explore them; and "the fumes are so deleterious to the lungs, that the artist ought to be on his guard to prevent their inhalation by the mouth; for if they be mixed and swallowed with the saliva, effects will take place similar to those which follow its introduction into the stomach in its saline or solid state; namely, a sensation of a piercing, gnawing, and burning kind, accompanied with an acute pain in the stomach and intestines which are violently contorted; convulsive vomiting; insatiable thirst, from the parched and rough state of the tongue and throat. Hiccup, palpitation of the heart, and a deadly oppression of the breast, succeed next; the matter ejected by the mouth as well as the stools, exhibiting a black, fœtid, and putrid appearance; at length, with the mortification of the bowels, the pain subsides, and death terminates the sufferings of the patient."

"Arsenious sulphurets," says COXE, "are much used by painters, but these advantages are not able to compensate for its bad effects." "The property which it possesses of being solu-

ble in water, increases and facilitates its destructive power; and it ought to be proscribed in commerce, by the strict law which prohibits the sale of poisons to unknown persons. Arsenious acid is every day the instrument by which victims are sacrificed, either by the hand of wickedness or imprudence. It is often mistaken for sugar; and these mistakes are attended with the most dreadful consequences. The symptoms which characterize this poison are, a great constriction of the throat; the teeth set on edge; and the mouth strongly heated; an involuntary spitting, with extreme pains in the stomach, vomiting of glareous and bloody matter, with cold sweats and convulsions.

“On dissection, the stomach and bowels are found to be inflamed, gangrenous, eroded, and the blood is fluid. Soon after death, livid spots appear on the surface of the body, the nails become blue, and often fall off along with the hair, the epidermis separates, and the whole body becomes speedily putrid. When the quantity is so very small as not to prove fatal, tremors, palsies, and lingering hectic succeed.”

“The symptoms produced by a dangerous dose of arsenic,” says Dr. BLACK, “begin to appear in a quarter of an hour, or not much longer, after it is taken. First—sickness and great distress at stomach, soon followed by thirst, and burning heat in the bowels. Then come on violent vomiting and severe colic pains, and excessive and painful purging. This brings on faintings, with cold sweats, and other signs of great debility. To this succeed painful cramps, and contractions of the legs and thighs, and extreme weakness, and death.” “Similar results,” adds Dr. AKERLY, “have followed the incautious sprinkling of scirrous ulcers with powdered arsenic, or the application of arsenical plasters.”

ORFILA, in his work on poisons, describes the symptoms which follow the taking of this powerful poison somewhat more in detail; though it is not to be understood that the whole of them are to be met with at the same time, in the same subject. His account is as follows: “An austere taste in the mouth; frequent *ptyalism*; continued spitting; constriction of the *pharynx* and *œsophagus*; teeth set on edge; hiccups; nausea; vomiting of brown or bloody matter; anxiety; frequent fainting fits; burning heat at the *præcordia*; inflammation of the lips, tongue, palate, throat, stomach; acute pain of stomach, rendering the mildest drinks intolerable; black stools of an indescribable fœtor; pulse frequent, oppressed, and irregular, sometimes slow and unequal; palpitation of the heart; *syncope*; inextinguishable thirst; burning sensation over the whole body, resembling a consuming fire; at times an icy coldness; difficult respiration; cold sweats; scanty urine, of a red or bloody appearance; altered expression of counte-

nance; a livid circle round the eye-lids, swelling and itching of the whole body, which becomes covered with livid spots, or with a miliary eruption; prostration of strength; loss of feeling, especially in the hands and feet; delirium, convulsions, sometimes accompanied with an insupportable priapism; loss of hair, separation of the epidermis; horrible convulsions, and death!"

"Many attempts have been made to introduce arsenic into medical practice; but as it is known to be one of the most violent poisons, it is probable that the fear of its bad effects may deprive society of the *advantages* it might afford in this way." Experience has, however, taught us that these "attempts" have been but too successful in introducing this demoniac article into medicine; and many, as might rationally have been anticipated, have fallen victims to this destructive mineral;—nay, to that reprehensible, inconsistent, and diabolical infatuation which has led physicians to the erroneous and life-destroying conclusion, that any substance known to be a potent poison, must likewise be a powerful medicine. It seems impossible that a rational being, in his sober senses, could, by any process of reasoning, arrive at such a fatal conclusion; and the most charitable apology that can be offered for this destructive paradox is, that physicians have adopted a wrong or perverse theory.

COPPER—*Cuprum*; so named from the Island of Cyprus, whence it was formerly brought. This metal abounds in considerable quantity; and is found in the greatest abundance in England, Sweden, Spain, and North and South America. It is used in the manufacture of a variety of cooking utensils; and, from its poisonous quality, has often been known to produce death. "Great care," says THACHER, "ought to be taken that acid liquors, or even water designed for internal use, be not suffered to stand long in vessels made of copper; otherwise they will dissolve so much of it, as will give them very dangerous properties.

BRASS, which is an alloy of copper and zinc, is also liable, though in a less degree, to the same objection as copper, and is much employed in the manufacture of cooking utensils. The best brass is composed of four parts of copper and one of zinc.

The effects of copper "when taken into the stomach, are highly deleterious and often fatal. It particularly affects the *primæ viæ*, exciting excessive nausea, vomiting, colic pains, and purging, sometimes of blood, or, though more rarely, obstinate constipation. It also produces agitation of the mind, headache, vertigo, delirium; renders the pulse small and weak, the countenance pale, and causes fainting, convulsions, paralysis, and apoplexy.—[*Thacher.*]

“Verdigris, and other preparations of copper, act as virulent poisons, when introduced in very small quantities into the stomachs of animals. A few grains are sufficient for this effect. Death is commonly preceded by very decided nervous disorders, such as convulsive movements, tetanus, general insensibility, or a palsy of the lower extremities.”—[*Hooper.*]

“But although copper be thus dangerous, some preparations of it are in certain cases used with great advantage, both internally and externally.”—[*Thacher.*] Internally, it is used as a *tonic*, and externally, as a *caustic*.

MERCURY—*Quicksilver*. This metal, or the ores which contain it, abounds most plentifully in China, Hungary, Spain, and South America; and of all the metals employed as medicine, is the one most extensively used; “there being scarcely a disease against which some of its preparations are not exhibited.”

Mercury is frequently found in the earth in a fluid form, sometimes so pure as not to need refining, when it is called virgin quicksilver; but more often it is mixed with other substances, in the form of ore. The most usual state in which it exists in mines, is a sulphureous ore of a red color, called native cinnabar. “The people who work in the quicksilver mines soon die; when first affected they are seized with tremors, after which salivation comes on, their teeth drop out, and pains of the whole body, particularly of the bones, seize them.”

Quicksilver was originally used in the treatment of eruptive diseases; and it is owing to its success in those complaints that it was first employed in the venereal disease. “In the times immediately following this disease, practitioners only attempted to employ this remedy with timorous caution, so that of several of their formulas, mercury scarcely composed a fourth part, and few cures were effected. On the other hand, empirics who noticed the little efficacy of these small doses, ran into the opposite extreme, and exhibited mercury in such large quantities, and with such little care, that most of their patients became suddenly attacked with the most violent salivations, attended with dangerous consequences. From these two very opposite modes of practice, there originated such uncertainty respecting what could be expected from mercury, and such fears of the consequences which might result from its employment, that every plan was eagerly adopted which offered the least chance of cure without having recourse to this mineral.

“A medicine, however, so powerful, and whose salutary effects were seen by attentive practitioners, amid all its inconveniencies, could not sink into oblivion. After efforts had been made to discover a substitute for it, and it was seen how little

confidence those means deserved on which the highest praises had been lavished, the attempts to discover its utility were renewed. A medium was pursued, between the too timid methods of those physicians who had first administered it, and the inconsiderate boldness of the empirics. Thus the causes from which both parties failed were avoided; the character of the medicine was revived in a more durable way, and from this period its reputation has always been maintained.

“It was about this epoch that mercury began to be internally given: hitherto it had only been externally employed, which was done in three manners. The first was in the form of liniment, or ointment; the second, as a plaster; and the third, as a fumigation. Of the three methods just described, only the first is at present much in use, and even this is very much altered. Mercurial plasters are now only used as topical discutient applications to tumors and indurations. Fumigations, as anciently managed, were liable to many objections, particularly from its not being possible to regulate the quantity of mercury to be used, and from the effect of the vapor on the organs of respiration frequently occasioning trembling, palsies, &c. Frictions with ointment have always been regarded as the most efficacious mode of administering mercury.”—[*Hooper's Dictionary.*]

It may be observed, however, that the *submurius hydrargyra*, or calomel, and the *pilula hydrargyra*, or blue pill, are the preparations of quicksilver in most common use at the present time.

Mercury, as an article of medicine, is probably more extensively used than almost any other article of the materia medica; and hence mankind have suffered more from its destructive powers, than from all the other poisonous drugs that have disgraced the science of medicine. In bilious and other fevers, which have so universally and fatally prevailed in the United States, calomel has been regarded as almost the only evacuant of the bowels to be depended upon; and by most practitioners it has been considered necessary in malignant cases of fever, and in many other obstinate complaints, to administer a quantity sufficient to produce salivation. And when it is wished to procure this loathsome discharge very speedily, the direful remedy is applied externally, in the form of mercurial ointment, at the same time that it is administered internally, in the form of calomel or pills. The disastrous effects of this “incendiary” practice, have left fearful monuments of its destructive character, in every city, town, village, and hamlet in the United States; and, in fact, in every civilized country where fashion and folly have been allowed to triumph over the dictates of common sense, and mercurial

medicines permitted to assume the place of the more salutary productions of the life-preserving vegetable kingdom.

So extensively, indeed, have mercurial medicines spread their ravages amongst mankind, that it has become an important "part of the physician's study, to learn to designate and remove the maladies which are caused by them."* Mercury is the most general evacuant belonging to the *materia medica*; whilst its different preparations are made to answer no less than ten different indications in the treatment of disease. And notwithstanding the almost universal employment of mercury, in the treatment of nearly or quite every disease, "it is to be regretted," says the work just quoted, "that for the want of a more precise knowledge of the peculiar properties of mercury, and the modes of its operation, writers have not yet assigned to it an appropriate place among the curatives of disease, nor agreed upon such general principles for its administration as will enable the *best* judgment to use, without sometimes *abusing* it; and," continues the same writer, "is not mercury by many rather given as a specific, or for *symptoms of disease* for which they *know not what to give*?"

"Practitioners," says Dr. HAMILTON, "prescribe, on every trifling occasion, calomel or the blue pill: thus, calomel is now almost the universal opening medicine recommended for infants and children; and a course of the blue pill is advised, without any discrimination, for the cure of trifling irregularities of the digestion in grown persons." To show the wretched consequences of this indiscriminate employment of mercury, we need only refer to HOOPER's Dictionary. "Many courses of mercury," says he, "would kill the patient if the medicine were only given internally, because it proves hurtful to the stomach and intestines when given in any form, or joined to the greatest correctors." It "often produces pains like those of rheumatism, and *nodes* of a scrofulous nature;" "and occasionally attacks the bowels, and causes violent purging, even of blood." "At other times, it is suddenly determined to the mouth, and produces inflammation, ulceration, and an excessive flow of saliva." The teeth also become loose, and mortification sometimes succeeds, and terminates in the destruction of the gums, lips, cheeks, &c.

In addition to these dreadful local affections, mercury often produces a more general effect, which is termed the mercurial disease.

"It is characterized by great depression of strength; a sense of anxiety about the præcordia; irregular action about

* Preface to the American edition of Dr. HAMILTON's Observations on the Use and Abuse of Mercurial Medicines, by ANSEL W. IVES, M. D.

the heart; frequent sighing; trembling, partial or universal; a small, quick, and sometimes intermitting pulse; occasional vomiting; a pale, contracted countenance; a sense of coldness; but the tongue is seldom furred, and neither the natural nor vital functions are much disturbed." "In this state, a violent or sudden exertion of muscular power, will sometimes prove fatal."

It may possibly be thought that we are devoting too much time to the consideration of this single article; but when we take only a hasty survey of the general and immense extent of its horrible desolations, we are ready to think a volume too small for a faithful portraiture of the heart-sickening picture. The subject of intemperance has enlisted the energies of hundreds, nay, thousands, who have portrayed in glowing colors the disastrous effects of this voracious monster, preying upon the vitals of the human race; opposed too, as it is, by the moral sense of the people, the dogmas of physicians, and the precepts of the gospel. But the career of calomel instead of being opposed by any of those barriers which resist the progress of immorality, is encouraged by a class of men whose authority is only equalled by the subserviency of the people to submit to their dictates.

The propriety of comparing the effects of mercury with those of intemperance, very probably may excite some emotions in the minds of many who have not given the subject a careful consideration. But we only request of these to reflect that calomel is prescribed in some form or other in almost every family which adheres to the poisonous practice of medicine; and although an individual may be subjected to its deadly effects but once in his life, he may never after be free from its morbid influence. Indeed, we do not doubt that the protracted insupportable languor and indescribable feelings of despondency which often succeed a course of mercury, have driven many an individual to intemperance if not to suicide, for that relief which may be prized higher than life. We are not dealing in fables, nor fanciful tales of romance; our subject is one in which the whole civilized world has a deep interest; and we feel it to be a serious duty to do all in our power to eradicate those prejudices which, through ignorance, have been implanted in the human heart.

The depredations which mercury has committed upon health and life since its first introduction into practice, demand that it should be placed in its native garb before the eyes of the world. Too much suffering, and misery, and waste of human life, have resulted from the use of calomel, for those who are acquainted with its real character to remain idle spectators of its mighty march; walking with gigantic strength through the world, and sweeping, with its baneful breath,

thousands and tens of thousands from the stage of usefulness, and the great theatre of life!

“Among the numerous poisons,” says Dr. HAMILTON, “which have been used for the cure or alleviation of diseases, there are few which possess more active, and of course, more dangerous powers, than mercury. Even the simplest and mildest forms of that mineral exert a most extensive influence over the human frame; and many of its chymical preparations are so deleterious, that in the smallest doses they speedily destroy life.” “When the effects of mercury upon the human body are accurately investigated and duly considered, it cannot fail to appear, that infinite injury must accrue from its use in many cases.”—[*Hamilton, pages 1, 3.*]

In treating of the effects of mercury, Dr. HAMILTON observes:—“Preparations of mercury, exhibited either internally or externally for any length of time, increase in general the action of the heart and arteries, and produce salivation, followed by emaciation and debility, with an extremely irritable state of the whole system.

“These effects of mercury are *expressly mentioned, or virtually admitted, by every author*, ancient or modern, who has directed its use; and it must appear very extraordinary, that their full influence should have been hitherto misunderstood, or at least not sufficiently regarded.”

“The first effect enumerated, is an increased action of the heart and arteries,” which “is attended with the most obvious of the circumstances which arise from inflammation. Blood drawn from the arm of the most delicate and debilitated individual, subjected to a course of mercurial medicines, exhibits the same buffy crust with blood drawn from a person laboring under pleurisy.”—[*Hamilton, pages 4, 5, 6.*]

“There is reason to believe, that the inflammatory diathesis induced by mercury may continue for a very considerable length of time after the mercury has been laid aside, and without any manifest signs. When individuals in this state are subjected to accidental exposure to cold, or indulge in irregularity of living, a violent and anomalous indisposition takes place, which is apt to terminate fatally, or to occasion a broken state of health.”

“Salivation, or an excessive and unusual flow of saliva, in general follows the increased action of the heart and arteries, and is preceded by a certain metallic taste in the mouth, and is attended with a peculiar odour of the breath different from what is ever perceived in any natural state of disease.” “In some cases, besides the ordinary ulceration of the gums, and loosening and final separation of the teeth, the tongue, moveable palate, &c. swell and ulcerate to a frightful degree.”—[*Hamilton, pages 10, 11.*]

“Delicate individuals, especially females, generally experience after a course of mercury, various modifications of disordered feelings, communicating the idea of imaginary diseases, which unfit them for the duties of life, and render existence a burden. Among the anomalous complaints arising from this cause, may be enumerated, impaired or capricious appetite for food, with all the ordinary symptoms of indigestion, particularly retchings in the morning, and flatulency—disturbed sleep, with frightful dreams; impaired or depraved vision; frequent aches and pains in different parts of the body; occasionally such sudden failure of strength, as if just dying, and at other times violent palpitations of the heart, accompanied with difficulty of breathing. Along with all these complaints, there is such a wretchedness of look, with such a disposition to brood over their miserable feelings, that it is extremely difficult to persuade the relations or attendants of the patient that there is no serious indisposition.”

Dr. FALCONER says, “that among other ill effects, [of mercury] it tends to produce tremors and paralysis, and not unfrequently incurable *mania*. I have myself seen repeatedly from this cause, a kind of approximation to these maladies, that embittered life to such a degree, with a shocking depression of spirits, and other nervous agitations with which it was accompanied, as to make it more than commonly probable, that many of the suicides which disgrace our country, were occasioned by the intolerable feelings that result from such a state of the nervous system.” Dr. HAMILTON adds, “to the truth of these remarks every unprejudiced physician who has been in extensive practice must bear testimony.”—
[*Hamilton, pages 13, 14, 15.*]

It is also worthy of particular notice, that the disastrous effects of mercury do not depend upon the quantity taken; “it is notorious that the very smallest quantities of mercury have suddenly proved injurious. Thus, in a lady who had had such small doses of the blue pill, combined with opium, for three nights successively, that the whole quantity amounted to no more than five grains of the mass, salivation began on the fifth day, and notwithstanding every attention, the gums became swelled to an enormous degree, bleeding ulcers of the mouth and fauces took place, and such extensive irritability and debility followed, that for nearly a whole month her life was in the utmost jeopardy. Every practitioner must have met with similar cases.

“Another common consequence of a very small dose of mercury is an excessive bowel complaint. In many individuals, a permanent irritability of the stomach and intestinal canal has followed the accidental exhibition of a few grains of calomel.”

“Dr. FALCONER mentions, that he once saw a dropsy of the breast produced by the use of a mercurial remedy for a redness in the face, which it effectually removed, but instantly produced a dropsy of the chest, terminating in death. Dr. BLACKALL has recorded similar cases.”—[*Hamilton, pages 20, 21.*]

Dr. HAMILTON also records one case, and Dr. IVES another, which “seem to prove, that mercury may remain inert for a considerable time in the habit, and afterwards by some inexplicable circumstance, may become active.”—[*p. 21.*] We have also seen at least one similar case. And that it does remain in the systems of most or all persons whose constitutions have only been slightly affected by it, without breaking forth in its peculiar and virulent form, can be attested by almost every individual who has undergone the process of salivation. Such persons are commonly premonished of stormy weather, by the pains “like those of rheumatism,” or as often expressed, “pains in the bones,” and soreness of the flesh. In some, the glands of the mouth and the throat become swelled, upon every exposure to wet or cold.

It may be thought, perhaps, that enough evidence has been adduced from the writings of those whose profession it is to use the poisonous preparations of mercury, to satisfy the most partial, that its use ought not to be admitted as a medicine; but as the prejudice in its favor is so deep rooted and strong, and its destructive consequences so general and terrible, we cannot acquit ourselves without selecting something more from the great mass of testimony to be met with at every step of our inquiries upon this important subject.

Dr. HAMILTON, in speaking of persons who appeal to their own experience as a direct proof of the great utility of calomel, in certain cases, remarks, “But if those persons could attend impartially to the effects of that medicine, they would find that its immediate operation is severe, and that it is followed for some time by uncomfortable feelings, and by an unusual susceptibility of derangement of the stomach and bowels.”—[*Hamilton, p. 79.*]

Again; “It disorders the digestive powers of the stomach; and in debilitated persons, the frequent employment of it sinks the strength and provokes hemorrhoids.

“From what has been stated in the preceding pages, respecting the injurious effects of all the preparations of mercury, and especially of calomel, upon some constitutions and the impossibility of distinguishing those individuals to whom that mineral, in every form, is apt to prove noxious, it must be evident that no physician can calculate, with any degree of certainty, on the safe operation of mercurial purgatives; and no preparation of mercury can be administered without the risk of some consequences

ensuing, which could neither be intended nor expected.—[Hamilton, pages, 105, 106, 107.]

Were these facts less familiar to us than they are, we might pause, after quoting sentiments such as the foregoing, to indulge in those feelings of astonishment, which must involuntarily force themselves upon the mind of him who meets with them for the first time. But we are so much accustomed to the most glaring inconsistencies in most matters relative to medicine, that we long since ceased to wonder at the contradictions of theory and practice. The reader must recollect that our quotations are from authors who themselves use the article they condemn.

But we are not done yet: We must beg a little longer indulgence, whilst we introduce a few more quotations, touching this important subject. In an Appendix to the work of Dr. HAMILTON, we find some remarks to our purpose, written by Dr. A. W. IVES, a respectable practitioner of New York.

“It is true,” says Dr. IVES, “that those who have most zealously recommended this medicine, have not denied the danger and uncertainty of its operation; still they appear rather to have labored to give it the character of a specific, than to establish general principles which would reconcile the discrepancy of their theory and practice. ‘Could a line be drawn,’ says Dr. WARREN, ‘between the diseases in which it is prejudicial, and those in which it is advantageous; and could the mode of administration be accurately prescribed much of that mischief which has originated from this most active class of medicines might be avoided, and many a constitution saved from ruin.’ But this is a knowledge which we can never hope to attain, and even if it were attainable, what would be the avail? There is a diversity in the character of the same diseases, arising from a difference in the circumstances or condition of the patients, which forbids the expectation that the science of medicine will be ever so perfected, and the labors of the physician so simplified, that a medicine can be safely prescribed for a name. It will continue to be the province of the physician to establish general principles from facts, and to mete out from these such particulars as may be suitable to the multifarious character and symptoms of disease; and until some general principles shall be settled for the better regulation of the mercurial practice in fevers, however extensive and popular it may be, it will continue to be empirical.”— [Hamilton, p. 192.]

Dr. IVES remarks, that there is the closest analogy in the operation of animal poison and mercury: “Both,” says he, “so far contaminate the circulating fluids as to keep up a permanent excitement for a considerable length of time; for as their properties can be destroyed by no antidote, their effects

will continue till they are carried out of the system by its emunctories.”—[p. 196.] “Nor does mercury, as has often been contended, possess the properties of a *tonic*; so far from increasing the tone of the muscular fiber, or the excitability of the nervous system, it diminishes both, in a direct ratio to the irritation which it excites.”—[p. 204.] And “it is yet a question of dispute, whether more lives have been prolonged by a timely salivation, than have been lost by the unsuccessful use of mercury, to the exclusion of other means.”—[p. 208.]

Dr. BARNWELL, after describing the effects of mercury exhibited in the first stages of inflammation of the liver, says “these are the effects, which we have seen invariably take place, from the abuse of mercury, in the early stages of disease; so that we are not more certainly convinced of the poisonous effects of arsenic, than of those mercurials given in the acute stages of this disease.”

The testimony of Dr. REECE is also very strong against the use of mercury. “We know not, says he, whether we have most reason to hail the discovery of mercury as a blessing, or regard it as a curse; since the *diseases it entails are as numerous as those which it cures*. Our best informed dentists declare that they can clearly witness the progress of the use of mercury, in the increasing diseases and decay of the teeth. There are serious objections, also, to other articles of the metallic world; antimony, iron, and arsenic, are dangerous remedies in the hands of the ignorant; and mankind, perhaps, in the aggregate, would be benefited by their expulsion from medical practice.”

If any should inquire why mercury is still used in medical practice, when its direful effects are so well known, the answer must be sought from several sources. “The facility,” says Dr. HAMILTON, “with which calomel can be exhibited to patients who are reluctant to take whatever has the semblance of a drug, is probably the chief motive for this unfortunate prejudice in favor of so hazardous a remedy;” and this he very justly reprobates as a sacrifice of “conscience to convenience.”—[page 111.] And Dr. IVES observes—“there is no inconsistency so extravagant that it cannot be supported by precedent, and no hypothesis so absurd, that it cannot be defended by books.” It may also be added, that as the study of books is more easy to most men than the investigation of nature, practitioners have generally been willing to practice under the protection of some great name, rather than attempt to reform the abuses of medicine.

“Had the injurious effects of calomel been hid from the rest of the profession, and known only to the author,” says Dr. HAMILTON, “some apology might be offered for the pertinacity with which that medicine is still prescribed; but so far is this

from being true, that it may be confidently asserted, that no medical man of competent knowledge and observation would administer calomel as a purgative, in a hundred instances, without being convinced of its injurious tendency. Of this, innumerable proofs could be cited.”—[page 109.] And “it cannot be a want of deference to the distinguished advocates of the mercurial practice, to distrust the soundness of their deductions, when they are not only opposed by the acknowledged *principles of medical philosophy*, but by the judgment of such men as ROBERT JACKSON and Dr. LIND. To these might be added numbers of the most celebrated physicians of England, France, and America, all of whom from *clinical observation*, have decided against the practice of resting the issue of febrile diseases on the constitutional operations of mercury.”—[Hamilton, *Appendix*, pages 191, 192.]

Those who have made themselves acquainted with the desolating consequences resulting from the use of mercury, will not wonder that so much space has been allotted to its consideration. Men of the greatest experience have devoted much time and attention to its consideration; the chief of whom are PIERSON, MATHIAS, TROTTER, CARMICHAEL, and HAMILTON, whom we have so often quoted, and whose experience and observation have enabled him to make a correct estimate of the dangerous powers of mercury. He, however, supposes that “notwithstanding all the hazards resulting from the use of mercury, there can be no doubt that it has certain medicinal virtues, the most remarkable of which is the power of curing the diseases occasioned by the syphilitic virus.”

In the venereal disease, he thinks this is the only remedy which can with certainty be depended upon; but this sentiment can only be tolerated on “the principle of necessity” growing out of the circumstances by which he was surrounded. He knew of “no other equally efficacious medicine.”—Fortunately, however, for the world, medicines are now known which are not only far more efficacious than mercury in venereal complaints, but in all others; besides being at the same time free from all risk and danger.

LEAD—*Plumbum*. This metal is found in almost all countries; and is particularly abundant in the western and north-western parts of the United States. It is but seldom used as an internal remedy; but is often applied externally to inflamed surfaces, wounds, scrofulous sores, and inflamed eyes. Internally it is employed “in some extreme cases of hemorrhagy from the lungs and bowels, and uterus,” as a styptic or astringent; but owing to its poisonous qualities, it is exhibited in very small doses, and that but seldom by prudent practitioners. All the preparations of lead are deadly poisons.

Lead is often used for sweetening cider or wines which have become sour; but this is a very reprehensible practice, and is only resorted to by unprincipled dealers in the article, for motives of pecuniary gain. The effect of drinking cider or wine, impregnated with any preparation of lead, is the same as those arising from the taking of it any other way.

“The colic of painters, and that formerly prevalent in certain counties of England, from the lead used in cider presses, show the very deleterious operation of this metal, when habitually introduced into the system in the minutest quantities at a time. Contraction of the thumbs, paralysis of the hands, or even of the whole extremities, have not unfrequently supervened.”

The symptoms of poisoning from lead are thus graphically described in the Book of Health: “Constriction in the throat, pain in the stomach, obstinate, painful, and frequently bloody vomiting.” Dr. THACHER, in his Dispensatory, says “its effects on the body are emaciation, violent colics, paralysis, tremors, and contractions of the limbs; as they generally come on gradually, the cause is sometimes overlooked until it be too late. Poisoning from lead is occasioned, either from liquors becoming impregnated with it, by being improperly kept in vessels lined with that metal, or to which lead has been criminally added to correct its acidity; or among manufacturers, who work much with lead, as painters and plumbers, and who are not sufficiently attentive to avoid swallowing it.”

“A dreadful disease,” says Dr. THOMAS, “of a similar nature with the colic under consideration, (*colica pictorum*, or dry bellyache) and caused by the destructive fumes of melted lead, is known to be very prevalent among those who are employed in smelting or preparing this metal, and is said to attack even those who live near the furnaces.”

Speaking of the *acetite* or sugar of lead, Dr. THACHER says, “Like the other preparations of lead, this is a violent poison.” “The internal use of it, notwithstanding the encomiums some have been rash enough to bestow upon it, is entirely to be rejected.”

The *subcarbonate* of lead, or white lead “is sometimes employed medicinally, in form of powder or ointment, to children whose skin is fretted. It should, however, be cautiously used, as there is great reason to believe that complaints of the bowels of children originate from this source.”

NITER—*Nitrate of Potash*—*Salt Peter*. This article is prettily extensively used, “in numerous disorders. Its virtues are those of a refrigerant and diuretic.” It also promotes insensible perspiration in fevers. “This powerful salt, when inadvertently taken in too large quantities, is one of the most fa-

tal poisons. There are several attested cases on record, and some recent instances might be added, in which from half to a whole ounce of salt peter, has occasioned violent vomiting, convulsions, swelling, and other painful symptoms in persons, who by mistake had swallowed it in a dissolved state, instead of glauber or similar salts."—[*Thacher's Dispensatory.*] "In large doses, such as an ounce, taken at one time, it produces the most dreadful symptoms, constant vomiting, purging, mixed with blood, convulsions and death."—[*Coxe's Dispensatory, p. 445.*] "I have found from a series of practical experiments, for many years, that salt peter has the most certain and deadly effect upon the human system, of any drug that is used as medicine. Although the effects produced by it are not so immediately fatal as many others, yet its whole tendency is to counteract the principles of life and destroy the operation of nature. Experience has taught me that it is the most powerful enemy to health, and that it is the most difficult opponent to encounter, with any degree of success, that I have ever met with."—[*New Guide to Health, p. 26, 27.*]

OPIUM. This is the inspissated juice of the white poppy, or *papaver somniferum*. The best opium is brought from Turkey; and a very inferior kind from the East Indies. It may also be made from the common poppy of this country. The Turks have the same kind of fondness for it, that the people of this country have for tobacco and ardent spirits.

Opium is exhibited as a narcotic, to procure sleep, and as an anodyne to assuage pain. It is also used as an antispasmodic, and to restrain diarrhœa. Indeed, there are few diseases in which this powerful article is not employed, either in substance, as in pills, or in tincture, as in laudanum. A still weaker preparation of it is to be found in the paragoric elixer.

The specific action of opium on the living system, by which it produces its peculiar effects, has been the subject of the keenest controversy amongst medical men. Some affirm it to be a powerful stimulant, and others, that it is a direct sedative. To our view, it is very clear, that its most important effects are sedative. It appears to possess but very little, if any power, directly to remove the cause of any disease whatever. It produces sleep—removes pain—relieves spasm—and checks diarrhœa; but it does it by destroying sensibility. It renders the living fiber insensible to the stimulus of the causes which give rise to those peculiar states or conditions of disease; and its debilitating effects are well known to all who have taken large quantities to remove spasm, or cure the lock-jaw. But as this, like all other violent poisons, is fast running its popular career, and is disused in the new practice

of medicine, it is unnecessary to dwell longer upon this controversy.

“Opium taken into the stomach in a large dose, gives rise to confusion of head and vertigo. The powers of all stimulating causes to make impressions on the body are diminished; and even at times, and in situations, when persons would naturally be awake, sleep is irresistibly induced. In still larger doses, it acts in the same manner as the narcotic poisons, giving rise to vertigo, head-ache, tremors, delirium, and convulsions; and these terminating in a state of stupor, from which the person cannot be roused. This stupor is accompanied with slowness of the pulse, and with stertor in breathing, and the scene is terminated in death, attended with the same appearances as take place in an apoplexy.”—[*Thacher's Dispensatory.*]

“It is a melancholy consideration, that opium is frequently resorted to for the horrid purpose of self-destruction. The alarming symptoms induced by it, are vomiting, delirium, stupor, deep and difficult breathing, convulsions, and death.”—[*ibid.*]

DIGITALIS PURPUREA—*Foxglove.* This potent vegetable, when taken into the stomach, produces a most powerful sedative effect upon the circulation, decreasing the general irritability of the system, whilst the action of the absorbents is said to be accelerated. It has been highly recommended in consumptions, palpitations of the heart, asthma, dropsy, &c. for which cases it has been often employed.

“Of all the narcotics, digitalis is that which diminishes most powerfully the actions of the system; and it does so without occasioning any previous excitement. Even in a moderate dose, it diminishes the force and frequency of the pulse, and in a large dose, reduces it to a great extent, as from seventy beats to forty or thirty-five in a minute, occasioning at the same time vertigo, indistinct vision, violent and durable sickness, with vomiting. In still larger quantity, it induces convulsions, coldness of the body, and insensibility, symptoms which have sometimes terminated fatally.”

“The administration of this remedy requires to be conducted with much caution. Its effects do not immediately appear; and when the doses are too frequent, or too quickly augmented, its action is concentrated so as to produce frequently the most violent symptoms.—[*Hooper's Dictionary.*]

Dr. WITHERING, who first employed the digitalis in the treatment of dropsy, lays down certain explicit rules for its administration; referring to these, Dr. THACHER, in his *Dispensatory*, says, “without the strictest attention to which, no practitioner should prescribe this powerful and singular medi-

cine." Dr. THACHER further adds, "Such are the active and virulent qualities of this plant, that it ought not to be entrusted to the direction of the inexperienced practitioner; nor resorted to, without due attention to the state of the system; and when administered, its peculiar effects should be discriminated with the utmost vigilance and precision. Dr. RAND relates for admonition, one melancholy example of the fatal effects of digitalis, in a man, who having experienced relief from its use, adventurously exceeded the extent enjoined by his physician." And well may cautions and admonitions be given in regard to the use of an article possessing such influence over the sanguiferous system. What else could be rationally expected, than that if it possessed the power, in a moderate dose, of reducing the pulse from seventy to thirty-five, a larger dose would check it altogether. It is also poisonous when applied to wounds or sores.*

HEMLOCK—*Cicuta*. "This is a large biennial umbelliferous plant, which grows very commonly about the sides of fields and hedges, and in moist places. The root is white, long, of the thickness of the finger, contains when young a milky juice, and resembles both in size and form, the carrot. In spring it is very poisonous, in harvest less so. The stalk is three, four, and often six feet high, hollow, smooth, and marked with red or brown spots. The leaves are large, and of a dark green color, having a faint disagreeable smell, resembling the urine of a cat. The seeds are inferior in strength. The whole plant is a virulent poison, but varying much in strength according to circumstances. When taken in an over dose, it produces vertigo, dimness of sight, difficulty of speech, nausea, putrid eructations, anxiety, tremors, and paralysis of the limbs; to which may be added, dilatation of the pupils, delirium, stupor, and convulsions."—[*Thacher's Dispensatory*.]

PRUSSIC ACID—*Hydrocyanic acid*. It was but lately that this substance became known in its simple separate state; and still later that it was introduced into medicine. Prussic acid is most readily obtained from the pigment called Prussian blue; but it is also made from some vegetable productions, such as the bitter kernals of the drupaceous fruits, particularly the peach. It is used in pulmonary complaints, especially whooping cough, consumption, asthma, &c.

The Prussic acid is said to be the most violent of all poison. "SCHARINGER, a professor at Vienna, spread a certain quantity of it upon his naked arm, and died a little time thereafter." "When a rod dipped into this acid is put in contact with the tongue of an animal, death ensues before the rod can be withdrawn. If a bird be held a moment over the open

* OREILA ON POISON.

mouth of a vial containing prussic acid, it dies."—[*Hooper's Dictionary.*]

There are many other poisonous articles used as medicines by the medical Faculty; but we have perhaps dwelt sufficiently long upon this subject. In describing the nature and effects of medical poisons, we have preferred quoting the language of those whose avocation it is to use them, rather than condense the facts into a narrower compass in words of our own; as it must be admitted that they, to the exclusion of all others, are better acquainted with their destructive tendencies and fatal effects. Most individuals, however, can call to mind cases which they have either seen or experienced, confirming the statements which we have made respecting the violent and dangerous character of many articles in common use by the Faculty.

But our limits admonish us to leave a subject which calls up in imagination, the pale, emaciated, and frightful visage of some acquaintance, neighbor, tender child, or endeared companion, who has fallen a victim to the destructive powers of those poisonous articles, falsely gilded with the name of medicine; the fearful effects of which have been accumulating for the last fifty years with the most ruinous consequences; yea, we might truly say, with more fatal and appalling violence, in some portions of the globe, than pestilence, famine, or the sword!

SECTION 3.

OF THE MEDICINES USED IN THE BOTANIC PRACTICE.

THE articles composing the botanical materia medica, are few in number compared with those which have been admitted into the older works of this character. But however few may be the articles, they are very ample, comparatively speaking, in their power to restore health. New and valuable remedies are also developing themselves to the industrious enterprise of Botanical Practitioners in every section of our country; and there is good reason to hope that a few years of careful observation, will put the world in possession of the means of curing almost every malady to which the human frame is liable. It is ardently to be wished, however, that every individual engaged in this noble work of improvement, might adopt the utmost simplicity in the rules which he may prescribe for conducting his investigations, as well as his observations on the result.

The following classification of remedies has been adopted in conformity with the New Physiological Theory, as well for

its simplicity and perspicuity, as from a firm conviction of its approaching nearer the truth than any other which has heretofore been proposed:—

A. General Stimulants.

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| 1. Diffusable. | Lobelia. |
| 2. Permanent. | { Cayenne, (African.)
{ Red Pepper, (Common.)
{ Black Pepper,
{ Ginger, &c. |

B. Tonics.

- | | |
|----------------|--|
| 1. Astringent. | { Bayberry,
{ Beth or Birth root,
{ Sumach,
{ Red Raspberry,
{ Witch Hazel,
{ Hemlock Bark,
{ Blackberry root, &c. |
| 2. Bitter. | { Golden Seal,
{ Poplar Bark,
{ Unicorn Root,
{ Balmony,
{ Columbo Root, &c. |

C. Local Stimulants.

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|------------------|---|
| 1. Cathartics. | { Butternut,
{ Black Root,
{ Mandrake,
{ Rhubarb,
{ Castor Oil, &c. |
| 2. Diuretics. | { Spirits of Turpentine,
{ Sumach Leaves,
{ Button Snake Root,
{ Virginia Snake Root,
{ Elder Bark, &c. |
| 3. Rubefacients. | { Cayenne,
{ Red Pepper,
{ Oil of Hemlock,
{ Brandy, &c. |

This classification goes much farther than was ever contemplated by the great prototype of the Botanical school, Dr. THOMSON, who sums up the fundamental principles of the healing art, in the terms, hot, rough, and bitter—stimulants, astringents, and bitters. We may be too prolix in this classification; but are fully satisfied that we have been enough so, and better that it be abridged than enlarged.

To all who are desirous of improving the materia medica, we would most seriously recommend the greatest circumspec-

tion in making experiments with, and the adoption of new articles. Human life is of too much importance to be lightly trifled with; and therefore nothing should be done at random, nor any thing hazardous attempted. In selecting any new article, a preference should always be given to those which, when chewed in the mouth, do not dry up the saliva. Even astringents, although their most obvious and characteristic effect is to harden the muscular fiber, and give it a firmer tone, ought not to be of that arid nature that many articles of this class are, drying up the juices of the mouth, and of course, of the whole system. Medicines of every kind and nature, to act upon the organs in a healthful manner, must neither accelerate nor impede the passage of any of the fluids beyond what the laws of life require; and such as have a tendency to impede the passages, ought, above all others, to be admitted with caution.

Although astringents, when chewed, contract the mouth and produce a sensation of roughness, as any one acquainted with the term at once will know, yet there are articles which possess this property in a considerable degree, without materially affecting the passage of the fluids. Any person, by tasting different astringent articles, may satisfy himself of the truth of this remark. And it is laid down as a general maxim, by Dr. THOMSON, that not only astringents but articles of every other class, should be tested by the same rule. This criterion for ascertaining an important quality in all medicinal substances, we regard as original with Dr. THOMSON, and consider it as being founded upon correct medical and physiological principles that ought never to be disregarded in selecting a remedy.

As it is not pretended that this work contains, or that the present knowledge of medicine embraces, all the most valuable articles of medicine which a beneficent Creator has bestowed upon the world; but that many, very many, remain yet to be discovered, it may not be amiss to suggest some other general rules to be observed in the experiments and investigations relative to this important subject:

1. Every substance used as a medicine, ought to act in unison and harmony with the laws of nature, and not contrary to them. Medicines of this character are always safe, and universally applicable.
2. If they do this, they will, instead of prostrating the strength of the patient, have a tendency to restore it. All medicines and means whatever, which, in their effects upon the system, weaken the power of life and produce debility, ought to be rejected as improper.
3. Any article which produces unnatural actions in the system, either increasing or checking the secretions or excretions beyond what health requires, ought also to be rejected. It is gene-

rally variations of these actions from a healthy standard, which constitute, or rather attend, disease; the object of cure is to restore a healthy action. 4. By all means avoid articles known to be poisonous, especially in small quantities. They always pervert the very order which we wish to restore—the harmony of nature. 5. Endeavor to ascertain to which class the adopted article belongs; and that, although it may be peculiarly adapted to some particular disease, it is not deleterious in any. This is a desideratum, we think, attainable in medicine.

SECTION 4.

OF THE EFFECTS OF BOTANIC MEDICINES UPON THE ANIMAL ECONOMY.

CAPSICUM ANNUM—*Cayenne Pepper*. This article, if considered with reference to the extent of its powers and universal applicability to the cure of disease, may be regarded as one of the most valuable articles of the materia medica. It is unquestionably the purest and strongest stimulant of which we have any knowledge, and is therefore the best article that we possess for increasing the vital energy of the system.

Cayenne possesses none of the narcotic properties of ardent spirits or opium, nor is its stimulant effect upon the system followed by that debility and prostration which always succeed the administration of brandy or opium. Its operation upon the tissues of the body, does not consist in affecting the irritability of the living fiber, but in imparting a sound and healthy stimulus to the vital organs. It strengthens substantially and durably the living power of the animal machine, and should therefore almost always be employed in practice.

LOBELIA INFLATA—*Emetic Herb*. This simple herb, for the variety and extent of its curative powers, stands unrivalled amongst botanic remedies. It acts as an emetic, antidote to poisons, diffusible stimulant, and expectorant. Its stimulant powers, however, are of such a nature as to be soon exhausted; and hence it is necessary to support it by something of a more durable character. Cayenne is admirably adapted to this purpose, and should generally be administered with the lobelia, as well as before and after its operation.

As all the articles composing our materia medica must necessarily be treated upon more explicitly hereafter, we will therefore let the brief notice of the two articles just named suffice; and close this section with a few remarks upon the general effects of approved botanic remedies.

The reader will recollect, that in a preceding section, we took a view of the effects of what have emphatically been denominated the "heroic medicines"—effects so destructive and appalling, that one might rationally conclude they ought, long since, to have been consigned to that oblivion which their dangerous powers richly merit; and into which, in time, they no doubt will be plunged.

But in surveying the thousands of subjects upon which the Botanic practice has been tried, we find not one solitary case of that permanent loss of appetite—that mournful dejection of spirit—that sinking of the soul, and loathing of life, which often follows a course of the severe medicines of the old practice.

The new remedies, says Professor ROBINSON, in his excellent Lectures, "possess an energy which seems to communicate new life to the system, and renovate the feeble, fainting powers of nature." We have often remarked to persons whom we were instructing, that the botanic remedies upon which we are treating, acted in unison and harmony with the laws of animal life, as much so as our food. This may be considered by many, no doubt, as the wild hallucination of an extravagant enthusiast. But we can cheerfully submit to those who have had the most ample experience of the effects of our botanic remedies, whether this assertion is not more consistent with truth than it is to regard calomel, and all the poisonous articles of the *materia medica*, as valuable medicines. "A remedy," says ROBINSON, "worse than the *disease*, is no remedy; it may hold the rank by prescription; but it is an authority as unhallowed as the tyranny of eastern despots." But calomel, arsenic, &c., have thus held their rank, and been prescribed for the sick, and their disastrous powers at the same time deplored, by the best men who have ever adorned the walks of medical science.

The objections of the advocates of poisonous medicines, to the proposition that our remedies act in harmony with the laws of life, have been mostly answered in a former chapter; but there is one of which no special notice has been taken. It is objected to our proposition, that *vomiting* is contrary to, or a reversion of, the laws of nature; because in a healthy state, vomiting never takes place. This objection, however, is more specious than solid; for, although it may be a fact, that vomiting does not take place in a healthy state, yet it often arises spontaneously, and thus affords relief, in a diseased state. Hence we may observe, that although vomiting may not occur spontaneously only in disease, it is in accordance with a law of nature, which only acts in certain conditions of the system; but always with a healthy intention. Now, is there any thing paradoxical in supposing that some-

thing not inimical to the laws of life might be discovered, which would assist nature in performing this operation; aid her in doing what she herself would do, were she capable?—We answer with confidence, no!

Vomiting then is perfectly consistent with the laws of nature or animal life; and a medicine has been discovered, entirely innocent and harmless, which exactly corresponds with that law, and may be administered with impunity to both sexes, and all ages and conditions of life. Indeed, it must follow, that if these medicines act in unison and harmony with the laws of life, there can be no disease of any name or nature, whether of young or old—male or female, but what it is proper to administer it; and, if it be done seasonably and perseveringly, it must have a good effect. Here no time need be lost in hesitating what remedy to prescribe—no anxiety about ambiguous symptoms—no objections to giving the best remedy because of peculiar circumstances, situations or habits of life of the patient. These medicines, acting in harmony with nature's laws, may be promptly administered in all cases; and the more violent and dangerous the symptoms—the more nature's laws are perverted or disturbed—the greater the necessity for applying the best and most powerful remedies.

An acquaintance of ours, formerly a surgeon in the United States' army, and who is enjoying at this time a highly respectable character in private life, observed to us, as a reason for abandoning the practice of medicine, that when he was called to the best friend he had in the world, and was exercising his best skill and judgment to relieve him of his maladies, with all his anxiety and solicitude, he was still involved in uncertainty whether he should kill or cure. What a most deplorable picture does this frank, honest, and disinterested confession exhibit of the old practice of medicine? But different, far different from this must be the feelings of him, who has become fully acquainted with the botanic practice. He goes forth in the noble work of healing the sick, with the fullest confidence in the power, the innocency, and the efficacy of his medicines; being confirmed beyond all doubt, that if he can do no good, he will at least do no hurt.

It is perfectly incredible to those unacquainted with the new practice, the facility with which a healthy action is often in the very worst cases restored to the exhausted organs of the system. Most persons have witnessed the secondary effect of opium administered in large quantities, as is often the case in spasms and convulsions; the extreme dullness, lassitude, headache, and debility, continuing for several days. And who has not become familiar with the morbid effects of calomel—the pale, contracted countenance; the intolerable languor; the great depression of strength; the insupportable anxiety, so

often following through life, those who have unfortunately been made the subjects of experiment with this mischievous article? But nothing of this, says Dr. ROBINSON, is ever "witnessed in the exhibition of the botanic remedies; but, on the contrary, a degree of animation and desire for food, which, to myself, was perfectly astonishing; and I presume must be to every one who perceives it for the first time. It was so contrary to what I had ever before witnessed, and especially in the same patient, who had taken medicine for years before, and always with the loss of appetite, that I could not, without sinning against my own soul, withhold my testimony and approbation."

How often have individuals, after a course of botanic medicines, reiterated the expression, "I feel like a new creature." The animating and invigorating power of medicines which display their remedial effects in restoring a healthy action to the system, must if persisted in, sooner or later, produce consequences well calculated to call forth from the poor dispirited valetudinarian such an impressive ejaculation. The happy consequences resulting from the use of these medicines, are frequently so sudden and unexpected to those unacquainted with their powers, that their expressions have often given evidence of the extacy and transport of their feelings. Indeed, what can be more ravishing to the mind of any individual, than feeling his maladies yield to medicine; and especially, when he has, for years, been on the verge of the tomb; weighed down by a wearisome depression of mind, and unceasing pain, perhaps without even the hope of relief; or of another, who has been violently seized with some acute and painful malady which is threatening him with certain and sudden dissolution? They only can know, who have been thus unexpectedly snatched from the confines of eternity.

We hope to be excused in once more introducing to the reader, a quotation from the learned and talented Dr. ROBINSON, whose glowing language, and excellent observations, we take a pleasure, on every suitable occasion, of borrowing: "Were I to recount," says he, "the incalculable advantages of this new system, it might astonish the ignorant, and admonish the wise; while both would be drawn into an extensive field of remark and meditation." "This botanic medicine purifies the blood, restores the tonic power of the fibers, and of the stomach and digestive organs; reanimates the whole frame; rouses the animal spirits, and acts, as it has been said to act, in harmony with life, in support of health, and in opposition to disease."

SECTION 5.

OF THE HEALING POWER OF NATURE.

VARIOUS terms have been adopted by different physicians, since the days of HIPPOCRATES, to designate this power or principle, almost universally allowed by medical writers to exist. Some, however, whose lofty, aspiring minds disdained the idea of admitting that nature performed any part in the curing of disease, have denied its existence. Such an admission, they think, would be detracting too much from the high pretensions of the professors of medicine. The physician's skill must have more credit than the admission of such a power would accord to it: his study and learning, and profound knowledge of the human system and of medicine, must have more respect and deference paid to them than to suspect that nature has any thing to do with curing disease. Nature, to use the vulgar expression of a professor of medicine, "must be kicked out of doors," and the boasted controller of her laws, assume her place, and dictate her operations.

HIPPOCRATES bestowed upon the healing power of nature, the name of *autocrateia*, but in modern times it has assumed the more comprehensive appellation of *vis medicatrix naturæ*; yet this has no advantages, even amongst the learned, over the plain, simple, and intelligible terms adopted at the head of this section. The idea of such a principle or power, in the animal economy, whether true or false, has descended from the "Grecian luminary," and is not only found in the schools of medicine, but in the mind of the multitude, at the present hour. From the supposition of a healing power in nature, and perhaps other circumstances conjoined, it is probable has arisen an idea of the *efforts* of nature; a doctrine with which many modern writers have become entangled. A fever, for instance, is said to be an effort of nature to throw off morbid matter from the system, and thus restore the patient's health. This appears eminently to have been the idea of HIPPOCRATES and SYDENHAM.

"DR. CULLEN," observes ROBINSON, "says, the increased action of the heart and arteries, which takes place in the hot stage of fever, has long been considered as an effort of nature to repel disease, by physicians; and the cold stage, also, as an effort of the same power. In this sedative state, nature is concentrating her powers, to that formidable resistance against the enemy, which she displays in the strong paroxysm of fever; for it has been observed, that the paroxysm is always in proportion to the force of the chill."

Such ideas as these, are more becoming the age of fiction and romance, when every thing mysterious was attributed to

the influence of its peculiar deity; when the gods were personified, and the passions deified, than they are of the enlightened age of Dr. CULLEN. This doctrine looks too much like the infancy of science, when the operations of life were attributed to a perceptive or sentient principle of which the mind was totally unconscious, to be adopted at this day, when it is admitted that the operations of nature are to be assigned to causes consistent with the effects produced.

But admitting that fever is an effort of nature to relieve herself of some noxious matter, a proposition pretty generally adopted by physicians, and how does the fashionable practice of treating fevers correspond with it? The common custom is to bleed, blister, physic, and starve the patient, and dose him with niter and other refrigerants, for the avowed purpose of *cooling* the fever. The new French practice is to bleed and starve the patient, when, as BROUSSAIS remarks, the disease will soon burn out of itself. If fever be an effort of nature to expel hurtful matter from the system, or if it be a violent action of the living power to repel the assault of disease, it would certainly be more consistent to promote this action, or assist this effort, than it is to retard or countervail it, by cold sedative medicines, whose sole effect consists in allaying the heat and excitement of fever.

It is very evident from the view which has been taken, that the theory and practice of physicans, in febrile complaints, are at variance with each other. If their theory be correct, their practice is inconsistent; and if their practice be right, their theory is erroneous. The fact is, that both are incorrect.

In order to prevent any misconceptions of what we have already written upon the subject, as well as to enable the reader to fully understand what follows, we will give what, from every consideration, we deem a correct definition of the term *nature*. There is scarcely any term in medicine, or any other science, the meaning of which is so vague, or illy understood in general, as this; notwithstanding its almost universal use, both by the learned and the ignorant.

We speak of the works of nature—the operations of nature—laws of nature—efforts of nature, as if nature were an animate, percipient, and rational being, capable of creating matter, of making laws for its government, and, if necessity require, to make extraordinary exertions or efforts to prevent those laws from being infringed or broken. But without taking up more time in multiplying remarks upon this subject, we will come directly to the explanation of the term as we use and understand it, and as we think it ought always to be understood in medicine, when applied to the human system.

It will be recollected, that we have endeavored in a former chapter, to show that life is a forced state; that it is kept up

in the living system, by the application of a foreign power; and, that this power, in its nature or qualities, is and must be a stimulant. Because every article or substance, having the power to support the living system, does it by a stimulant or forcing operation. Now, *nature* is the *susceptibility* of the living organs or fibers of the human body, to be acted upon by stimulants, whether in health or disease; as disease must be cured by stimulants, as well as health and life supported by them. Now the susceptibility of the living fibers of being acted upon, and the capability of stimulants to act upon them, is derived from certain principles innate in both; or which, as we might say, is naturally inherent in them. These principles, as they govern, limit or extend this action, may aptly be termed the law of nature. Therefore, the laws of nature are those rules, principles, or laws, which govern the action or effects of stimulants upon the living system; and the operations of nature may be defined, the effects of those principles, both in the stimulants and the living fiber, mutually acting upon each other.

From this view of the subject, which we deem to be correct, nature must be passive, acting only as she is acted upon by other agents: And, effort, always implying activity in the agent by which the effort is made, cannot, with any propriety be applied to passive nature.

But, although we thus deny the propriety of considering disease as an effort of nature, and from this denial may be also implied a denial of the healing power of nature, or *vis medicatrix naturæ* of the schools, yet we have an unwavering confidence in a power or principle equivalent to it, but susceptible of a different, and we conceive more correct explanation, in accordance with our doctrine of passive nature.

It is obvious, that in disease, the natural healthy stimulant powers are measurably cut off, particularly the food, and the organs being impaired are not capable of properly applying those which remain; hence the body becomes emaciated, and the strength fails. In this situation there is, therefore, less power to act upon and stimulate nature to increased exertion or effort, to repel or throw off disease. Moreover, if it were by an effort of nature that diseases were cured, this event could happen only at the very onset, as it must be admitted that nature's power to make an effort is then at its zenith, and is growing weaker and weaker as disease progresses.

But instead of such a hypothesis as this, it appears much more rational to conclude that the system of man is so constituted by the Author of his existence, that every disease produces an effect which is calculated to remove the cause by which it was produced. And why should any be startled at this? The Creator of all things could as easily implant this

quality or principle in the constitution of man, as to make him susceptible of being acted upon by stimulants: and most surely there is as much necessity for the one as the other.

Without this wise provision of the beneficent Creator, who in all things has an eye to the happiness and preservation of his creatures, every individual who becomes diseased, must, without the aid of medicine, undoubtedly die. It is from this constitution of the human system, that all the indications of curing disease can only with correctness be drawn; it is upon this only that the practice of medicine can be rationally founded; upon this alone can it securely stand and be sustained. It was correctly remarked by one of the fathers of the healing art, that it is only by watching nature, by what critical evacuation she cured disease, that we should be enabled to assist her in restoring health. This fundamental principle of the healing art was laid down by HIPPOCRATES, followed by SYDENHAM, and more recently, by FORDYCE, in the treatment of fever.

SYDENHAM observes of HIPPOCRATES, "this sagacious observer found that nature alone terminates distempers, and works a cure with the assistance of a few simple medicines, and sometimes even without any medicines at all." These observations are founded upon facts familiar with all; as every one must know that persons oftentimes recover from slight indispositions, and sometimes even from serious ones, without the aid of any kind of medicine whatever. And this arises not from the efforts of nature, but from the effects of the disease having a certain tendency to remove the cause which produced it. And thus it is, that art steps in and assists in promoting those salutary operations which the powers of life are, from some cause or other, incapable of accomplishing: or, by art, these effects may be accelerated, and brought about much sooner than they would be by the ordinary, unassisted operations of nature.

We may observe that nature's method of terminating a paroxysm of fever is by perspiration; and this is an effect produced by the disease, which may be accelerated by the use of suitable medicines which act in unison with the laws of life; for both the hot and the sweating stages of fever are the effects of those laws with which DEITY has endowed our constitutions, for supplying the deficiency of living power, which is the cause of fever as of all other diseases, and for removing from our systems the worn out morbid matter retained in them in consequence of this deficiency. But we shall treat more particularly upon this subject, under the head of fever.

What is technically termed a phlegmon, a name applied to boils and other common swellings inclined to suppuration,

may be noticed in illustration of the theory which we have advanced. In cases of this kind, we are often able, at the commencement of them, by promoting the natural healthy actions of the system, to disperse, or scatter them as the common phrase is. But if this cannot be done, they will go on and suppurate, break, and discharge the matter, and heal up sound again. All this may, and often does take place, unassisted by art; but these effects may be accelerated by the use of such means as experience has proved to be efficacious in similar cases. Thus we apply poultices to promote suppuration; and when this has properly taken place, we employ the lancet, or some sharp instrument, to open the abscess to permit the matter or pus to make its escape. Yet all this, in most cases, would take place through the agency of that law of preservation implanted in the human system, without any aid from art. The suppuration would go on and the abscess open, and a cure be effected without human interposition; and, therefore, to promote these effects is considered the true indication of cure which may be accelerated by suitable means. And it ought to be considered by all rational beings, as a blessing arising from the benignant provision of our Creator, that he has not only constituted us so that our pains may be mitigated, but also provided the means of assuaging and shortening them.

We will mention one more complaint by way of illustration of the proposition that the indications of cure are, with the greatest certainty, to be drawn from nature. In consumption, the most prominent symptoms are a cough and expectoration of matter from the lungs. This is nature's method of relieving the lungs, which is the principal organ affected in this most fatal complaint; and who would think of administering such medicines, or using such means, as would be calculated directly to check this necessary evacuation? On the contrary, it is the settled practice to promote the expectoration by all suitable means.

It is not, however, pretended that we are possessed of the knowledge of pointing out by what particular means nature frees herself from all the maladies which she is subject to. Many of them are not terminated by any very marked or prominent symptom; and, in our inquiries upon this subject, we ought to use much judgment in discriminating those symptoms or effects which are really critical, from those that are merely the evidence of diseased action. Thus, the cold stage of fever, and the pain in the head and back, and the dryness of the skin attending both the cold and hot stages, are not to be regarded as critical symptoms or salutary effects; they are merely evidences of diseased action, and the indications of cure

are to use means to produce a contrary state of the system. The hot and the sweating stages are to be considered as critical, because it is by these that we expect relief from the torpidity, coldness, and oppression of the first stages of fever. And thus we might go on and multiply the distinctions between the symptoms which we have termed critical, and those which are regarded merely as evidence of diseased action; but what we have given is sufficient.

Now it may appear from the foregoing remarks, that we disapprove of the terms, healing power of nature, and efforts of nature, because by using these expressions, we convey the idea of power and activity in a passive agent. Nevertheless, with the definition which we have given of the word *nature*, the terms, healing power of nature, will be in no danger of misleading the mind; and is, moreover, perhaps as near being correct as any thing in the language. But the expression, efforts of nature, seems to us so far from the facts, that it ought to be expelled from books, and something more appropriate adopted in its stead. It should be a rule in all science, to adopt terms which express the precise idea we wish to convey; or, if no term in the language will fully and completely do this, adopt one which comes nearest, with such qualifications as will convey the exact sense. But we trust we have been actuated by higher motives, than merely criticising upon language. The explanation of what we believe to be a correct theory, is very intimately blended with whatever there may be of criticism in our remarks. And this we conceive to be of importance no farther than it may be instrumental in preparing the mind to adopt a more rational practice of medicine; and to do this, especially with professional men, it became necessary to improve every means in our power; for as Dr. CULLEN says, "it is well known to have happened at all times, that of the persons who apply to science, the greatest part implicitly receive the doctrines delivered by their masters; which having once imbibed, adhere to them with a degree of bigotry that opposes every attempt towards innovation and improvement."—[*Professor Cullen's Treatise of the Materia Medica*, vol. 1, page 13.]

We will now take leave of this subject after remarking, that with regard to drawing the indications of cure from each particular disease, so little is known that not much reliance can be placed upon it in common, and perhaps but little ever can be, excepting in a few complaints. The grand indications of cure upon which our greatest dependence must be placed, are drawn from physiological and a few pathological facts; and upon these general indications, with a few more local ones, we rest the success of the new practice of medi-

cine; with the firmest convictions that in the common discretion of most families, it will be found a great blessing, and infinitely more beneficial than the old practice of mineral poisons, with all its splendid trappings of literature and science.

CHAPTER VII.

OF SOME OF THE INDICATIONS WHICH IT IS CONSIDERED NECESSARY TO ANSWER IN THE TREATMENT OF DISEASE.

IN the former edition of this work we distributed the present subject into two chapters, each including several appropriate sections, the object of which was to exhibit a comparative view of indications regarded as necessary in both the old and the new practices of medicine. This arrangement also seemed to afford the best means of bestowing upon each subject, that attention which the merits of either appeared to require.

But as the arrangement in the first edition apparently involved a repetition, we determined to connect the consideration of similar subjects under their proper heads; thus making the number of chapters one less in the present than in the former edition.

For the benefit of those who may not have had the opportunity of learning from medical works, the sense in which the term *indication* is employed, we subjoin examples of its application:—In case of nausea, vomiting is the indication necessary to be answered, because nausea mostly arises in consequence of a foulness of the stomach, which indicates the propriety of an emetic to cleanse it. When a dryness of the skin prevails, diaphoretics and the vapor bath are indicated, to promote perspiration, &c. These examples we think are sufficient to enable any reader to understand the meaning of the term.

SECTION I.

OF VOMITING.

SATISFACTORY indications of the propriety of vomiting patients, in the treatment of disease, must have presented themselves in the infancy of medicine. The sudden and sensible relief which must very early have been observed to follow spontaneous vomiting, could not have failed to arrest the attention of the primitive race of man, and induce them to seek the means of producing it artificially, so soon as the least attention whatever was paid to medicine.

With regard to the propriety of artificial vomiting, there is perhaps little difference of opinion amongst physicians; some, however, approving of recourse to it much more frequently than others. But generally, medical writers are more united upon this point, than upon any other indication of cure whatever. And this correspondence of sentiment we regard as of much importance in strengthening our own views of this matter, however little we may respect their opinions on many other subjects. Vomiting, we are satisfied, is a true indication of cure in most if not all cases of disease; but the emetics commonly employed by the Faculty we disapprove of for reasons which have been stated in a former chapter.

Dr. CULLEN remarks, that "when the contents of the stomach may be supposed to be in a morbid state, and noxious to the stomach itself, or to the whole system, there can be no question or doubt about the propriety of vomiting, except in a few cases," &c.

Now we are convinced both by reason and observation, that there can scarcely be any case of disease of a serious nature, in which the contents of the stomach do not become vitiated, and, therefore, "noxious" to the whole system. JOHN HUNTER established the proposition that the stomach was the center of sympathy, to which all physiologists since his time have uniformly assented. It is from this organ that the system receives its nourishment, which is derived from food and drink; and from this obvious circumstance, an intimate connection and association of feeling might rationally be expected to exist between this organ and all other parts of the body. Now as any organ of the system is liable to become diseased or incapable of performing its healthy functions, whereby it also becomes disqualified for receiving and appropriating to legitimate use, its proper proportion of nourishment, it would hence seem necessary that the stomach should be, as it were, apprised of this state of the organ or organs, so that the diseased part may not be overburthened with an excess of nutriment which it could not dispose of.

Whether we have adopted the most happy mode of expressing our ideas, we cannot, of course, decide; but that such a sympathy between distant parts and the stomach does exist, may be demonstrated by the most familiar occurrences. We may daily witness the loss of appetite from the slightest causes; such as rheumatic pains or other diseases of the extremities, and upon trifling indispositions of various kinds; and hence the origin, in all probability, of the popular disposition of ascribing the cause of all diseases to the stomach.

That such a connection and association of feeling as we have been endeavoring to describe, does exist, admits of no doubt; and is rationally to be ascribed to the intimate sympa-

thy which is acknowledged to subsist between the stomach and all other parts of the system. The celerity and the certainty with which impressions are conveyed from the most distant parts of the stomach, is frequently illustrated by the familiar occurrence of severely wounding the finger or hand, which will often almost instantaneously produce sickness at the stomach, and sometimes vomiting. On the other hand, extreme nausea weakens the muscular powers; as a person suffering from this distressing symptom, though otherwise in the enjoyment of good health, is instantly rendered nearly unable to move or stand.

There is also another intimate association of sympathies, to which allusion has heretofore been made, (of which the stomach is the center,) in the organs and process of digestion. There is no function performed in the human system in which so many organs are concerned as in that of preparing our food for the accomplishment of its final purposes in the animal economy. Hence it would seem necessary that a common sympathy should exist between them; and the stomach and intestine next to it, being the focus in which the energies of all the others meet, it is hereby constituted the center of an organic sympathy, differing from the common sympathies which exist between other parts of the system.

Hence we infer from the general view which has been taken of the intimate connection of the digestive organs, and the astonishing sympathy which exists between each of these and the stomach, and between the stomach and every other part of the animal machine, that no serious case of disease could occur in any organ or part of the system, without producing a decided influence upon the stomach. And this necessarily being an unhealthy one, must injure the tone of this organ, and vitiate its contents so as to become noxious to the whole system.

We may likewise further remark, that the animal fluids, notwithstanding the system may be diseased, are continually accumulating in the stomach; but not being appropriated to the purposes of health, are vitiated, and the noxious matter is thus increased in this important organ. From all these facts and arguments, we are constrained to the conclusion that vomiting is indicated in every disease of a violent or obstinate nature, to which the human frame is liable. And upon the same assumption of facts, the conclusion is irresistible that vomiting ought often to be repeated until a healthy action is so far restored that the stomach is capable of performing its healthy functions; because, until this state of the stomach occurs, its contents are liable, from the causes just stated, continually to become vitiated and injurious to the animal organs, as our own experience has repeatedly confirmed.

And whoever has had occasion to vomit a patient six or eight times in the same number, or twice the number of days, and has observed foul vitiated matter of nearly the same appearance and quality discharged at each time, as we have done; and repeated the same process on many different patients, with the same appearance and good effect, will, doubtless, with us conclude, that vomiting is indicated in all violent cases, and may, with propriety and safety be often repeated until a healthy action is restored to the system.

We are well aware that the sentiments of most medical writers, on this subject, are at variance with those which we have just advanced. They disapprove of the frequent exhibition of emetics because "it weakens the tone of the stomach." This is undoubtedly the effect of such unnatural emetics as are in fashionable use; but with such as act in harmony with the laws of animal life, as we believe the *lobelia inflata* does, no such effect is to be apprehended. This article may be administered for many days in succession to produce vomiting, with a continual improvement of the health, and of the stomach in particular, as we can testify both from personal experience and practical observation in a great many cases.

An opinion has obtained very extensive credence in the world, that vomiting is of but little utility if bile be not largely thrown off. This, however, like many other ideas connected with the healing art, is very erroneous. It is a common notion with people generally, as well as with physicians, from whom, of course, the people derive the idea, that the bile in most complaints accumulates in the stomach, and there acting as a cause of disease, must be removed as a preliminary step towards restoring health. Hence it is very naturally concluded, that unless an emetic throws out bile in large quantity, it will do little or no good. We are convinced, however, both by experience and observation, that the ejection of bile from the stomach, is not often necessary or even healthful.

Dr. CULLEN says that emetics not only evacuate the stomach, but that "the duodenum with a portion of the jejunum, may be, and commonly is, evacuated at the same time." He also goes further, and says it is probable that it is brought not only from the duodenum, but "even from the gall bladder and biliary ducts." A valve is placed at the pylorus or outlet of the stomach for the purpose of preventing the contents of the intestines from entering the stomach. The bile, therefore, cannot enter the stomach, unless some violent convulsion forces this valve open. The vomiting of bile must therefore be attributed in general to the violent convulsive action of the emetic by which the vomiting is produced; and its ejection from the stomach ought not to be regarded as a necessary object.

We are satisfied beyond all doubt that an emetic which acts in harmony with the laws of nature, as all medicine ought to do, will rarely produce an evacuation of bile. Such circumstances will only occur when there is an increased morbid secretion of this fluid; which will be found to be far less seldom the case than at present is generally supposed; and when it is, it cannot, in our opinion, be considered so much the cause as the *effect* of disease. But whenever an increased secretion of bile does take place, and, as a necessary consequence, a large quantity of it is poured into the duodenum, spontaneous vomiting may produce an evacuation of it from or through the stomach. Under such circumstances as these, we should of course expect that the operation of the mildest emetic, with the unnatural quantity of bile pressing upon the valve, would force the bile into the stomach from whence it must necessarily be thrown by the process of vomiting. There appears to be no reasonable probability, indeed scarcely a possibility, that bile ever enters the stomach only at the time of vomiting; and we think that when an evacuation of bile pretty uniformly attends the operation of an emetic, it should be regarded as conclusive evidence that such emetic acts contrary to the laws of life. No animal fluid ought ever to be ejected from the system until it has performed the office for which it was designed, unless it has become corrupt and unfit to perform its office; and then nature should be the judge and point to its removal by some unerring indication before an officious interference of art is attempted. And even then we must follow precisely the course of nature, removing the offensive matter by the same channels that she does; as man is so constituted that the natural operations of the system, in health or disease, can with no more propriety be turned from the proper channel than the regular operations of the nicest machinery.

The simple operation of vomiting, independent of any effect which the medicine may produce upon the system, some physicians have supposed to be useful to health, "by its exciting the activity of the stomach itself, and by agitating, as vomiting does, the whole body." But although vomiting may be in some degree useful in this way, yet its principal good effects must be regarded as arising from the cleansing the stomach of its morbid contents, and from its universally stimulant effect over the whole system. This last is especially the case in vomiting with the *lobelia* and some other vegetable emetics. Even in hæmorrhagies, particularly bleeding at the lungs, vomiting has been recommended and resorted to with success.*

*See CULLEN'S *Materia Medica*, vol. II. pp. 328, 329. Phila. Ed. 1812.

We consider the indications which require the exhibition of emetics, much more frequently occurring, and far more readily distinguished, than those requiring the administration of cathartics; and, therefore, emetics ought more generally to be resorted to. We know full well that in this we are at variance with the established principles and usages of the Faculty. But we are in pursuit of truth, and care not whither we go, so that we are led by her unerring light. We are deeply and seriously sensible of the high responsibility which we have taken upon ourselves in attempting to revolutionize the whole practice of medicine; and nothing but what we believe to be truth shall be permitted to burthen our pages. We also know that we may, with some color of truth, be charged with recommending a practice at variance with our theory; but if there be any thing of this character discoverable, we wish it to be imputed to the right cause—the want of medicines which act in unison with our theory. If our theory is correct, it will be a useful hint for those who may attempt to improve the practice. We shall endeavor, with suitable cautions, to guard the reader, wherever there may appear the slightest ground to apprehend danger. The result we must leave to be tested by the criticisms of the learned, or the experience of the multitude.

But to return to our subject. It may be remembered that the stomach, although the process of digestion is commenced and partly performed there, acts principally as a receptacle for our food; which, whilst it remains there, gives out none of its nutritious particles for the support of the body. It is in the intestines that the finish is given to the digestive process; and in them the nutrient portions of our food are separated from the more gross particles which pass off by stool. It is true, that food, almost as soon as taken into the stomach, imparts an energy to the whole system; but this effect, it is conceived, arises in part from the immediate stimulus which the stomach receives from the food; and is instantly communicated to the other parts of the system by sympathy, as we have previously pointed out how the intimate association of feeling existed between the stomach and other parts of the body.

As just observed, the important process of digestion is finished in the intestines, when the food is immediately exposed to the action of the innumerable lacteal absorbents which take up the nutritious particles and pour them into the blood-vessels which distribute them to all parts of the body. Now, it must be evident, with but little reflection, that if the stomach contains any foul or noxious matter, as it unquestionably does in most or all cases of severe illness, the evacuation of it downward must be attended with the hazard of being absorbed and contaminating the blood; thus creating a new source

of irritation to the already disordered system. The morbid contents of the stomach passing through the intestines, as they undoubtedly must, if not thrown off by vomiting, and being taken into the blood, must certainly have a powerful tendency to poison the whole mass of fluids, and thus derange or destroy the peculiar organization which is necessary to continue life. For however the humeral pathology may at this day be regarded as being exploded, it is certainly a fact that the fluids hold an important influence over the solids; and those who look for the cause of disease solely in the derangement or organic lesion of the solids, may, as we think, expect disappointment.

Assuming it as granted, that the principal or most essential purpose of the stomach is a receptacle for the food; and that the nutritious parts are not absorbed by the stomach and conveyed directly to the blood; and further, that nature herself is often so operated upon by the noxious matter formed or received into the stomach as to eject it spontaneously, and thus prevent its passage through the intestines, where it would be absorbed and scattered like wildfire through the system; and when to all this we add the debilitating effects of the cathartics in most common use, the conclusion seems irresistible that emetics are more often indicated, and should more frequently be used than cathartics.

Vomiting when produced by proper emetics, especially with any of the preparations of lobelia, not only cleanses the stomach of whatever may be useless or noxious, and little if any thing more, but it also does it without inducing that permanent prostration of strength which so uniformly follows the employment of active purgatives. And to husband the strength of the sick, not only by rejecting the use of such medicines as have a manifest and direct tendency to weaken the power of life, but by employing such as have the power of restoring the already lost energy of the system, should be a rule never to be lost sight of in the practice of medicine, and cannot therefore be too often repeated, nor too strongly enforced. We do not, however, pretend to claim that every article which we shall hereinafter recommend, acts upon those principles; but we know that the rule which we have laid down is founded upon correct data, and ought to be universally adopted. There are many articles of food that will satisfy hunger, which, notwithstanding, are unwholesome; and so there may be articles of medicine that will cure disease, which we know are not perfectly safe and salutary. We would, therefore, most strenuously and seriously recommend that every article of the materia medica be tried by the aforesaid rule, and every thing of a debilitating nature rejected.

SECTION 2.

OF PURGING.

ALTHOUGH it is found useful to resort to purgative medicines in the treatment of disease, it is not so uniformly beneficial as vomiting, nor are its indications so readily to be distinguished as are those of the latter operation; and from this circumstance, as well as from their decidedly injurious effects when improperly employed, we cannot but recommend caution in their administration. The dangerous consequences of the indiscriminate use of cathartics has, within a few years, perhaps become more apparent, than at former periods; though their debilitating effects have always been known and acknowledged.

“The administration of cathartics is rendered improper by inflammation of the *stomach* or *intestines*, or tendency to it; and by much debility.” Purging, next to letting blood, diminishes the living power more suddenly and permanently than does the fulfilment of any other indication which the fashionable practice of medicine imposes upon its patients. Instances have sometimes occurred in which the administration of an active purgative has produced such a prostration of the vital power that death soon ensued; evidently more in consequence of the debility thus induced, than from the effects of the disease. This has been the case in a high degree in the spotted fever or cold plague, which ravaged many parts of the United States with such frightful mortality, at different periods a few years since.

“Cathartics, especially the more powerful ones, require to be administered with caution, even in diseases where they are indicated by peculiar circumstances, particularly any tendency to inflammation or extreme debility; also during pregnancy, immediately after delivery, during the flow of the menses, and in those liable to hæmorrhoidal affections.” “The too frequent use of them induces wasting of the body, and sometimes renders the intestines morbidly irritable, so that purging is easily excited, while in other habits it renders them more torpid, and induces costiveness.”*

We are satisfied from reasoning and observation, as it is also an acknowledged fact, that stimulating any of the organs or sets of organs of the animal system, beyond the ordinary bounds established by the original constitution of the animal machine, has a direct and invariable tendency to injure the healthy tone of the organ or organs thus subjected to the unnatural excitement, by which they become incapable of per-

* THACHER'S Dispensatory, article “*Cathartics*.”

forming their functions; and the whole system is rendered liable sooner or later to suffer in consequence thereof. Thus, when the intestines are repeatedly stimulated by active purgatives, they lose their tone, and become either "morbidly irritable," or "torpid;" and hence incapable of performing their healthy functions. And, therefore, we think it an incontrovertible rule, that if a certain number of purgings produce any given degree of irritability or torpidity, then half that number will produce either of those states proportionably; though probably not a mean arithmetical proportion; for it is most likely that each successive purging produces an increased bad effect over the one immediately preceding it throughout the whole series necessary to accomplish any given degree of either irritability or topidity. And so it will follow, that one single purging must have a bad effect, proportionally less however, than the one which immediately follows it in any series.

It will be readily understood, we suppose, that our remarks on purging are general, and apply only to the cathartics in common use, and of these, more particularly to such as are active or drastic in their operation, because their certain effect upon the human system is to prostrate its power. Could any thing be discovered which would act as a purgative without weakening the power of life, or injuring the tone of the intestines, its exhibition would much more often be admissible than any of the purgatives now in common use. And considering the goodness of Deity in providing for all our wants in the most exuberant manner whilst in a state of health, how can we but believe that he has been as provident for us in sickness; and in the rich stores of nature furnished something to relieve every ill to which human nature is liable. We have the authority of the eminent Dr. RUSH for this sentiment, and we are firmly convinced of its truth.

"After bewailing the defects and disasters of medical science, Dr. RUSH consoled himself with the animating prospects of that hope which he often proclaimed from his desk, that the day would arrive, when medical knowledge should have attained to that apex of perfection, that it would be able to remove all the diseases of man, and leave not for life a single outlet, a single door of retreat, but old age; for such is my confidence, said he, in the benevolence of Deity, that he has placed on earth remedies for all the maladies of man. I remember still, with a thrill of love and gratitude, to that admired and venerable professor, with what enthusiasm and transport, and prophetic vehemence, he used to pronounce that sentiment at the close of his lectures."*

* ROBINSON—Lecture I.

The new French schools of medicine seem to have fully espoused the doctrine that purgatives ought to be expunged from medical practice. "None but blind humorists could have established those barbarous indications consisting in the expulsion of bile, mucus, saburrhal obstructions, and other matter by which they thought the body infected, without examining the condition of the viscera, or considering that the tissues, whose action is impaired, should alone be attended to. Let candid physicians compare the results of this (the new French) method in the various kinds of *gastro-enteritis*,* with those obtained by that perturbing, incendiary, or evacuating treatment so generally employed in fevers, and let them decide. It is at the bed side that the physiological doctrine is most constantly triumphant."† In another place, the same author, in apparent reference to the use of purges in fever, calls them "sanguinary remedies," "keeping up or exasperating the disease, at the same time that" the physician "was attempting to supply nature with the means of returning victorious from a conflict in which she experienced a greater resistance from the treatment than from the disease."‡

We are of the opinion, however, after all that has been or can be said with regard to the injurious consequences resulting from the use of purgatives, that a large portion of the evils have arisen from the use of improper medicines; and we are not aware that any discovery has yet been made of a cathartic which is certainly known to act in harmony with the laws of life. Should any one be fortunate enough to detect such a remedy, and communicate it to the world, he will deserve the lasting gratitude of the human family.

The common practice of exhibiting purgative medicines as a remedy for costiveness is highly reprehensible. The cause of this complaint is a loss of tone in the intestines; and, as has previously been shown, the frequently repeated use of such medicines increases the difficulty, or it may eventually produce the opposite state, morbid irritability. The true indication in constipation of the bowels is the use of stimulating bitter and laxative tonics.

The only case in which we conceive purgative medicines are very obviously indicated is in a common looseness of the bowels or diarrhœa, and in most cases of spontaneous purgings. But even these have been and can be, no doubt, cured again and again, by the use of general stimulants, such as cayenne, alone, or combined with astringent tonics, with the

* The new French name for fever; or rather the local disease which they suppose is the cause of fever.

† Begin's Therapeutics, page 183. ‡ Ibid. p. 23, 24.

happiest effect. We have the authority of Dr. CULLEN* for believing that purgatives produce an afflux of the blood to the internal parts, thus drawing the determining powers inward, and checking perspiration. If this be the fact, it is evident that the use of purgative medicines must be injurious in many cases of disease; and in fevers might even justify the strong language of BEGIN, which we have quoted in this section.

There is another objection to the use of purgatives, connected with their debilitating effects, worthy of being noticed. Their operation, it is said, "extends to the whole length of the alimentary canal, from the upper orifice of the stomach to the lower extremity of the rectum," and consequently "serve to evacuate the stomach."† If this be true, what could be anticipated from purging but pernicious consequences to the system already laboring under debility and the effects of a retention of the worn-out matter retained in consequence of checked perspiration, which attends the greater number of diseases, and particularly those in which purgatives are most frequently administered? The noxious matter which, as has been shown, more or less exists in the stomach, in most cases of disease, is carried by purgatives down through the intestines, and exposed to the action of the lacteal absorbents, which take it up and transfer it to the blood-vessels, whence it is spread through every part of the economy to poison and deprave it. And if there be any wholesome food in the stomach, this is as likely as the noxious matter to be carried out before it is suitably prepared, and being hurried on through the intestines, cannot afford that nourishment which it ought to; and moreover debilitates and weakens the tone of the stomach by thus prematurely hurrying out its contents.

The contents of the intestines are also hurried off in the same premature manner, not allowing time for the lacteals to absorb all the nutritious or stimulating particles from the chyle which is destined to be submitted to their action. The sudden abstraction of so much matter from the intestines as is often removed by powerful purges, produces much debility merely by the loss of so much bulk, the mere magnitude of which, by keeping the intestines properly distended, seems to be of much importance in the animal economy in some way or other. A modern writer, (EWELL,) advises persons laboring under severe diarrhoea to be careful not to encourage or allow of too great discharges at one time, as fatal consequences have resulted in such cases from the want of proper care.

Thus we may see that every effect produced immediately upon the intestinal canal by purges is productive of injury;

* CULLEN's *Materia Medica*, vol. 2, pages 349—'50.

† *Ibid.* vol. 2, pages 345—'46.

and therefore their use ought, as a general rule, to be dispensed with. A natural action of the intestines is what is wanted, which may generally be procured by the use of general stimulants and tonics, and by the aid of injections or clysters, of which more will be said hereafter.

SECTION 3.

OF BLEEDING.

Blood letting is resorted to for the purpose of reducing the quantity of blood, and removing inflammation. It has also been supposed by the vulgar, and countenanced, if not believed in, by enlightened physicians, that blood letting was indicated by a vitiated state of the blood, and that the *bad* blood could be drawn out by bleeding, and the *good* left in the veins. We cannot attach importance enough to such an idea, however, to take the trouble to confute it.

The custom of blood letting has long been used in medical practice; and, although it has often been the means of removing the acute pain attending violent inflammation, as in pleurisy, yet it is sure to produce permanent debility, from which the patient slowly recovers; and many instances are known and recorded in which very alarming and even fatal consequences have ensued, either immediately or within a few hours or days. There are no means used for the cure or alleviation of disease, by which the vital power can be so suddenly or permanently reduced as by bleeding; and consequently, none by which so much mischief is likely to be done. It has been asserted by a late writer, that, during a certain period, more persons perished by the lancet, than by "war, pestilence, and famine." Even Dr. RUSH, who might be considered an honor and an ornament to any country or age, has been accused, and no doubt justly, with destroying his patients by the pernicious practice of blood letting. His treatment of yellow fever, which was severe purging and copious bleeding, it was declared by Dr. CURRIE, could, "not fail of causing death!" Indeed, the certain tendency of letting blood, according to the new physiological theory, must be to assist disease to accelerate the fatal period, because it prostrates the living powers. The blood is the vital stream whence the whole animal system is nourished and sustained, in disease as well as health; and in proportion to the reduction of its quantity must be its morbid effects upon the system, and its debilitating influence over the vital functions.

The knowledge of these physiological facts must unhesitatingly lead us, *a priori*, to detest the "incendiary" custom, so

universally adopted, of wasting the vital fluid in all inflammations, and in many cases of fever. Such practice can only be tolerated in the absence of the knowledge of more rational and better means; but the ignorance which leads to such a suicidal course—a course so contrary to the best established principles of physiology, ought to receive no kind of countenance, respect, or toleration from enlightened men.

“The question of the morbid effects of the loss of blood,” says Dr. HALL, “appears to me not to have sufficiently engaged the attention either of the physiologist or practical physician; yet to both they offer objects of inquiry of great interest and importance.”* The work from which this quotation is made, is probably the first ever published principally devoted to this important part of medical practice; and the accurate details of a variety of cases, and the relation of many disastrous consequences resulting from blood letting, very clearly evince the author’s close attention to the subject upon which he treats. It is a work which could not fail to be interesting to every medical practitioner, and especially to such as are in the habit of indiscriminate repeated bleedings.

The same author, in speaking of the remote morbid effects of loss of blood, says, “of the more obvious and striking effects of loss of blood, or those of reaction, are such as to suggest the idea of increased power and energy of the system, and of increased action of its organs, and to lead to an erroneous and dangerous employment or repetition of the lancet, when a directly opposite mode of treatment is required: while the state of actual but protracted sinking frequently resembles a state of oppression of the brain, or of congestion of the lungs, so accurately, as to prompt the unwary practitioner to a still more suddenly fatal use of the lancet.”—[page 12.] Again he observes: “That the effects do not correspond with the measure, or even a comparative measure, of loss of blood in different subjects. Sometimes there is no reaction. At other times the reaction is excessive and even violent. In a third instance we may be surprised by the sudden accession of a sinking state, or even of the symptoms of immediate dissolution.”—[page 13.]

The observations of Dr. HALL are but fatal premonitions of the disastrous effects of the lancet in the most experienced hands; whilst the aggregate amount of mischief which has arisen from this pernicious practice in the hands of all who have been dabbling with it, is, and must forever remain, beyond the reach of human calculation.

* Researches principally relative to the morbid and curative effects of loss of blood; by Marshall Hall, M. D. page 11.

The immediate effects of the loss of blood, as stated by Dr. HALL, are, syncope, convulsions, delirium, coma, and sudden dissolution.

Cases of syncope or fainting from the loss of blood, are familiar to every one who has often witnessed the operation of blood letting. "From this state the system usually recovers itself spontaneously, if the cause by which the syncope was induced be discontinued. The principle by means of which this recovery is effected, may, without involving any hypothesis, be denominated reaction."*

Convulsions stand next after fainting in frequency of recurrence, "and are most apt to occur in children, and in case of the slow and excessive detraction of blood."† "A physician aged thirty-four, became affected with inflammation of the larynx. He was bled freely on two successive mornings at his own instance. In the afternoon of the second day, the disease being unsubdued, he was bled a third time, placed in a rather inclined position upon a sofa. The blood was allowed to flow until thirty-four ounces were taken. He then suddenly fell upon the floor violently convulsed; and he remained for some time afterwards in such a state of syncope as to render his recovery very doubtful; being carried to bed, however, and cordials being administered, he slowly recovered." "A very intelligent surgeon in the neighborhood of London, in bleeding a clergyman to the extent of twenty ounces, whose idiosyncrasy in this respect was not known, was compelled to remain with him during the whole of that day; and notwithstanding frequent recourse to brandy, continued long apprehensive for the patient's life."‡

"Delirium occurs as an immediate, as mania occurs as a more remote, effect of loss of blood.

"A young man, aged thirty, had lost much blood from the arm and by leeches, and under the influence of a brisk purgative, fell into complete syncope; instead of laying him recumbent, his ignorant friends kept him in the erect position during an hour and a half, and thus protracted the state of deliquium during the whole of this period.|| He was found perfectly colorless and senseless, and affected with rattling in the breathing. Being laid down, he made a convulsive effort to expectorate, and the blood rushed into his cheeks; in half an hour he began to recover, opened his eyes, and complained of deafness; the pulse was frequent. The rattling gradually subsided, and he gained a degree of warmth under the influence of brandy and fomentations.

* Loss of Blood, page 17. † Ibid. ‡ Loss of Blood, page 18.

|| It ought to be borne in mind in all cases where loss of blood produces any unpleasant or alarming symptom, that the patient should be laid immediately in a horizontal position.

“To these phenomena succeeded severe rigor, followed by great heat of skin, constant delirium, with continued though diminished deafness. The delirium did not cease during the night. On the following morning it was only occasional, and the deafness slight. This state was followed by numbness of the feet and legs, and great fear of choking on going to sleep. The patient gradually recovered.

“Another patient fell and hurt his back. On three successive days he was freely bled from the arm and by cupping, and purged. On the evening of the third day he was again bled. This was followed by faintness, sickness and retching, and much affection of the head.

“I saw this patient very early on the following morning. There was great pallor, tinnitus aurium, with intolerance of noises, and of light, and sighing breathing. To these symptoms succeeded great hurry and alarm of mind, with extraordinary noises and visions, delirium, weeping, and sighing. At length, continued delirium supervened, and finally wore out the patient.”*

“It is important to remark, that delirium may occur even from the loss of a very small quantity of blood, in those cases in which there is what I have ventured to term an intolerance of loss of blood; or, in other words, great susceptibility to its effects.”†

With regard to a state of coma or lethargic drowsiness, Dr. HALL remarks: “We may be called to patients so perfectly comatose, immediately after blood letting or hæmorrhage, that we may be in doubt for a time whether the case be not apoplexy.”‡

A state of coma or sleepiness is peculiar to children; and, according to Dr. HALL, may arise not only from the exhaustion attendant on blood letting, but from exhaustion occasioned by other means, and particularly purging, and often from spontaneous diarrhœa. In his remarks upon the use of blood-letting in the treatment of the diseases of infancy and childhood, he says: “This tender age is far more liable than later years, both to the insidious, and the sudden, fatal effects of loss of blood; it therefore requires to be viewed with still greater care and watchfulness.”||

Of cases of sudden dissolution from the loss of blood, Dr. HALL gives a number of instances, in different parts of his interesting work. He copies from the London Lancet, vol. xi. p. 94, the case of a man who had fallen from a scaffold, and received an injury about the thorax. As this case is too lengthy for insertion verbatim, we will abridge it by confining ourselves to the most important particulars, and the final result.

* Loss of blood, pages 19, 20.

† Loss of blood, pages 20, 21. ‡ Ibid, page 22. ||Ibid, page 166.

This patient, immediately on entering the hospital, was bled to eighteen ounces, and at noon of the same day lost twenty ounces more, which gave him relief; the blood exhibiting a decidedly inflammatory character. Next morning, having passed an indifferent night, and the pulse quick, he again lost eighteen ounces of blood, which was again repeated, in similar quantities, at noon and night. The blood drawn this day had not the slightest appearance of inflammation.

The following morning he appeared much better; talked cheerfully with a friend, and expressed himself free from pain. The pulse was small and jerking, but very compressible. In this situation, the patient was ordered to lose eighteen ounces more of the vital fluid, from the supposition that the state of the pulse indicated inflammation, instead of resulting from the exhaustion of repeated bleedings. "The dresser, however, perceiving what effect even the loss of a few ounces had, desisted from drawing any more. About two hours subsequently, Mr. LAWRENCE saw the patient, and concurred with Mr. LLOYD, as to the propriety of the further abstraction of blood; they therefore directed twenty ounces more to be drawn.—The pulse after this time became a mere flutter, and the man only survived a few hours!"*

Dr. HALL gives many other cases of dissolution, evidently from exhaustion by blood letting; but this one will suffice to close the dark catalogue of the work of death from this incendiary practice. Similar cases might be added from other sources, and there is no doubt that most physicians of extensive business who have addicted themselves to this fatal practice, might, after reading Dr. HALL, call to mind cases in which they had evidently contributed to the work of devastation and death; though at the time, they might have been perfectly unconscious of contributing to such fatal result.

When we take a physiological and pathological view of the blood, we shall certainly be astonished that more lives than is apparent, have not been lost by blood letting.

We have elsewhere noticed the fact, familiar to every physiological student, that the blood is the medium through which the system receives all its nourishment; and, indeed, the whole vital power is undoubtedly concentrated in this fluid. After it has received the nutritious parts of our food from the intestines, and the stimulant principle from the air in the lungs, it traverses the whole body, for the purpose of supplying to all parts the portion of nourishment and stimulus necessary for promoting the functions of life. This distribution of nutriment and stimulus is more necessary in disease than in health; because disease is the result of a deficiency of the vital power,

* Loss of blood, page 24.

and which, when uninterrupted, keeps all the organs in vigorous action and healthy tone. Moreover, it yet remains to be proved, that nature produces an exuberance of the purple flood any more than of flesh or muscle, even in the best state of health; and in disease, there are certainly fewer materials from which to form an exuberance of blood, or even to furnish a requisite supply for the ordinary purposes of life.

How injurious then must it be to the system, already suffering from the abstraction of vital stimulus, to abridge the very means which are provided to replenish and sustain its wants, by wantonly wasting the vital fluid? By diminishing the quantity of blood, the whole system, even the minutest fiber, suffers a diminution of nutrition and vital power. Even the mental energies must suffer, because the organs of the mind, in common with all others, are sustained by the same means and from the same source. Thus it may be seen, that although the sick patient may possess the same capacity for comprehending ordinary matters, he is incapable of abstruse reasoning or profound thought. Indulging in any thing of this nature is sure to injure his health, and should therefore be avoided.

It may be said that plethora and inflammation furnish pathological facts capable of overturning all the theoretical reasoning which has been, or can be advanced. We are well aware that theory must always yield when it comes in conflict with experimental facts. But we are equally well aware, that even experience, under the influence of a false theory, has often made wrong impressions upon the mind, and led to a corresponding error in practice. Thus we see in cases of plethora or apparent fulness of blood, that the abstraction of a part of it appears to afford relief; but at the same time it produces a degree of permanent debility, and in some instances has occasioned death. In inflammation too, bleeding often affords relief to the most urgent symptoms of pain; but in this, as in plethora, permanent debility is induced; and in some cases repeated bleedings which appear necessary to subdue the violent symptoms, terminate in death. Instances of this kind might be multiplied.

Both these states of the system may be relieved and cured by a simple process, with perfect safety and far more certainty than by letting blood. The means employed will possess the advantage of acting in harmony with the laws of life. Of these means we shall speak more particularly hereafter.

It has been urged in favor of blood letting, that it is indicated by the natural operations of the system. But admitting this reasoning with all the force that can consistently be attached to it, and it argues nothing in favor of using the lancet. We allude to bleeding at the nose, which often relieves the

headache. Epistaxis, or bleeding at the nose, is principally, if not wholly, caused by an over determination of blood to the head, and is produced mechanically, by inordinate pressure upon the tender fibers of the vessels, causing them to burst. But this mechanical force rupturing the vessels and giving vent to the restrained fluids, cannot be considered as harmonizing with the laws of nature, because these never exert mechanical violence sufficient to injure the most delicate fiber or excite the most susceptible nerve. If the practice of blood letting received any countenance from spontaneous hæmorrhage from the nose, bleeding ought only to be encouraged from that organ, and in such complaints as bleeding from the nose relieves. But even spontaneous bleeding from this organ, if of frequent recurrence in the same subject, ultimately induces a weakly state of the body.

SECTION 4.

OF BLISTERING.

THE application of epispastics or blistering plasters, is considered to be indicated in many cases of pain and inflammation, and in fevers of the typhoid type, to “communicate a stimulus to the whole system, and raise the vigor of the circulation.”*

The most common article in use for producing a blistered surface, is the powder of the cantharis, or blistering fly. There is no doubt that the application of blistering plasters often removes pain and inflammation, and may also affect the general circulation; but this may be done as well without producing a blister as with, and save all the painful and disagreeable consequences of the ulcer which succeeds a blister. The principle upon which this relief is obtained seems not to be well understood, it being attributed to the pain it excites in one case, and the inducing a different kind of action in the other; in the one case removing pain, and in the other, morbid action or inflammation.

The facts are, that in all cases of pain and inflammation, or in any other case in which blisters afford relief, there is want of sufficient action in the vessels of the affected part. Pain, we consider in all cases, an evidence of obstruction, and is always an attendant upon active inflammation. The obstruction to the free passage of the fluids through the vessels, is what causes the pain. Now, how the “exciting one pain” or

*Hooper's Dictionary.

obstruction can “relieve another,”* seems to be beyond the reach of philosophy to comprehend or account for satisfactorily. The only thing that approximates towards satisfying our mind, is to suppose the flies to act as a stimulus which removes the obstruction that causes the pain and inflammation; whilst the pain and inflammation caused by the flies is to be considered as arising from the too great stimulant power of the flies, or their stimulating in an unnatural manner. Because whatever stimulates the system, either generally or partially, in unison with the laws of nature, will not produce blisters.

Moreover, it is agreed upon all hands that the evacuation of fluid which takes place from a blister, is too inconsiderable to have any influence in removing disease. It must, therefore, do it by opening the obstruction which causes the pain and inflammation. Pain, according to our theory, is principally caused by an obstruction to the passage of the fluids through the painful part; and hence we infer that the Spanish flies afford relief by stimulating the diseased vessels into higher action, whilst the vesicatory or blistering process produces no good effect whatever.

All the good consequences resulting from the application of a blister plaster may be obtained from a strong preparation of vinegar or brandy and cayenne pepper, without the protracted painful suffering consequent on the ulceration of blisters. The cayenne is a powerful stimulant, producing a very sensible pungent effect wherever applied to the skin; and so far as our own experience goes, always affords relief in cases where we had reason to expect blisters could have been useful.

Thus we think it manifest that it is not by “inducing an action of a different kind in the same or a neighboring part,” that a morbid operation is corrected; nor does the “exciting one pain” ever “relieve another;” but it is, we confidently affirm, by removing the obstruction and restoring a healthy action, that pain and inflammation are removed. It is true, that where a morbid action exists, the inducing of a different action, providing that be a healthy one, is correct physiological doctrine; but this does not appear to be the principle upon which the Spanish flies have heretofore been supposed to operate. Indeed it would seem that it had never entered the minds of physicians that a diseased action could, by salutary medicines, be changed at once into a healthy one; but must first be altered to some other unhealthy action, and then, by the powers of nature, restored to proper order. We must confess that we have little partiality for, or confidence in, remedies that act upon this principle. We want medicines and means which exercise a direct influence upon the

*Thacher's Dispensatory, page 109.

diseased organ, and without any circumvolutions restore a healthy action in the unsound part.

The practice of exciting blisters with the Spanish flies is objectionable on other accounts besides the protracted soreness which they produce. Their use "is often followed by a stranguary, accompanied with thirst and feverish heat."*

Dr. HILLARY, an English physician, is not so modest as Dr. THACHER, in his remarks on the effects of cantharides, or Spanish flies, as they are more commonly denominated. He says, "I have long observed that blisters are too frequently, and too often improperly used, as they are now so much in fashion." "It is very probable, that we have no one remedy in all the materia medica, that is so frequently abused, and so often improperly applied," "not only in too many cases, where they cannot possibly give any relief, but too often where they must unavoidably increase the very evil which they are intended to remove or relieve. How often do we see them applied, and sometimes several of them, by pretended dabblers in physic, not only where there are no indications for applying them, but where the true indications are against their application; as, in the beginning of most fevers, and especially those of the inflammatory and of the putrid kind, where, in the first, the stimulus of the acrid salts of the cantharides, which pass into the blood, must unavoidably increase both the stimulus and the momentum of the blood, which were too great before, and so render the fever inflammatory, and all its symptoms worse.

"And it is well known that the cantharides contain a great quantity of alkaline, semi-volatile salts, which pass into the blood, though they are applied externally; and attenuate, dissolve, and hasten and increase its putrefaction, which is also confirmed by the putrid alkaline acrimony which they produce in the urine, with the heat and stranguary, which it gives to the urinary passages."

SECTION 5.

OF STARVING.

THE practice of starving is very common to nearly all classes of physicians, but it is most peculiar to the new French schools of medicine. In some severe cases they push the fulfillment of this indication to its utmost limit; stopping only at the confines of starvation. "The first indication," says BE-

*Thacher's Dispensatory, page 284.

GIN, "in acute or chronic gastritis, [which term he appears to use as he does gastro-enteritis, as synonymous with fever] is abstinence." And, "in many cases, the physician is placed between the fear of exasperating the disease by allowing food, and the danger of causing, by a longer abstinence, the stomach to become irritated by a continued absence of the materials it requires." "The call of the patient cannot be a safe guide for the physician."*

The fashionable mode of treating disease by the administration of such remedies as are inimical to the laws of animal life, as we have shown that the greater number upon which physicians of the old school place their principal dependence do, no doubt renders it improper to take food; although the appetite of the famishing patient might even require it. The hostile remedies, perverting the very order which they are intended to restore, make it improper to gratify the calls of nature, because, in this perverted order of the vital laws, the organs are not in a state or capacity to properly manufacture and appropriate to their legitimate purpose the materials which exhausted nature craves.

But when the system is under the influence of remedies which act in harmony with the laws of animal life—remedies which are hostile to disease and death, and which are calculated to restore to harmony that discord of the animal functions which is the effect of all disease; we say, when the human system is under the influence of such remedies as these, the calls of nature for food and drink ought always to be gratified. True, a factitious appetite may occur, which may need restraining; and the same precautions may be necessary during the convalescence from fever and other acute diseases, when the appetite becomes too strong for the impaired tone of the organs; but who is there so deficient in judgment that cannot, with a little reflection, regulate the quantity to suit the state of the stomach?

The desire for food and drink, being the result of that instinctive feeling, common to the whole animal creation, by which the individual is preserved, ought always to be gratified; taking special care, however, to distinguish between the morbidly insatiable appetite which is sometimes met with in some complaints, or the too greedy one of convalescents, and the natural calls of the living powers for something to sustain its operations.

* Begin's Therapeutics, vol. I. pages 172, 173.

SECTION 6.

OF INJECTIONS.

THE employment of injections or clysters appears to be of very ancient origin; having been learned, as is said, from the Ibis, a bird worshiped by the Egyptians "from the services it did in devouring great numbers of serpents, which they observed injured by their stench when dead, as much as by their bite when alive."* This bird is said to be similar to our king-fisher, and when sick was perceived to inject with its long bill the water of the Nile into its fundament, whence the people of Egypt are said to have learned the use of clysters in curing disease.†

The great value of injections, however, seems in general but imperfectly appreciated even by the medical Faculty, excepting in a very few diseases. And in these they are comparatively of little use, from their being usually composed of inert materials. The most predominant idea is that clysters are only indicated by an obstinately costive state of the intestines; and in ordinary cases of this kind, it matters little what enters into their composition. But in diarrhœa, dysentery, fevers, and all general and violent complaints, and in all diseases of the bowels, medicines highly useful in removing the disease may and ought to be introduced into the system in this manner. The employment of medicated injections stimulates the intestines and muscles concerned in the expulsion of the fæces; whereby, in costive habits, the necessary daily evacuation of excrementitious matter from the intestines is accomplished without the aid of injurious laxatives or more debilitating purgatives.

The great importance of injections to promote the regular daily dejection of the fæces, particularly in fevers, and especially those of the typhoid type, ought to be indelibly impressed upon the mind of every individual, and particularly those who have the care of the sick. None, perhaps, but those who have made a profession of medicine, or who are well experienced in nursing, can be aware of the high importance to the sick of having regular stools. And in no way can they be so cheaply, expeditiously, and advantageously procured as by the use of clysters. The great relief which is very often and readily obtained in this way, will far more than compensate the sufferer and his or her sympathizing friends who may have to administer them, for all the seeming indelicacy attending this invaluable mode of exhibiting medicine.

* SMITH'S Treatise on Fever, page 375. † LANGIUS, lib. 11, ep. 11.

In cases of drowning, or of suspended animation from any other cause, we have no doubt that injections of warm stimulating medicines would be of more consequence in restoring animation than any thing else that could be advised. The intestines are known to be the most susceptible of any organ within the immediate reach of medicine. Moreover, it is said, that in drowning, the intestines exhibit traces of vitality after life has disappeared from every other part of the system. If these propositions are correct, and physiology and pathology we think will confirm them, it must be evident that stimulating injections, by warming and exciting the intestines, are admirably adapted to resuscitate persons apparently dead from drowning.

It was the remark of Dr. THOMSON, who has the chief merit of introducing clysters into extensive use, that "they are perfectly safe in all cases, and better that they be used ten times when not needed, than once neglected when they are. In many violent cases, particularly where there is danger of mortification [of the intestines,] patients may be relieved by administering medicine in this way, when there would be no chance in any other. I do, therefore, most seriously advise that these considerations be always borne in mind; and that this important way of giving relief be never neglected."*

In the complaints peculiar to infants and children, injections are peculiarly serviceable. From the nature of the food of infants, and the too common indulgence of children in unripe fruit and other unwholesome trash, their complaints mostly arise from derangements of the intestinal canal. The irritation of teething is also another fruitful source of derangement of the intestinal functions. In all these cases, injections are found to be peculiarly serviceable.

A modern author† speaking of the use of medicines in this way, says "Glysters are of the highest importance in the practice of medicine; and many are lost by the neglect of this invaluable mode of administering remedies. Were I confined to one remedy for the cure of disease, I should choose glysters. They are not only safe, but highly useful in every disease in its forming stage. In dysentery, and many other diseases, no physician can acquit his conscience for an omission of this remedy. Every family should have an apparatus for this purpose, and view it as a matter of the highest importance to keep it in clean complete order." It is, perhaps, unnecessary to add, that we fully concur in the sentiments contained in this quotation. We would, however go further than Dr. JAMESON, and say, not only in the forming, but in every stage of disease, clysters are of the highest utility. And

* New Guide to Health.

† Dr. JAMESON.

with him we feel it our duty to enforce the propriety, nay, the necessity of every family's having a syringe, that they may be provided for all occasions of emergency. In cases where medicine or food cannot be swallowed, either from a diseased state of the œsophagus, from spasm, as in hydrophobia, or in case of suspended animation, both food and medicine may be introduced into the system by injection, by which means life may often be prolonged, and the chances of cure multiplied.

Dr. JAMESON further remarks, "if they, (clysters) are so beneficial, why so childishly neglect their use because, to those unaccustomed to them, they seem indelicate; but what has delicacy to do with matters which jeopardize human life? Much of the indelicacy, however, attending the former method of administering injections with a bladder and pipe, may be avoided by the use of a pewter syringe. This convenient and useful instrument, after being charged, must be placed under the bed clothes, and the patient can introduce the pipe, when the attendant can throw up the contents of the syringe and withdraw it from the bed, without any exposure of the patient whatever.

SECTION 7.

OF VAPORIZING, OR THE USING OF THE VAPOR BATH.

THE importance to health, of the vapor bath, although very early known and often recommended, has been much neglected in most civilized communities, until within a few years Dr. THOMSON and his agents have given such an impulse to public feeling in the United States that it appears likely once more to be extensively adopted in medical practice. It seems astonishing indeed that this available and ever useful means of mitigating disease, should have been so nearly abandoned. It is attributable, however, to the same cause which ever has and perhaps ever will prevail in the walks of refinement, by which society is driven from the paths of nature into the vain pursuit of some artificial phantom, as a substitute for the more substantial and less expensive gifts of Nature's God.

It has heretofore been shown that disease is a failure of the vital power of the system; and hence when this takes place, a degree of languor or sluggishness of the animal functions ensues; the secretions and excretions do not progress with suitable activity; perspiration especially is retarded, which adds an additional source of irritation to the diseased organs.

As a necessary consequence the animal fluids become thick and viscid, and of course cease to circulate with the requisite facility through the minute capillary vessels, which increases the load and oppression of the already weakened struggling energies of life.

Hence the surface of the muscles, and of all the internal viscera, are insufficiently moistened with the fluids which soften and lubricate their surfaces that they may glide over each other easily and smoothly without too much friction; and, furthermore, the thickened juices, although they continue to flow sluggishly on, do not pass through the vessels in that agreeable manner that they do in health. The pain and soreness of the flesh; the headache; the lassitude; the debility, and the often extreme aversion to muscular exertion or motion, some part, or the whole of which symptoms so uniformly usher in an attack of fever, the most universal complaint of the human family, may readily be traced to such a state of the system as we have described.

Now the application of heat, in any form, to the human system, it is well known, acts as a powerful stimulus; but applied in vapor or steam, is admitted to be far more penetrating and efficient than it is in any other manner. It adds vigor to the living power, and penetrates and relaxes the constricted vessels; stimulates the organs; attenuates or thins the various fluids, and thus promotes the secretions and excretions; whence the muscles and viscera are again properly lubricated; perspiration returns; the worn-out morbid matter is removed, and all the functions of life are again performed with healthy activity, and health and vigor assume their empire over the frail and complicated tabernacle of man.

Heat and moisture, that is, vapor or steam, applied to the surface of the body, is both emollient and anodyne. It relaxes the rigidity of the skin and external parts, in all cases of fever and inflammation; and, in cases of broken or dislocated bones, cloths wrung out of hot water and applied as hot as can be borne, will relax the muscles so that the bones may be replaced, if done soon after the accident, almost without pain. And in cases of the most excruciating pain, indicating, as the old practitioners would judge, the use of opium or the lancet, the proper use of the vapor bath will afford the most sudden, efficient, and permanent relief. It procures this kind of relief because it acts upon physiological principles; removing the cause, and restoring a healthy action. The cause of pain, as we have before observed, is generally an obstruction in the painful part, excepting cases where pain is produced by sympathy. The application of heat and moisture, as we just remarked, penetrates the system; relaxes the constricted vessels; attenuates the fluids, and enables the living power to

perform its office, and thus relieves in a mode which opium nor bleeding can never do. Hence too, the pain and soreness; the headache and stupor; the lassitude and debility; and the sluggishness of the fluids, which characterize the first onset of fever, are removed on the same principles.

The usefulness of vapor or steam, is not confined in its application to the skin. In painful inflammatory affections of the lungs, attended with internal soreness and difficulty of breathing, inhaling the warm vapor of vinegar and water, affords the most grateful relief. The same thing is also useful in bad cases of sore throat of every description.

To the foregoing, we also beg leave to introduce the testimony of others in favor of the vapor bath. The Domestic Encyclopedia, on the subject of baths, says, "We allude to the sweating or vapor baths, which," in Russia, "are used by persons of every rank and age; in almost every disorder, before and after a journey, hard work, &c. These are frequented at least once a week, or as often as possible, whether in a state of health or sickness. The extraordinary degree of heat produced by the evaporation of water thrown upon red hot stones in a close room, raises the thermometer to 146 or 168 degrees; the latter of which numbers is a degree of heat considerably above that which melts wax, and only twelve degrees below that for boiling spirits of wine. In such a bath, the Russians lie naked on a bench, and continue there, notwithstanding a profuse perspiration, sometimes for two hours, occasionally pouring hot water over their bodies; thus, some, with a view to promote perspiration, and completely open the pores, are first rubbed, and then gently flagellated with leafy branches of birch, while others wash their bodies with warm or cold water, and all of them at length plunge over head in a large tub of water. Many, however, rush out almost dissolved in sweat, and either throw themselves immediately from the bath room into the adjoining river, or in winter roll themselves in snow during the most piercing cold, without suffering any inconvenience, and probably with advantage; for we understand that rheumatism is scarcely known in Russia; and there is great reason to attribute this exemption to the use of the vapor bath." By exciting an unusual degree of perspiration, they (vapor baths) promote cleanliness, while they render the skin soft and smooth.

Dr. THOMAS, in treating of the means of curing rheumatism, recommends a warm, or a tepid bath, according to circumstances. "Both remedies, however, may," he says, he thinks, "be considered of inferior value in the cure of rheumatism, when compared with the topical, and sometimes general use of hot water in the form of vapor. Whenever the joints are very rigid, and the pain upon motion exquisitely severe, or where

the muscles have become contracted and almost paralytic; and indeed, in all protracted cases of the disease of the hip joint, lumbago, or sciatica, the vapor of hot water, locally and properly applied, will seldom fail, in conjunction with other proper topical applications, to prove a safe and successful remedy." "A vapor bath, constructed agreeable to the plan advised by the honorable BASIL COCHRANE, or in the Russian manner, would be a great acquisition in all infirmaries and hospitals."*

Speaking of the mode of applying hot water in the obstinate complaints just named, Dr. THOMAS observes, "A large boiler, with a pipe affixed to it, forms a simple apparatus. With this, the parts affected may be *steamed* for about half an hour at a time, repeating the process two or three times a day."† Yes kind reader, credulous or incredulous, Dr. THOMAS, an eminent medical practitioner of the old school of medicine, who has practised in both hemispheres, and in different climates, having, as he says, "obtained an insight into the practice of physicians of both Russia and Sweden, during a residence in the capitals of those empires," and an "experience of upwards of forty years," unhesitatingly recommends what, in the Botanic practice, is considered as an empirical and dangerous custom. And Dr. THOMAS recommends this *terrible* operation of steaming, not only topically but generally, and considers it preferable to the warm bath, which "frequently renders the patient hot and restless." "Now the advantage," says Dr. THOMAS, "of the vapor bath, (steaming) is, that perspiration takes place at a much lower temperature in it than the other." In the warm bath, "when the exhalents are ready to yield their contents, the surrounding medium, (water) presses upon the cuticle, and in some measure prevents the flow of perspiration which it had brought upon the surface: on the contrary, in the vapor bath the heat being applied to the body in an æriform state, unites with the insensible perspiration as it arises by the exhalents, condenses upon the surface, and drops from the body by its own weight, meeting with no resistance from the elastic vapor."‡

We deem it unnecessary to say more with regard to the superiority of vapor bathing over immersion in warm water, as but little reflection will, we think, convince any philosophical mind of the fact. But we will take the liberty of introducing a few remarks from the writings of W. TOOKE, which were the result of several years observation of the good effects of vapor bathing amongst the Russians.

* Modern Practice of Physic: article, "*Rheumatism.*"

† Ibid.

‡ Ibid.

“It is not to be doubted,” says TOOKE, “that the Russians owe their longevity, their robust state of health, their little disposition to certain mortal diseases, and their happy and cheerful temper mostly to these baths, though climate, aliment, and habits of living, likewise contribute their share. The great Lord Chancellor BACON, and other sagacious observers of nature, and of mankind, have lamented and certainly not without cause, that this bathing has fallen into disuse among the modern nations of Europe, and justly wish the practice back again, in all our towns and villages. In fact, when we consider that the old physicians so early introduced into their practice this remedy of nature’s own invention, and employed it with such great success; when we recollect that Rome for five hundred years together, had no physicians but only their baths, and that to this day a multitude of nations cure almost all their maladies merely by baths; we cannot avoid regarding the dismissal of them as the epocha of a grand revolution, which has been wrought in the physical state of the human race, in our quarter of the world. The natural perspiration, the most important of all excretions, must naturally go on better in a body constantly kept soft by bathing. A great number of impurities which privily lay in us the train to tedious and dangerous distempers, are timely removed ere they poison the blood and juices. All exanthematic diseases are abated by bathing, consequently then the small pox; and if this dreadful disorder be actually less fatal in Russia than in other countries, this phenomenon need not be attributed to any other cause than the vapor baths.”

Nor is the employment of the vapor bath confined exclusively to the Russians. It is used by other nations of Europe, and particularly in the vicinity of Naples, where they have natural vapor baths, the vapor being supplied from hot springs produced by the volcanoes with which that country abounds. Other parts of Europe likewise abound with baths, the vapor of which is supplied by hot springs.

Artificial vapor bathing has also been used in most, if not all, the nations of the European Continent as well as in England; and the aborigines of America have been in the habit, from time immemorial, of employing the vapor bath to assist in curing their maladies; and they still continue it at the present time.

CARVER, in the history of his travels among the Indians during the years 1766, '67, and '68, in treating of their diseases, says—“The disorder to which they are most subject is the pleurisy; for the removal of which, they apply their grand remedy and preservative against the generality of their complaints, sweating. The manner in which they construct

their stoves for this purpose is as follows:—They fix several small poles in the ground the tops of which they twist together, so as to form a rotunda: this frame they cover with skins or blankets, and lay them on with so much nicety that the air is kept from entering through any crevice; a small place being only left just sufficient to creep in at, which is immediately after closed. In the middle of this confined building they place red hot stones, on which they pour water till a steam arises that produces a great degree of heat. This causes an instantaneous perspiration which they increase as they please. Having continued in it for some time, they immediately hasten to the nearest stream and plunge into the water; and after bathing therein for about half a minute, they put on their clothes, sit down and smoke with great composure, thoroughly persuaded that the remedy will prove efficacious.” “They often,” continues CARVER, “make use of this sudorific method to refresh themselves, or to prepare their minds for the management of any business that requires uncommon deliberation and sagacity.”

We have also before us a letter from CALEB ATWATER, Esq. whose opportunities for making observations amongst the Indians have been very extensive, in which he gives a somewhat more particular account of the Indian method of steaming, which he learned amongst them during the years 1796, '97, and '98. It may also be proper to state that this letter is in reply to one addressed by ourselves to him, requesting any information in his power to give, respecting the treatment of disease and the remedies peculiar to the Indian natives.

His account coincides with that of CARVER, respecting their method of steaming, and further adds, that the bath-room is constructed inside of the wigwam previously made tight and warm. In the center of the bath-room a small hole is dug in the earth, into which water is poured and a red hot stone is put into it; the patient in the mean time being placed in the room and drinking of a warm tea prepared from the Seneka snake root, including both the roots and tops.—“One stone after another is thrown into the water, and a copious steam produced around the sick person,” and “after steaming sometime in this way, the patient is taken from his bath-house and plunged into a stream of running water, always near the wigwam. This bathing in cold water occupies but a minute or two at most, after which the patient drinks some of his warm tea, and sits a short time in the bath-room again in which the steam is renewed. Then he is placed in a warm bed, prepared for him, where he lays in a state of gentle perspiration for some time.” “So far as I now remember,” continues he, “in every case where these remedies were thus applied, during the first three days of a fever, it

was cured." "Instead of the hole in the earth, a sap-trough was sometimes used for the water and heated stones."

This mode of steaming is precisely similar, in principle at least, and very nearly so in practice, with that employed in Russia; it is the same as is practised by the greater part of the American Indians, and adopted by Dr. SAMUEL THOMSON, and approved, used, and recommended by ourselves.

SECTION 8.

OF COLD BATHING.

THE usefulness of the cold bath, both in preventing and curing disease, has been known and acknowledged from time immemorial. The employment of it was so highly esteemed in ancient times, that amongst the oriental nations, and particularly the Jews, bathing was a part of their ritual ordinances.

The custom of cold bathing, however, like that of vapor bathing, has very much fallen into disuse: though it has retained its sway in the United States, far beyond that of vapor bathing. The cold, like the vapor bath, may be advantageously used either topically or generally. As a topical application it is useful in some cases of headache and rheumatism; in all cases of sprains and local inflammation; in wounds, and particularly in cases of burns and scalds. In the last cases it is one of the most grateful and efficient applications which can be applied. It immediately allays the most intense pain; and by renewing the application as often as the pain recurs, the inflammation attendant upon such accidents may be entirely removed, and very frequently when applied seasonably, blistering will be completely prevented.

Cold bathing is resorted to as a general application in ardent fevers; in some kinds of rheumatism; in relaxation of the cutaneous vessels; in nervous debility, and a great variety of complaints, for which purpose thousands of persons annually, both in Europe and America, resort to the mineral springs and to the sea, according to the nature of the disease or the fancy of the patient. Cold bathing is a powerful tonic and bracer of the system, and may be advantageously resorted to in a great many cases; but as an indication of cure peculiar to the new physiological practice of medicine, it is very highly beneficial, and extensively used. It is employed in all cases, after the vapor bath, in the simplest form, by pouring upon the patient in a high state of perspiration, a quantity of water proportioned to his age, size, strength, or other circumstances.

This practice is viewed by most individuals unacquainted with the new system of medicine, with astonishment and even terror. This, however, is what might be readily expected; it being so directly opposed to the popular ideas, in this country, respecting the means of promoting health. But in Russia, as well as amongst the American Indians, (as has already been noticed,) the practice of cold bathing, or washing with cold water, after producing a high degree of perspiration in the vapor bath, is a common thing; being resorted to on many important occasions, and in Russia by all classes of society. In the quotation from the Domestic Encyclopedia, which we gave, in treating of vapor bathing, the reader may have observed, that it is there stated, that the Russians rush out of the bath room, almost dissolved in sweat, and either throw themselves into an adjoining river, or, in winter, roll themselves in snow, during the most piercing cold, without suffering any inconvenience, and probably with advantage. We will only add, that the advantage is more than probable; as it is very improbable that such an apparently daring practice would be continued unless the beneficial effects of it were appreciable and incontrovertible.

The testimony of Dr. THOMAS also confirms the statement in the Encyclopedia as to the practice of cold bathing whilst in a high state of perspiration. "During my stay," says he, "at Petersburgh, I observed that many of the Russians threw themselves immediately from the bath room into the adjoining river. In the winter they roll themselves in snow, in a frost of ten or more degrees of REAUMUR's thermometer." Dr. THOMAS says nothing as to the good or bad effects of this intrepid practice; but it is fair to presume that he observed no bad consequences to follow it. But, for the proof of its innocence, we need not refer the reader to the Encyclopedia, to Dr. THOMAS, nor to the Russians. The same practice has been very successfully and extensively brought into notice by Dr. THOMSON; and by his agents and other Botanic practitioners introduced into every State in the Union.

After the patient has passed through the operation of vapor bathing and perspired profusely, as is generally necessary in all bad cases in order to throw out from the system the morbid accumulation which has taken place in consequence of the want of vital energy to carry off the worn-out, superfluous matter through the proper emunctories, and more especially when, in addition to vapor bathing, an emetic has been prescribed, the skin, and even the whole body, is relaxed; and the patient sometimes feels weak, faint or languid. The application of cold water always removes these symptoms wholly or in part, and leaves the patient in the enjoyment of a warm,

pleasant, glowing sensation over the whole body, as delightful as unexpected to those unacquainted with this healthful practice. And in all cases of immoderate sweating, whether caused by artificial means, or arising from a laxity of the cutaneous vessels, cold affusion produces the happiest effects. The tonic and contractile powers of cold water, brace and strengthen the perspiratory vessels, as well as every other part of the system. The nervous and sanguiferous systems, upon the equable action of which, health so much depends, particularly receive a powerful impulse; and nature, always ready to profit by every favorable circumstance, assisted by the strength which she derives from this new impulse, secures, so far as she is able, what has thus been gained.

CHAPTER VIII.

OF THE THEORY OF FEVER AND INFLAMMATION.

THE theory of fever and inflammation has been a fruitful theme for the physiologist to dwell upon, without any thing hitherto being elicited which could bear the test of investigation. Nor can it be astonishing that theories should be unsettled and uncertain, so long as the practice remained unimproved, contradictory and inconsistent. Theories, to be sure, are but the butterflies of the day, and may generally be said to be at variance with correct experience and sound practice; yet, in some measure conformably with custom, and also in conformity with the new physiological doctrine and practice, we deem it not out of place to throw together a few theoretical hints upon fever and inflammation.

SECTION 1.

OF FEVER.

WHETHER we regard fever as a disease of more universal prevalence than any other whatever, or as being the most prolific outlet to human life, it must be considered as claiming pre-eminent attention, both in a physiological and practical point of view. The following observations on this subject, from the pen of Dr. HOSACK, being so much in unison with our own, we take the liberty of transcribing them into our pages:

“From the earliest period to the present day,” says he, “the subject of fever, more than any other disease to which the human frame is liable, has received the attention of physicians. Yet, looking into our obituaries, we find that fever and febrile diseases still constitute the great outlets of human life, and are at this day almost as fatal as they were in the time of SYDENHAM, who calculated that fevers, properly so called, make up nearly two-thirds of the diseases which prove fatal to mankind, and that eight out of nine of all who die, are cut off by febrile complaints. However minutely, therefore, we may be acquainted with the symptoms of fever in its various forms and stages; however extensive may be our knowledge of its predisposing and exciting causes, we certainly are very defi-

cient in our acquaintance with the *proximate* cause of fever, or its treatment would be more distinctly defined in its various stages, than it appears to be in any of the great practical works that have fallen under our notice. Whence, then, has arisen the discordant, and, we may almost say, the *empirical* practice, that fills the pages of the best writers on fevers, and that are even to be found in the truly valuable works of BOERHAAVE, CULLEN, FORDYCE, WILSON, and others? We answer, it is in a great degree ascribable to the local views of the animal economy to which some of these writers have been limited by their own hypothesis, and which practitioners, relying upon the authority of great names, have hastily adopted."

What a deplorable picture is here exhibited of the imperfections of that science in which we have, above all others, the deepest interest. In the foregoing quotation may be contemplated the sentiments of an eminent physician of the old school, who is intimately acquainted with the inconsistencies of the common mode of treating fevers, and which he very justly attributes to the local views of practitioners, and their deficient knowledge of the proximate cause of this most fatal complaint; in short, to the want of a correct theory from which to deduce sound principles, upon which alone a rational practice can be founded.

We have, in general terms, pointed out the proximate cause of fever, in our definition of disease; but as the complaints comprised under the common appellation of fever, in consequence of their universal prevalence and great mortality, have given rise to many hypothetical theories, we propose briefly to point out what we believe to be the cause of that catenation or chain of symptoms which constitutes this fatal malady. And although we may occasionally advert to preceding theories, we shall not attempt in this place any thing like a review of any of them.

It will have been perceived that we attribute the cause of all disease to a diminished energy of the living power, which may be regarded as a condition of the body nearly analogous with Dr. CULLEN's "sedative powers applied to the nervous system, which diminishing the energy of the brain, thereby produce a debility in the whole of the functions." Dr. CULLEN, as it would seem, had no definite idea of the manner in which those sedative powers were applied, and therefore left a very important part, the very starting point, of his theory unexplained; and seized upon the effects, instead of the cause of fever, whereon to build his theory. This indeed has almost always been the point from which theorists have strayed by looking forward at the result, instead of backward at the cause of what they wish to explain. Although we have heretofore pointed out the origin of the living power, we will here

repeat, that it is drawn from food, drink, and air; the vital organs being so constituted as to act upon these materials in such manner as to abstract the vital stimulus from them, and this stimulus in turn acting upon the organs and enabling them to perform their functions. Hence a failure of this stimulus, from any cause whatever, constitutes disease, which is modified by a great number of circumstances; whence arise the almost infinite variety of symptoms by which all the various diseases are distinguished.

Now if we trace Dr. CULLEN's "diminished energy of the brain" back to its cause, we shall find that debility or diminished energy of the living power is the first effect produced upon the system by the exciting causes of fever. But we do not therefore agree with CULLEN that this diminished energy of the brain, or more properly of the living power, produces a *spasm* of the extreme vessels, because we have no evidence that such spasm does exist. These vessels are no doubt *contracted*; but simple contraction does not constitute spasm. We are unable to perceive, in ordinary cases of fever, the slightest traces of spasmodic affection of these vessels. Neither do we agree with Dr. CULLEN, that "debility proves an indirect stimulus to the sanguiferous system;" because the idea of *debility* operating as a *stimulus* is utterly incompatible with itself; at least it explains nothing in a physiological or satisfactory manner. But we believe that this effect follows, and that all the beneficial consequences which Dr. CULLEN attributes to the "intervention of the cold stage, and spasm connected with it," are produced upon philosophical principles which are susceptible of a satisfactory explanation. We must confess, however, that some parts of the Cullenian system are nearer correct than any other heretofore offered to the world.

We have said that every disease was caused by something which, in its operation upon the system, produced debility. We may also observe that similar causes produce, in general, a similar effect; that is, any known cause of disease being applied to any number of persons who are susceptible of its influence, commonly produces the same disease in all. This position is exemplified in contagious and epidemic diseases.

In contagious complaints, as measles or small pox, the contagious matter being applied to any number of persons liable to be affected by it, produces the same disease, in modified forms, on all. And just so in epidemics; they arise from a vitiated condition of the atmosphere, to which all being alike exposed, every person who is susceptible of its morbid impressions, is affected in the same or nearly a similar manner.

Now the human system is so constituted that the greater number of debilitating agents when applied to the body, act

upon the organs in such a manner as to produce a train of symptoms so nearly uniform as to receive the general name of fever. And it would seem most natural that this should be the case; for fever is a disease, to adopt the language of **FORDYCE**, "that affects the whole system; it affects the head and trunk of the body, and the extremities; it affects the circulation, the absorption, and the nervous system; it affects the skin, the muscular fibers, and the membranes; it affects the body, and likewise the mind. It is, therefore, a disease of the whole system, in every kind of sense. It does not, however, affect the various parts of the system uniformly and equally; but, on the contrary, sometimes one part is much affected in proportion to the affection of another part."* This being the case, we are enabled to perceive that almost every debilitating power applied to the system will produce a fever, whilst the surrounding circumstances, peculiarity of constitution, or the nature of the debilitating agent, give the disease that particular character which distinguishes one form of fever from another.

We do not mean, however, by the terms debilitating agents or debilitating powers, that something is actually applied to the body which directly weakens the living power. This effect may be produced in various ways; as for instance, by fatigue or over exertion; by the application, absorption, or inhalation of a poisonous substance which may destroy either immediately or remotely the tone of the vital organs and thus prevent them from performing their functions, and in various other ways.

The greater number of debilitating agents, therefore, producing one common effect upon most of the organs of the system, or upon the living power, a corresponding disease of the whole system is the consequence. And to this circumstance may be attributed the more universal prevalence of fever than of any other one disease, as every debilitating agent applied to the body acts as an exciting cause. Hence we find an increased speed or excitement of the pulse and heat, or what is termed fever, attending almost all complaints.

There are eminent theorists, however, who disagree with **Dr. FORDYCE**, and maintain that fever is essentially a local disease; saying that the appearances which have led to the conclusion that it is *general* are fallacious; contending that the universal derangement of the system, is referable to diseased action in a single organ. The principal champions for this theory are **CLUTTERBUCK** and **BROUSSAIS**. "There is," says **Dr. SMITH**, "a perfect accordance in the doctrine of these two celebrated and rival theorists, respecting the na-

* Dissertation on Fever, page 16.

ture of fever; both are agreed that it is an affection of the solids of the body, and that its essence consists in inflammation; both are agreed that that inflammation is strictly local, being seated in a single organ; but in determining which that organ is, there is an entire discrepancy in their opinions.

“According to Dr. CLUTTERBUCK, the organ universally affected in every variety of *ideopathic* fever is the brain.” “BROUSSAIS, on the contrary, contends that the primary and essential seat of inflammation in fever is the mucous membrane of the stomach, or of the intestines, or both, but especially the former, and that, therefore, the proper designation of it is *gastro-enteritis*.”*

Another opinion as to the seat of fever, has lately sprung from the London Fever Hospital, which has given rise to an elaborate treatise by Dr. SMITH, from which we just quoted. Actual examination by dissection after death, in every fatal case at that Hospital, has enabled him to decide that not only the stomach and intestines, but also the lungs and brain, were in a state of inflammation. He, however, lays it down as an invariable fact, that the first indications of fever “are clearly traceable to the nervous system: that the disorder of the functions of the brain and spinal cord with which the attack always commences, demonstrates that these organs form the primary seats of the malady.”†

If Dr. SMITH’s proposition be correct, that a disturbance of the brain and spinal marrow is the invariable primary affection in fevers, and we think all experience goes to confirm it, then it follows that the nervous influence must be in some measure impaired over the whole system. And here the facts and observations of Dr. SMITH apparently, in some degree, confirm the views of CULLEN, “that the remote causes of fever, are certain sedative powers applied to the nervous system.” But it must be remembered that the nervous system, like every other set of organs in the human body, is dependent for its power and influence over the other organs, upon the power of life, which as we have shown, is concentrated in the blood. The diminished energy of this power must therefore be followed by a proportionate debility of the nervous influence over the whole system, whether it produce fever or any other complaint. Now if the nervous energy reside in a fluid, as is most commonly supposed, the brain and spinal cord must perform the office of a gland, by which the nervous fluid is secreted or separated from the blood, and through the agency of the nerves is transmitted to every part of the body.

From this view of the subject, we may readily comprehend how the application to the body of any of the debilitating

* SMITH’S Treatise on Fever, pages 36, 37. † *Ib.* page 345.

powers which produce fevers, affect the nervous system, and through it the whole body; which is acknowledged by all classes of theorists to be sooner or later the case in all febrile complaints. The specific effects thus produced, constitute that peculiar train of symptoms so readily recognized, though difficult to define, which, from the very infancy of medicine, has received the name of fever, and which is derived from the almost universally attendant symptom of increased heat over the whole body.

Let us now examine the symptoms and the effects, actual or apparent, connected with fever.

In tracing this disease from its origin to its termination, we find it to consist of a certain train of events, succeeding each other in a certain manner.* The order of occurrence of these events is determined by the symptoms, which are nothing more than the sensible and visible effects or signs of disease.

Dr. CURRIE supposes that the first operation of the remote cause producing fever, is debility of a peculiar kind.† This is in almost exact accordance with CULLEN: but we do not agree with these authors, that this debility produces a spasm of the capillary vessels of the surface, because, as we have elsewhere observed, none of the specific characteristics of spasm are proved to be present. But most certain it is that these vessels, in ordinary fevers, are contracted either as a direct or remote effect of the diminished energy of the living power, debility being only the symptom or evidence that the power of life is weakened. The contracted state of those vessels, however, is most probably the effect of impaired nervous influence, which extends not only to the capillary vessels of the surface but to the whole sanguiferous system, and even to the entire body.

Writers have recorded facts sufficient to show, what all experience confirms, that there is actually a shrinking of the whole body, and particularly of the capillaries and arteries near the surface, in all cases of fever. All authors agree that the skin is constricted or contracted; and some even assert that this constriction extends, as just observed, throughout the whole substance of the body. The larger arteries near the surface which can be felt, (the radial at the wrist, for instance,) are evidently to the feel lessened in their size from what they are in a state of health. FORDYCE also says that the whole secretory system throughout the body secretes a smaller quantity of fluids in fever than in health. The kidneys, the bladder, the mucous glands, the exhalants, all appear to be constricted; and also the vessels which furnish

* SMITH'S Treatise on Fever.

† Modern Practice of Physic.

the fluids that lubricate the surfaces of the muscles, appear contracted; because a wound or an ulcer, in any part of the body, becomes dry during an attack of fever.*

The direct natural consequence of debility, whether it be of that kind which authors have supposed peculiar to fever, or any other, is to reduce the motion of the blood or pulse; and accordingly we find a small low pulse always attending the onset of fever. This slowness of the circulation and languor of all the other animal functions, caused by the diminished influence of the living power, lessens the production of animal heat, whence arises the chilliness and coldness which usually precedes the hot stage of fever. The idea always associated with the application of a sedative to the system is, that of producing a diminished activity of the vital functions; and this term is actually used by CULLEN to designate that peculiar debility which he thinks produces fever. There is indeed a dullness, a languor, a lassitude, attending the attack of fever that must justify the conclusion that heat, let it be produced in any way that has perhaps ever been suggested, is not generated in the usual quantity that it is in health. The living power is beyond all question diminished, and hence the vital functions throughout the whole system must proportionally fail, and the healthful quantity of heat cease to be produced. We would by no means however pretend to say that the nervous sensibility was not in some manner depraved, so that the feelings of the patient were not somewhat deceptive to himself as to the actual difference between the amount of heat generated in health and in the cold stage of fever. But in accounting for the production of heat upon the principle of friction, as we have done, or upon any other, there can be no doubt that the generation of it must be checked, which accounts, as just observed, for the chilliness and coldness of the first stages of fever.

It may be objected to this hypothesis, that coldness is by no means an unfailing precursor of fever; but that the hot stage often comes on with no other premonition than a sense of languor and debility, without any sensation of coldness or chilliness whatever. We do not regard this, however, as an objection of much weight, as it is an admitted fact that all general rules have some exceptions; and we are confident that but few cases, if any, occur of primary fever in which, if the patient carefully attended to his feelings, he would not be sensible of some degree of chilliness. Hectic fevers, as well as those arising from inflammations and the irritation of worms, may occur without any preceding chill; but these facts do not, we conceive, militate against the general propo-

* FORDYCE, page 33.

sition that fevers, properly so called, are preceded by diminished heat. The production of this necessary material in the human system, as we have shown, is a mechanical rather than a chymical operation; and there are certain states of the nervous system frequently occurring in which the patient complains of coldness when to the feel of a by-stander, or by the thermometer, there appears no diminution of heat whatever. On the contrary, there are other states of the nervous system in which the patient complains of increased heat, of which there is no other evidence than his own morbid sensations. We mention these facts, which have been recorded by different writers, only to show that the feelings of the sick are not unerring indications of the true condition of the patient. Therefore, although a patient may not be sensible of any diminution of heat, it does not nevertheless follow that its production is not diminished. For if the process of its generation is interrupted or impeded, which must evidently be the case in the languor, slow respiration, sluggish circulation of the fluids on the attack of fever, its production must be retarded whether the patient be sensible of it or not.

So great a depression of the vital power has sometimes taken place during the cold stage of fever, as to cut the patient off at once; though instances of this kind are quite rare. Such occurrences would no doubt more often happen, were it not for that wonderful provision for our preservation by which disease produces such an effect upon the system as to remove the cause that gave rise to it; in other words, by which disease is constituted its own physician. Indeed if we were not under the influence of a principle like this, every person taking a chill must expire in it, unless relieved by medicine; and in fact, the same remarks will apply with equal force to all other complaints. We are well aware that physicians have attributed this rousing of the system from its depressed state, to the *vis medicatrix natura*, or the efforts of nature; as if nature were a sentient power, or being, capable of perceiving the inroads of disease and of arming and strengthening herself for the combat. Such an idea is certainly more befitting the fictitious imagery of a romance than the grave philosophy of a treatise on medicine.

The whole phenomena may no doubt be explained on philosophical principles, modified, however, by the different situation of living from dead matter. All the varieties of matter were formed by a Supremely Intelligent Being, and each kind endowed with certain principles which, in combination, and under certain circumstances, produce certain peculiar effects; and the effects of disease may as rationally be attributed to the action of matter upon matter as the heat of combustion to the action of oxygen upon fuel. We have heretofore shown that life and organization were the effects of the various

proximate elements of man acting upon each other under the influence of laws peculiar to animal life; and the effects of disease may be attributed to a somewhat similar action induced by a failure of the living power caused by either the abstraction or superaddition of something necessary or unnecessary to the elements of health, and by which the living harmony is disturbed, and may eventually be annihilated in death.

With these views, and from these premises, we will proceed to point out, so far as we are capable, the natural causes, intimate relation with, and dependence upon each other, of the principal events or phenomena of fever. We may not, however, be able in a manner satisfactory to every one, to suggest the true cause or to point out the proper relative connection of these events; nor do we expect to steer clear of all former hypotheses; but we trust that the rule which we have laid down by which all phenomena whether of the living or dead, or of the healthy or unhealthy states, may be tried, will bear, though perhaps with some modifications, the severest test of scrutiny and of time.

We have remarked heretofore that the cause of fever, as of all other disease, was a failure or diminished energy of the living power, the consequent effect of which is a diminished secretion of the animal fluids; contraction of the body and all its vessels,* particularly of the glands and minute capillary vessels of the skin; languor in all the vital functions; with commonly a cold sensation over the whole surface of the body. From this depression the vital organs must be aroused, or the living power will be destroyed and the career of life be closed forever. And this very check of the secretions and excretions, and this very contraction of the body and its vessels, the natural result of diminished vital energy, produces another effect by which those very effects themselves are removed. In consequence of the check given to the secretions and excretions, especially of the perspirable fluid, the quantity of blood remains unimpaired, or perhaps is increased; but it still continues to flow, though more slowly than in health, through its proper vessels, now reduced to a smaller diameter than they were in the healthy state. Here it may be borne in mind that the lessened diameter of the vessels of the skin is embraced in CULLEN'S spasm as well as in FORDYCE'S contraction not only of the skin, but of the more deeply seated parts, and is often evident to the feel in the radial artery at the wrist.

Now we think it evident that although the motion of the blood is checked in consequence of the diminished energy of the vital power, yet as it continues to flow through the con-

* FORDYCE on Fever, page 26.

tracted vessels its friction against the sides of those vessels is increased; and therefore, upon our principle of accounting for the production of animal heat by friction, an *increase of heat* must be the consequence: because, whatever increases the friction must also increase the amount of heat. Hence, in a cold day, those who are employed in the open air and become chilled, redouble their exercise, and thus increase the friction and heat by which they are preserved from the inclemencies of the cold. In case of fever, the heat thus produced operates as a stimulus, as heat is well known to do, upon the vital organs, and the blood is propelled with greater speed and energy, which increases the friction and heat; and thus continuing to act as cause and effect, produces the hot stage of fever.

We cannot precisely agree with Dr. THOMSON that the heat of fever is a friend to health, and yet there seems to be no rational means of avoiding the virtual admission of such a seeming paradoxical proposition. We know that the heat and excitement of fever are incompatible with the healthy state of the system; and yet the morbid depression which almost invariably attends the forming and cold stages of this class of diseases must undoubtedly prove suddenly fatal without the intervention of some process to produce that evolution of heat which has given birth to the term fever. This hot condition of the system is absolutely necessary to rouse the vital organs from that state of imbecility to which the loss of living energy has reduced them. Without the intervention of the hot stage of fever, every individual who becomes affected by the preceding depression and chill, must undoubtedly die unless relieved by suitable medicine. And cases of this kind have actually occurred at the very onset of fever, by which the life of the patient has been terminated in a few minutes or a few hours. Hence, we are led to the conclusion, that although the excitement and heat of fever are incompatible with a state of health, yet this very excitement and heat are subservient to the restoration of a healthy process, and arises from the operation of that law by which all diseases have a tendency to be removed by the effects which they produce. And thus we may see that DEITY, in his designs, has an eye to the preservation of his creatures; and that although dissolution awaits all things possessing life, yet he has, amongst the seeds of dissolution seated a redeeming principle by which the life of man may be, and is no doubt, preserved for a much greater length of time than it otherwise could be.

But this hot or feverish condition of the system, however useful or necessary it may be, must not too long continue, or the tone of the organs becomes so much injured as to be incapable of carrying on the vital operations of the system, and the living power becomes exhausted.

In contemplating the singular succession of symptoms in fever, we are forcibly impressed with the wisdom and goodness of the great Benefactor, in the wise adaptation of means to the ends which it is necessary to accomplish in the restoration of health. The fact we believe was first noticed by Dr. CULLEN, that the violence and intensity of the fever is almost always in corresponding proportion with the duration and force of the chill. Hence, if the chill have been long and severe, the succeeding heat and excitement will rise to a corresponding height; because the greater the prostration of the vital power, and the greater the constriction of the vessels of the skin, the greater must be the excitement and heat to overcome them. It is an invariable rule in physics, that the effect will always be equal to the cause by which it is produced; and the effect must also be equal to the end to be accomplished by its production; and hence, in fever, if the chill and constriction be severe, the excitement and heat must be proportionally great to overcome them.

The hot stage, of which we have been speaking, after continuing a length of time, is succeeded by the sweating stage, which completes the paroxysm of fever.

Heat is known to be one of the most important products of animal life; the continual operation and effect of which is necessary to existence. Its artificial application to the body in any manner, or by any means, uniformly relaxes the solids, attenuates the fluids, promotes the secretions and excretions, particularly perspiration, and increases the sensibility of the external parts. Hence, when the heat of fever has arisen sufficiently high, and continued sufficiently long, the juices become attenuated or thinned, the constricted vessels are relaxed, the secretions are promoted, and a moisture breaks out on the forehead, which gradually becomes a sweat, and extends over the whole body. With the flowing of the sweat, the heat of the body subsides, and most of the functions are again performed nearly in their ordinary manner.

We have now given the history of a complete paroxysm of fever, which, as Dr. FORDYCE asserts, constitutes the whole disease, and from which we think no one, after mature deliberation, will dissent.

A *perfect* paroxysm, agreeably to the views of FORDYCE, makes an end to the disease, and leaves the patient in his ordinary health, when he is no more liable to a return of the fever than one who has not had it. All fevers consist either of a single paroxysm, such as we have described, or of "repetitions of it, modified in a great variety of ways."*

* FORDYCE on Fever, page 106.

In the true ague, these simple paroxysms recur at different periods, from twenty-four to seventy-two hours, or in some instances a longer time elapses between them. In this disease, which is also termed intermittent fever, the fits at each return, go through the same round of stages, cold, hot, and sweating; and, in some instances, continue their recurrence for a long time, even for a year or more, without any apparent exhaustion of the patient's strength, after the first few days or weeks.

The regular and exact return of the paroxysms of intermittent fever, has often engaged the attention of medical men, in all ages; but hitherto no satisfactory cause has been assigned for this common but extraordinary phenomenon. Some have attributed, or rather compared it to that disposition so conspicuous in many of the operations of nature to observe regular periods; as, for instance, the earth's annual revolution round the sun; its diurnal revolution on its axis; the regular return of the seasons, &c. &c. But even admitting that there was some analogy between the revolutions of the earth and the regular return of the paroxysms of an intermittent, it would account for nothing—it would explain nothing. With regard to the revolutions of the earth, and the return of the seasons, we not only know that they take place regularly within certain periods, but we also *know* the reason or cause why it is so. Attraction produces the revolutions of the earth, as well as of the whole solar system; and the particular position of the earth with regard to the sun, causes the regular return of the seasons. But do we see any thing like this influencing the return, with so much regularity, of the paroxysms of fever? Or can there be any correspondence pointed out between the movements of the heavenly bodies, and the operations of animal life? We answer, assuredly, no! The first are under the influence of physical, and the latter of organic laws; and there can, therefore, be no similarity or correspondence whatever between them.

Without pretending to be able to explain this hidden mystery, we will suggest a few ideas which may possibly assist some more acute observer, in the investigation of this intricate pathological question.

We will first direct our attention to the origin or first paroxysm of the disease. It often happens, says *FORDYCE*, and it is confirmed by our own observation, that a person may sit down to his dinner with a good appetite, and apparently in good health, and be taken so suddenly sick that he will be able to eat nothing; or he may eat a hearty meal, and have a severe attack of fever shortly afterward. Occurrences of this kind are by no means uncommon. The morbid poison, or whatever it may be that thus so suddenly prostrates the vital power, could not, for the first time, have been applied to the sys-

tem, at the moment of attack; the body must have been previously subjected to its influence, from which time it was secretly at work, until some favored moment presented to exercise the full extent of its powers. The consequence then is a paroxysm of fever; which, if it prove an intermittent, returns again after twenty-four, forty-eight, seventy-two hours, &c., according to the type which it may assume.

It would seem that the sedative power which produced the first paroxysm, still held its seat in the system, and was secretly exerting its influence as at first, until it produced another fit of the disease. The time which these sedative powers require to produce their specific effect, is probably modified by some peculiar influence of the febrile virus upon the living power, or upon the organs of the system; or by the *idiosyncrasy* of the individual. It may also be modified by the seasons of exercise and repose; that is, day and night. Exercise and rest, or sleep, have an important influence upon our bodies; and a due proportion of each, regularly observed, is essential to health.

There is also another circumstance worthy of consideration in discussing the probable causes of the regular returns of intermittents. We find that the human system is capable of enduring the exhaustion of exercise for only a limited portion of the twenty-four hours, when repose becomes necessary, in order to recruit the exhausted powers of nature. Now, may not the paroxysm of fever either exhaust or remove from the system the offensive matter which produced the paroxysm?—Hence after the fit has subsided, but the vital organs being under the influence of the same causes which generated the peccant matter that gave rise to the first paroxysm, and after the lapse of some specific period another fit is produced, by which the hurtful matter is again exhausted. Thus the return of the fits will be regulated by the capacity of the organs to generate the cause which produces it; or by their disposition to return to that peculiar state which is necessary to induce another paroxysm. Hence in some cases this will take place in twenty-four, forty-eight or seventy-two hours, according as the organs are disposed to return to that state which favors the recurrence of the paroxysm, in some one of those periods.

Our ideas respecting the modification of the effects of the febrile virus, or whatever else it may be that produces fever, upon the living power or upon the organs, as regulating the length of the intervals between the fits, receive support from the irregularity of the paroxysms of a remittent fever. In this disease, the fits recur at irregular intervals, and without a perfect remission of the fever: the paroxysms are also very irregular in their duration. As this fever is produced by the same remote causes, or sedative powers, that induce an inter-

mittent, we may readily infer that a modification of the effects of the febrile virus, gives rise to the different types of the disease.

Another modification of fever is that termed continued. In this type the paroxysms succeed each other in such rapid succession, that no perfect remissions take place between them: Hence the name, continued fever.

The explanation of continued fever, which we have just given, has been pretty generally received and admitted since the time of FORDYCE, and affords another proof of the universal operation of the law that we have endeavored to illustrate, which makes disease its own physician. We have already given the general history of a paroxysm of fever, in which was pointed out the dependence of one event upon another that preceded it, and that all the events which succeed the cold stage are necessary in the natural process of cure. In continued fevers, there are evident *exacerbations* and remissions daily;* but the remissions are less prominent or distinguishable than in fevers of the remittent type. This fever is also produced by the same exciting causes which induce either of the other types; and may therefore be considered as another modification of the effects of the febrile virus upon the living power of the system, or on some of its organs.

In continued fevers, the salutary effects of the healing process are not so extensive, or they are not, from some cause, so efficacious, as they are in intermittents. Although a remission is partially produced, there is no crisis; the symptoms only abate, and then become exasperated.

Thus we have shown that the same law runs through all the different types of fever; but in some acting with less energy than in others. In what FORDYCE terms a simple fever, which consists of but one single paroxysm, this law acts with such energy that health is completely restored. In other words, the offending matter, or that specific state of the organs which produced the peculiar train of symptoms termed fever, becomes so completely expelled or annihilated, or changed, that a healthy action is established, and the patient is no more liable to a second paroxysm than one who has not had an attack. In intermittents this law acts with less force, or these circumstances less perfectly take place; and consequently a perfectly sound healthy action does not immediately ensue; but another paroxysm succeeds after some specific interval, according to the type which the fever may incline to assume, and may be followed by a repetition of the fits for a considerable length of time.

* THOMAS' Modern Practice.

In remittent fevers, this law acts with still less force and with less regularity, than in intermittents; whilst in continued fevers its powers are nearly inert: but even in these it often ultimately prevails and accomplishes a cure unaided by medicine.

In remittent and continued fevers, it would seem that the excitement and heat were not sufficient to exhaust the offending matter, or change the condition of the organs, whichever it may be that causes fever, sufficiently to produce a solution or crisis of the paroxysm; and hence, although there may be, as there always is, an abatement of the symptoms, yet it does not amount to a complete intermission of fever. But by a continued repetition of the paroxysms the condition of the organs may become so changed, or the virus so exhausted, that perfect health will be restored.

These natural processes by which the organs are coerced into a healthy action may however be promoted by the aid of suitable means, and health be thereby much sooner restored, than by trusting to the simple operations of nature. For it is one of the grand fundamental principles of our system, that a healthy action can only be restored to the vital organs, by a stimulant or forcing power applied to them in the form of medicine, as life can only be preserved by a similar power derived from food.

Those who are familiar with the history of medicine will undoubtedly perceive the close analogy which exists between our views and those of Dr. CULLEN; and therefore it might be considered as presumption in us to claim originality for our own; but in justice to ourselves we may say that our ideas upon this subject were conceived and matured without any knowledge of CULLEN's theory other than a casual notice of his doctrine of spasm, which we found in THOMAS' *Modern Practice of Physic*, under the head of continued fever. But since our own views were more fully matured, and an anxiety thereby excited to become acquainted with the opinions of others upon this interesting subject, we have turned our attention to the Cullenian System and were gratified to find it so much in unison with our own. We have therefore seized upon whatever we thought valuable in his system and appropriated it to the explanation of our own. Those who believe the system of Dr. CULLEN to be on the wane, may very naturally conclude that ours can derive no support from it; but we are amongst those who believe that several of the most important features of his theory stand yet unimpaired; and if it be at this moment, says Dr. GOOD, crumbling into decay, it certainly is not falling prostrate before any fabric of more substantial materials, or more elegant architecture.

We must be permitted, however, in justice to ourselves, to observe that in some particulars we differ from, and in some respects supply the defects of, Dr. CULLEN. He appears to think that the cold stage, with spasm of the minute vessels, is merely a link in the remedial process; whereas we regard them, and particularly the spasm or what we term constriction, as amongst the first effects of diseased action, which must be opposed, and a contrary state of the system produced. Indeed, it must be evident that if the spasm were a part of nature's process for restoring health, then it must follow that to promote health we must encourage this spasm, instead of opposing it, to restore a healthy action to the system. We consider the hot and the sweating stages alone as concerned in the remedial process, and therefore these alone are to be encouraged and promoted. Not that the absolute apparent heat of the body in fever ought to be increased, but the cold stage should be removed; whilst the relaxation of the constricted vessels and the perspiration ought to be assisted by proper means. We must, therefore, distinguish in our attempts to heal the sick, between those symptoms which are mere evidences of diseased action and those which indicate those processes by which health is restored.

There is nothing, says Dr. GOOD, in CULLEN's hypothesis to account for a return of debility and spasm after they have been subdued; nor to show why spasm should ever in the first instance be a result of debility. This objection we have endeavored to obviate in our own theory; though something yet remains to be done to perfect it.

We will close the subject of this section by a few remarks upon the causes which have produced the failure of theories and the consequent incessant round which they have been running in the works of medicine. The principal cause of this failure and consequent fluctuation may be summed up in few words—ignorance in some instances, of medicines which would act in harmony with theory and the laws of life; and in others, the perversion of sound principles in their application to medicine.

Dr. BROWN's theory was condemned chiefly because his stimulants, which were brandy, opium, &c. did not act in harmony with the laws of animal life. We do not, however, refer to his theory of *fever*, as we think this quite inconsistent, but to his general theory of disease which embraced many truths. Dr. BROWN's stimulants, which indeed are those in common use with the whole Faculty, produce a mere temporary excitement of the vascular and nervous systems, without adding any thing substantially to the living power. They seem to produce their effect upon the body by calling into action the vital energy and thus induce an expenditure and

waste of this force beyond what the natural operations of the system without them would require. Hence, when their action ceases, the strength and vital power of the patient is always found to be exhausted in proportion to the excitement which has thus been produced. We may illustrate this proposition more intelligibly by supposing a vital scale upon which the power of life is graduated. Upon this scale we will suppose death to be zero, or the starting point, at the bottom of the scale. We will now suppose that an attack of disease reduces the living power from forty to twenty degrees: we then administer a dose of brandy, or opium, which raises it to twenty-five degrees in the scale. Here now is an excess of five degrees produced by the stimulus of the medicine; but inasmuch as neither the brandy nor opium add any thing substantially to the living power, therefore, so soon as the exciting power of the medicine is exhausted, it sinks down to fifteen degrees in the scale; just as much below where it first stood, as the stimulus of the brandy or opium had raised it above it. It will add nothing to the weight of argument in favor of those unnatural stimulants to say that they must be repeated before this sinking takes place; because, if one dose wears out the living power, or, as BROWN calls it, excitability, as is universally admitted, then two doses must weaken it still more, until it is annihilated.

We have reiterated the rule, that medicine ought to act in harmony with nature or the laws of life, even as much so as food; and if it do, it will not wear out the living power, but will add something to it as food does. It is upon this rule that medicine ought to act; at least, it ought not to weaken the power of life, either directly, as the cathartics in common use and sedatives do, or indirectly as brandy and opium do. Had Dr. BROWN's medicines possessed the happy quality of acting in harmony with life, the fate of his system would have been far otherwise than it is, and the corrupt and incendiary practice which had preceded his time, and which has prevailed down to the present moment, would have been shorn of many of its destructive weapons.

Dr. CULLEN's practice too, had it been in accordancé with his theory, both as to the medicine and its mode of administration, would have disrobed fever, that frightful specter, of half its terrors. But his eye was closed—his judgment sealed! Although he had the capacity to unbar the gates of wisdom, and open the portals of science—to penetrate the recesses of knowledge, and remove much of the rubbish with which medical learning was encumbered, yet he was so wedded to established remedies, that with all the force of his brilliant genius, and the power of his mighty mind, he did nothing substan-

tially to improve the healing art; for, "as a practitioner," says Dr. PARR, "he was often feeble and indecisive."

In like manner, Dr. FORDYCE improved the theory or principle of treating fevers; which was to employ such medicines as were best calculated to produce the same effects that are observed in the termination of a paroxysm by the simple powers of nature. Or, in his own language "to produce those appearances which take place in the ordinary crisis of fever;" and no fever was ever terminated in any other way, except it were by death. Every fever, from the mildest *ephemera*, or slightest intermittent, to the most malignant plague, if it ends in health, must terminate by a free perspiration. And it is the object of the physician's anxious care to promote this essential evacuation. It was upon this principle of drawing the indications of cure from nature's own pointings, that Dr. FORDYCE'S practice was founded; and the principle was undoubtedly correct; but alas! he also failed of complete success, because his remedies were incompatible with the laws of animal life.

It was reserved for Dr. THOMSON to settle the clashing and contending of theories with practice, and to shed a lustre upon medical science with which it had never before been honored. We have heretofore observed that he first matured his system of practice, and then framed his theory by it; and it matters little whether a theory be correct or not, if the practice be sound and efficacious. Dr. THOMSON'S theory, however, was founded upon a few prominent features of his practice, which, as he was altogether unaided by science, led him into errors: but they are of little practical importance. He found, for instance, that stimulating medicines are universally applicable in all cases of disease. All the articles of this class which he used produce a burning sensation in the mouth, and warm the whole system: hence he came to the conclusion that *heat* was the vital power or principle, and that its quantity in the body being diminished was the universal cause of disease. This hypothesis we have shown to be incorrect; but with his strength and originality of mind, had Dr. THOMSON been aided by the lights of science, we have little doubt that he would have adopted very nearly the views of Dr. CULLEN; we mean with regard to fever.

Another peculiar trait in Dr. THOMSON'S theory, is his speculation about *canker*; which he says is caused by cold. This canker, he thinks, is seated *inside*, and if a fever is kept up, it "will ripen and come off in a short time." "This idea," says he, "is new and never was known until my discovery." But waving any further notice of these, and many other equally fantastical notions, which are the undoubted effects of a want of education, we will observe, that without this singular idea

respecting canker, his method of treatment would have been incomplete. He would scarcely, under any other view of fever, have adopted his valuable class of astringent articles which he terms canker medicines; and without which any system of medical practice would be very imperfect. In short we believe that however defective Dr. THOMSON'S theory may be, it has certainly given a spring to medical improvement beyond any thing previously offered to the world. It may, therefore, be regarded as one of the most striking events of the age, as well as the most important innovation ever attempted in the science of medicine.

SECTION 2.

OF INFLAMMATION.

THE theory of inflammation, in many of its features, bears a close analogy to that of fever, though in some respects it is different. The increase of local heat which attends inflammation appears to depend upon the same cause in the one case that it does in the other; whilst the local effects are quite different. In fever, there is a general derangement of action of the capillary vessels throughout the whole system, whilst in inflammation it is confined to a particular part. Local inflammations may take place from a sudden loss of tone in the diseased part, with the living power apparently in full vigour, whilst in those diseases properly termed fevers the vital force is evidently diminished. All extensive or severe inflammations, however they may be denominated local, in their effects upon the system weaken the power of life, and thus produce general derangement of the whole system and fever.

Various theories have been proposed to account for the phenomena of inflammation. Nothing, however, has yet been offered to the world, and perhaps never may be, that is not liable to some objection, or which may not be, in some respects, palpably absurd.

The most commonly received theory of inflammation is, that it is caused by "an increased action of the blood vessels, propelling forward a greater quantity of blood than usual into the part affected, by which means its sensibility and irritability are increased, its vessels distended beyond their natural tone, and the circulation through them rendered more rapid." In this view, however, several things are assumed as facts, which scarce deserve the character of conjectures. This hypothesis pre-supposes the heart or arteries, to be possessed of a discriminating power, the one to send or the other to

convey, to the inflamed part, a greater quantity of blood than is usual or necessary. And even admitting that this might be the case, the conclusion would seem irresistible that inflammation should extend through the whole length of the vessels which convey the blood; that is, that it should not be confined to any particular part, but extend the whole length of the artery, from the heart to its termination.

But there is another view of this subject more difficult to reconcile with the doctrine under review. There is no one part of the system except the heart supplied exclusively by a single artery, but by innumerable ramifications of several of them. Hence this discriminating power of furnishing an inflamed part with a superabundance of blood must reside in several different vessels, and which, if an increased quantity of blood had any agency in producing the inflammation, would be as likely to produce it on a large scale as a small one. Moreover, we have no evidence, says Dr. Good, that a mere accumulation of blood can produce that augmentation of heat which characterizes and gives name to inflammation. But there probably is not, in the whole science of pathology, one solitary fact recorded, having the least tendency to establish the proposition, that any more blood is propelled to an inflamed than to a healthy part.

Moreover, the doctrine that the vessels of the part are "distended beyond their natural tone, and the circulation through them rendered more rapid," is quite inconsistent with itself. For if we admit the distention of the vessels, it must then follow that the circulation will be more slow; for by increasing the volume of the stream, we shall decrease the velocity of its current. A late theory, however, suggests that these vessels "exercise a power by which they, as it were, pump the blood from the larger arteries with increased rapidity."* But this argument only increases the difficulty. In order either to engorge those enlarged vessels according to the latter, or to increase the rapidity of the circulation agreeably to the former theory, the blood, whether by "pumping" or by any other operation, must be forced through the adjacent vessels which are in a healthy condition, with still more rapidity than they possibly can be through the vessels of the inflamed part.

Now admitting Dr. Good's assertion to be correct, and few, if any will dispute him, that we have no evidence that a mere accumulation of blood can produce that augmentation of heat which characterizes and gives name to inflammation, in connection with our method of accounting for the production of heat, and the seat of inflammation would not be at a mere point, as has been said, nor would it be in the distended ves-

* SMITH'S Surgical Anatomy of the Arteries; page 9.

sels, but it would be diffused in the adjacent parts and vessels through which the blood must flow with greater rapidity than in the part which is actually diseased.

If inflammation depended upon an increased action of the blood vessels, as is commonly supposed, this symptom should show itself first; whereas it is secondary in its appearance. Local inflammation, assuming or admitting this as a fact, could not be a primary affection, but always symptomatic of previous deranged action of the vascular system.

That the "sensibility and irritability" of an inflamed part are increased there is no doubt; but that this is caused by the greater quantity than usual of blood in the part, we think is incorrect. The blood is not possessed, so far as known, of either of those properties termed sensibility or irritability. Therefore, admitting that there is a greater quantity of blood than usual in an inflamed part, it would not follow from that fact, abstractly considered, that the sensibility or irritability of the part was increased. But still this is the fact, in some sense. Both are owing to the derangement of action in the diseased part, but sensibility is increased to no other stimulus than that of mechanical pressure or violence. To the effects of the living stimulants, an inflamed part is less sensible than a healthy or sound one. Indeed, this seems to be the proximate cause of inflammation, the parts becoming less sensible of impressions from that vital stimulus which pervades, through the medium of the blood, every part of the body. Inflammation often takes place in a system otherwise in a healthy state; and unless the part in which it is about to take place, becomes insensible to the vital influence, it cannot by any possible means become inflamed.

Our argument on this point also derives support from the fact, that inflamed surfaces are far less sensible to impressions from stimulants externally applied. Thus, if we apply a strong wash of cayenne pepper and vinegar or brandy to an inflamed part, it does not produce that sensible effect that it would to any other part that is free from disease, or to the same part when not inflamed. Here is what we conceive to be positive proof that the vital sensibility is deficient. The morbid sensibility, or that tenderness to the touch, which frequently occurs in inflammations, is probably caused by the distention and loss of tone which inflamed parts often suffer during their progress to suppuration. It may be also observed, that the higher the inflammation the less sensible the part is to the effects of stimulus; whilst on the contrary, the more the inflammation is reduced, the more sensible it becomes to the operation of those substances.

We must also notice another feature in the popular hypothesis of inflammation. It is said that in consequence of the

“greater quantity of blood than usual in the affected part, its vessels are distended beyond their natural tone, and the circulation through them rendered more rapid.” Now, admitting that the vessels are distended and the circulation more rapid, upon what principle can we account for the effusion of lymph and blood into the cellular tissue, which attends inflammations, especially those terminating in suppuration? This circumstance, as well as the swelling of an inflamed part, ought, in our opinion, to be attributed to other causes than a distention of the blood vessels.

A simple distention of the vessels of a part, would render such part soft and yielding, especially if the contained fluids were passing through them with greater facility, as they naturally would in such case. But we know, on the contrary, that an inflamed part usually becomes more hard and firm.

We propose to account for the effusion as well as the hardness attending inflamed parts by supposing, in the first place, that the vessels are obstructed; that instead of being distended, they are *contracted*, and their diameters lessened. The blood being driven on through the arteries, and meeting with these contracted vessels, it is, by the pressure which it receives from behind, forced through the walls of the arteries, thus producing what is termed effusion or extravasation. We think the reader will now anticipate the cause of the swelling and hardness to which we have alluded. It may rationally be attributed to the extravasation of the blood, or any of its component parts, as lymph or serum, in the cellular tissue of the inflamed part.

We also refuse our assent to the proposition that the diameters of the circulatory vessels are enlarged in inflammation, not only because there is no proof of it, but because it appears inadequate to account for the concomitant symptoms and effects attendant upon the complaint, and is also contrary to the nature of the animal economy. But it is inconsistent with a popular treatise to descend to minute particulars, and notice all the errors and inconsistencies with which the theory of inflammation has been burthened. We will, therefore, content ourselves with briefly putting forth our own views, accompanied by such remarks upon the opinions of others, as may be considered appropriate to the subject.

Our own ideas, then, of inflammation, are briefly these; that it is caused by an obstruction in the circulatory vessels, and not, as some have thought, in a change of the fluids contained in them; because inflammation often occurs in persons otherwise in perfect health, whose circulating fluids are in a pure state; whilst the inflammatory process must be referred to some local cause acting exclusively upon the part inflamed. These local causes may be external violence, such as bruises

or wounds, or they may depend upon some internal cause, of which we have no knowledge. But most certain it is, that the effect of this cause is to render the vessels incapable of performing their healthy actions, as we have heretofore observed, by contracting their diameters. But the blood being still driven to the part, and forced through these vessels with greater rapidity than in health, being a necessary consequence of their reduced diameter, an unusual friction is produced, which, upon our principle of accounting for the production of animal heat, will cause an increase of temperature in the part, which is the most universal characteristic of inflammation. This increased heat appears to have an influence upon the contractility of the arteries of the part affected, which accelerates the transmission of blood through the diseased region.

Inflammation may be defined, a diseased or imperfect vital action of some local part; the vessels of the inflamed region being incapable of performing their living functions; and so far as they fail in this, so far there is in the diseased part, an approach towards death. Marvel not that we speak of the death of a part of the human body or organs. It has taken place in thousands of instances under the name of mortification. And it seems to be a prevailing idea, that this occurs in consequence of the increased heat attending inflammation; for in proportion to the heat will be our apprehension of mortification. But still the heat has no connection with it, as a cause; indeed, so long as the heat continues there will be no mortification.

The fact is, that heat is an effect of the same cause which leads to the putrefaction of living matter. An inability of the organs, either wholly or in part, to perform their functions, is the first effect of all disease, and is equally the case in local inflammation. It is this inability of the vessels to perform their functions, which causes the heat of inflammation. As this inability increases, their approaching death advances and the heat is augmented. Thus the increase of heat, and the incapacity of the vessels to perform their vital functions, go hand in hand, until their living action becomes utterly destroyed; when mortification or death of the part ensues, which puts an end to the production of heat and of inflammation.

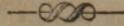
We also object to the common distinctions of inflammation, such as healthy and unhealthy; considering all inflammations as being unhealthy, arising from an unhealthy action in the part inflamed. The circumstances which have given rise to this vague and unmeaning distinction are no other than a healthy or unhealthy state of the general system. Inflammations occurring in an individual in the full possession of health, will almost always terminate in a kind, healthy manner: whilst in others whose health is not good, and with a peculiar predisposition, or *idiosyncrasy*, they often assume forms of great

malignancy or virulence. "The general principle of inflammation," says Dr. GOOD, "is the same in all;" the different kinds are only modifications of the same thing, arising from some peculiarity of the patient, or of the tissue in which the disease is located.

Neither can we accede to that doctrine which attributes the production of inflammation to an effort of the healing power of nature to drain the system of some foul humor; or in the words of Dr. GOOD, "a concentration of the constitutional complaint" at the inflamed point. How a man of the enlightened philosophy of Dr. GOOD, could subscribe to such doctrine as this, is incomprehensible. This is to suppose that disease is a host of inimical little beings, which are roaming at large through the system, and committing their depredations; or that it is some noxious matter pervading the body without any fixed principles, but which, at length, concentrates itself for a vigorous effort, and bursts forth in the heat and fury of its passion, in the form of inflammation.

But we have perhaps dwelt sufficiently long upon this subject; and although it is by no means exhausted, enough has been said to convey a general idea of the nature of that local state of the organs, denominated inflammation.

RECAPITULATION.



As we are now about to close the first part of our work, which embraces the general principles upon which the true science of medicine is founded, we here propose a brief recapitulation of the whole subject; in which may be seen at one view, as it were, the whole doctrine for which we contend.

1. We have endeavored to establish the fact, that life is a forced state; or in other words, that man is comparable to a machine which is kept in motion by the continual application of a moving power—that this power is drawn from food, drink, and air; the withholding of which from the body, for a very limited period, or a failure of any of the organs to prepare these materials for yielding this power to the system, produces death.

2. That this power is constantly wearing out; as the power of a steam engine having produced one stroke of the piston is then exhausted, and the machinery must stop if the same power were not constantly being generated, a measure of which immediately supplies the place of that which was just spent. And, therefore, the living power must be regularly and constantly supplied to the animal machine, or disease and death will be the consequence.

3. That those substances from which the living power is drawn, after having yielded this power to the body, must be removed; which may be compared to the steam in the steam engine, which after having exhausted its force, must pass off to make room for the application of another supply of power, or the machine must stop.

4. We have shown that health, which it is the physician's object to preserve or restore, consists in the harmonious action of all the organs of the animal machine, which can only be preserved by a suitable supply of the living power, and by the constant removal from the body of the worn-out materials from which this power is drawn, thus keeping the system pure and unincumbered with useless matter.

5. That disease is a diminution of the living power. That in every variation from a state of health, this power is always *deficient* and never in excess; because nature never produced or provided a power more than adequate to the accomplishment of her objects. That the ultimate effect of disease is

death, and therefore every stage of it is an advancement towards that state, in which the living power is annihilated. That the only rational mode of cure is to restore the living power to its proper influence over the system.

6. We have pointed out the destructive nature and tendency of the medicines in common use with the mineral Faculty, showing that their effect is to weaken the power of life, and thus assist disease in its destructive career, instead of opposing a barrier to its progress.

7. That medicines ought to act in unison and harmony with the laws of life; and that those of this character are only to be sought and found in the vegetable kingdom; and that such is the character, and such the source, of the medicines in common use by the most approved botanical practitioners.

8. We have endeavored to show that there can be no such operation of the system as is termed an effort of nature. The using of this expression is calculated to mislead the mind, and therefore ought to be rejected. We believe that it is upon this erroneous view, that has been founded the truly incendiary practice of reducing or debilitating a sick patient, to cure a fever and many other complaints. But that notwithstanding we have no faith in the common notion of disease being cured by an effort of nature, we still believe that there is a healing power in the human system, susceptible of explanation, in perfect harmony with our doctrine of passive nature.

9. We have pointed out the common indications usually considered by the mineral faculty, as necessary to answer in the treatment of disease; many of which we have shown to be erroneous. We have also pointed out the indications of cure relied upon in the botanic practice, showing that they are drawn from nature, which alone can furnish us with proper data to enable us to make correct deductions.

10. We have given our views of fever and inflammation; of which we think it not necessary to give a recapitulation.

END OF VOL. I.

GLOSSARY,

OR EXPLANATION OF THE PRINCIPAL TECHNICAL TERMS USED IN
THIS VOLUME.

- Abdomen*, The belly.
- Abscess*, A tumor containing pus, as a boil, or other swelling.
- Absorbents*, 1. The small, delicate vessels which suck up substances from the surface, or from any cavity of the body, and carry them to the blood. 2. Medicines which destroy acidities in the stomach, &c. 3. Substances which have the faculty of withdrawing moisture from the atmosphere.
- Absorption*, The taking up of substances by means of the absorbents.
- Acid*, That which imparts to the taste a sharp or sour sensation.
- Acrid*, Sharp, pungent, corrosive, or heating.
- Albumen*, Coagulable lymph, similar to the white of eggs.
- Aliment*, Food and drink.
- Alvine*, Relating to the belly, or intestines; hence the stools are termed the alvine discharges.
- Anatomy*, The dissection or dividing of organized bodies, to expose the structure, uses, &c. of the parts.
- Anodyne*, Any medicine which eases pain.
- Antacid*, That which destroys acidity.
- Anthelmintic*, That which procures the evacuation of worms from the stomach and intestines.
- Antispasmodic*, That which removes, or tends to prevent spasms.
- Antidote*, A preservative against, or a remedy for, disease, and particularly for poison.
- Aorta*, The great artery of the body, which arises from the left ventricle of the heart.
- Artery*, A membraneous pulsating canal, through which the blood passes from the heart to every part of the body.
- Asthenic*, Diseases arising from debility are thus termed by Dr. Brown.
- Astringent*, That which corrects looseness and debility, by rendering the solids denser and firmer, known by its puckering effect upon the mouth.
- Atmosphere*, The elastic invisible fluid which surrounds the earth, commonly called the air.
- Auricle*, A name given to those parts of the heart which resemble small ears, and commonly called deaf ears.
- Autocrateia*, The healing power of nature.
- Bile*, (or *Gall*.) A bitter fluid, generally of a yellowish brown color, secreted in the glandular substance of the liver.
- Botany*, That part of natural history which relates to the vegetable kingdom.
- Caloric*, The chemical term for the matter of heat in its latent or unperceived state.
- Canker*, Small eroding ulcers, generally covered with a whitish slough.
- Capillary vessels*, The very small blood vessels.
- Carbon*, The chemical name for purified charcoal.
- Carbonic acid*, Fixed air, compounded of carbon and oxygen.

- Cartilage*, A white elastic substance, which serves to facilitate the motions of the bones, and to connect them together—often called gristle.
- Cathartic*, That which produces purging of the intestines.
- Caustic*, A burning application.
- Cellular*, Consisting of cells or reservoirs.
- Cerebral*, Appertaining to the brain.
- Cerebrum*, }
Cerebellum, } The brain.
- Chimistry*, Is that science which teaches how to ascertain the nature of material substances, and the different parts of which they are composed, as well as the various effects, &c. which the union of different substances produce.
- Chronic*, A term applied to diseases of long continuance, and mostly without fever.
- Chyle*, A white milky fluid, separated from the chyme after the latter has passed from the stomach into the small intestines.
- Chyme*, Food partially digested in the stomach.
- Clinical*, Appertaining to observations or practice at the bed-side of the patient.
- Clyster*, (or *Glyster*.) A liquid substance injected into the lower intestines.
- Coma*, }
Comatose, } A strong propensity to sleep.
- Congestion*, A collection of blood, or other fluid, which produces a gradual swelling of the part.
- Constipation*, }
Costiveness, } An obstruction, or preternatural slowness of evacuations from the bowels.
- Constriction*, A drawing together, or contraction.
- Contagious*, Diseases that may be communicated from one person to another, as small pox, measles, &c.
- Convalescence*, The state of returning health after sickness.
- Convulsion*, A violent contraction of the muscular parts by spasms.
- Corrosive*, That which has the quality of eating or wearing away substances.
- Cupping*, Drawing blood by means of scarification and a cupping glass.
- Cutaneous*, Belonging to the skin.
- Cutis vera*, The true skin, which is covered by the cuticle or outward skin.
- Decarbonizing*, Depriving of carbon.
- Deliquium*, A medical term for swooning or fainting.
- Delirium*, An alienation of mind, or wandering of the senses, caused by the violence of fever.
- Demulcent*, Any medicine which lessens acrimony, or blunts the effect of sharp medicines.
- Diaphoretic*, That which, from being taken internally, promotes perspiration, or discharges by the skin.
- Diaphragm*, A muscle separating the chest, or thorax, from the abdomen, or lower belly: the midriff.
- Diarrhea*, Purging or flux. A frequent or copious evacuation of excrement by stool.
- Diathesis*, Any particular state of the body.
- Diffusible*, A substance that may flow or be spread in all directions.
- Digestion*, The process of dissolving aliment in the stomach, &c.
- Diluent*, Substances which increase the proportion of fluid in the blood.
- Discutient*, That which possesses the power of repelling or dissolving tumors.
- Diuretic*, That which, by its internal application, augments the flow of urine from the kidneys.

- Drastic**, Powerful; acting with strength and violence.
- Drupaceous**, A term applied to any pulpy fruit, having a nut or stone, with a kernal, as the peach, cherry, &c.
- Duct**, A small tube or vessel, by which fluids are carried from one part of the body to another.
- Duodenum**, The first portion of the small intestines.
- Dyspepsia**, Indigestion.
- Element**, First principles; a substance which can be no further divided or decomposed by chimal analysis.
- Emetic**, A medicine which provokes vomiting.
- Emmenagogue**, That which tends to promote menstrual discharges.
- Emollient**, That which softens and relaxes the solids.
- Empirical**, Pertaining to experiments; using without science; quackery.
- Emunctory**, Any organ of the body which serves to carry off excrementitious matter.
- Endemic**, A disease that is peculiar to a certain class of persons or country.
- Enema**, (see *Clyster*.)
- Ephemera**, A fever consisting of but one paroxysm.
- Epidemic**, A contagious or other disease that attacks many people at the same season, and in the same place.
- Epidermis**, A thin membrane covering the true skin. The scarf-skin.
- Epigastric region**, That part of the abdomen that lies immediately over the stomach.
- Epispastics**, Applications which attract the humors to the skin; blistering.
- Epistaxis**, Bleeding at the nose.
- Errhines**, Medicines which, when applied to the membranes of the nose, excite sneezing, and increase the secretion.
- Eructation**, The act of belching wind from the stomach.
- Escharotic**, Caustic; corrosive.
- Exacerbation**, An increase of febrile symptoms.
- Exanthematic**, Eruption and redness of the skin.
- Excrement**, The alvine fæces, or stools.
- Excretory ducts**, Little vessels in the fabric of glands.
- Exhalents**, Small vessels which carry off the excrementitious, worn-out matter, from the system.
- Exhibition**, The act of administering medicines.
- Expectorant**, Medicines which increase the discharge of mucus from the lungs.
- Extravasation**, A term applied to fluids which are out of their proper vessels.
- Fæces**, Excrements discharged from the intestines.
- Fauces**, The back part of the mouth.
- Febrile**, Pertaining to, or indicating fever.
- Flatulency**, Windiness in the stomach and intestines.
- Fluid**, That which has the quality of flowing; a liquid.
- Fomentation**, A sort of partial bathing, by applying flannels dipped in hot water, or medicated decoctions, to any part.
- Friction**, The act of rubbing the surface of one body against that of another.
- Fumigation**, The application of fumes, or vapors, to destroy contagious effluvia in rooms, &c.
- Gas**, A permanently elastic aeriform fluid.
- Gastric**, Appertaining to the stomach.
- Gastritis**, Inflammation of the stomach.
- Gland**, In *anatomy*, means a distinct, soft body, composed of blood-vessels, nerves, and absorbents, and destined for the secretion or alteration of some peculiar fluid.

Hemorrhoids, The piles.

Hemorrhagy, A flux of blood proceeding from the rupture of a blood-vessel, or some other cause, other than external injury.

Humoral, Pertaining to, or proceeding from the fluids of the body.

Hypochondriac region, The spaces in the abdomen that are under the cartilages of the spurious ribs.

Hypogastric region, The lower part of the abdomen.

Idiopathic, This term is applied to such diseases as exist independent of all other complaints, in contra-distinction to those which are symptomatic.

Idiosyncrasy, A peculiar temperament or constitution of the body, which renders it liable, under certain circumstances, to a particular disease, which other persons under similar circumstances, would not be subject to.

Integument, The covering which invests a body, or some particular part of a body, as the skin, nails, &c.

Intestines, The convoluted membranous tubes, situated in the cavity of the abdomen, vulgarly called guts.

Jejunum, The second portion of the small intestines, so called because commonly found empty after death.

Lachrymal, Of, or appertaining to, tears, or the glands by which they are secreted, &c.

Lacteals, The vessels which absorb the chyle from the intestines, and pour it into the thoracic duct.

Lesion, A hurt; wound; injury.

Ligament, An elastic strong membrane, connecting the extremities of the moveable bones.

Lithontriptics, Substances which possess the power of dissolving gravel, or stone, in the urinary passages.

Lobe, A part or division of the lungs, liver, &c.

Local, Belonging to a part and not to the whole.

Loins, The small of the back.

Lumbago, A rheumatic affection of the muscles about the loins.

Lumbar regions, The loins.

Lungs, Two organs situated in the chest, by means of which we breathe.

Lymph, A colorless fluid, separated from the blood, and contained in certain small vessels, called *lymphatics*.

Mania, Raving or furious madness.

Materia Medica, That branch of medical science which treats of the nature and properties of substances employed for the cure of diseases.

Mediastinum, A membranous partition, which divides the cavity of the chest into two parts.

Membrane, A thin, flexible skin, serving to cover some part of the body.

Metaphysics, The science of the mind; relating to the mind or immaterial things.

Miliary, A disease accompanied by an eruption of the skin, resembling millet seeds.

Morbid, Diseased, sickly.

Mucus, A slimy, ropy fluid, secreted by the mucous membrane.

Muscles, The organs of motion consisting of fibers, or bundles of fibers, inclosed in a thin cellular membrane.

Narcotic, A medicine which has the power of procuring sleep by stupefaction.

Nausea, An inclination to vomit, without effecting it; also, a disgust of food, approaching to vomiting.

Nerves, Long white cords, originating in the brain and spinal marrow, and extending throughout the whole body, serving as the organs of sensation, &c.

- Nitrogen gas*, An elementary, gaseous fluid, incapable of supporting animal life; composing nearly four-fifths of the atmospheric air.
- Nosology*, The arrangement of diseases in classes, orders, genera, species, &c.
- Œsophagus*, The tube through which the food passes from the throat into the stomach.
- Organ*, A part of the body capable of performing some perfect act or operation.
- Oxide*, A substance formed by the union of oxygen with some other material; thus, rust of iron is a *red oxide* of iron; the scales about the anvil of a blacksmith are a *black oxide* of iron, &c.
- Oxygen*—*Oxygen gas* composes about one-fifth of the atmospheric air. It was formerly called vital air, because it appeared to be the only part which exercised any stimulant effect upon the living power. It appears to be absorbed or consumed in the combustion or burning of fuel; and its absorption by cider, and other liquids, produces vinegar, and is hence called the principle of acidity, &c., &c.
- Pallor*, Paleness.
- Pancreas*, A soft, supple gland, situated in the lower part of the abdomen, which secretes a kind of saliva, and pours it into the duodenum.
- Pancreatic*, Pertaining to the pancreas.
- Papillæ*, 1. The nipple of the breast. 2. The fine termination of the nerves.
- Paralysis*, Palsy; the loss of the power of muscular motion.
- Paroxysm*, 1. An obvious increase of the symptoms of a disease which lasts a certain time and then declines. 2. A periodical attack or fit of a disease.
- Pathology*, The doctrine of diseases.
- Pathological*, Relating to disease or a diseased state.
- Peristaltic*, The vermicular (worm-like) motion of the intestines, by which they contract and propel their contents.
- Perspiration*, Evacuation of the fluids of the body, in the form of vapor, by the pores of the skin.
- Pharynx*, The muscular bag at the back part of the mouth, which receives the masticated food, and conveys it into the œsophagus, or gullet.
- Philosophy*, Is an investigation of the causes of all phenomena, both of mind and matter. [It has various other definitions.]
- Physical*, (In the sense in which this word is used in the foregoing work, means) Pertaining to *material* things, as opposed to things *imaginary*, or *immaterial*.
- Physiology*, That science which treats of the phenomena proper to *living* bodies.
- Physiological*, Relating to the living state, or more especially to the laws and actions or operations of living bodies in a state of health; and in this sense is opposed to a pathological or diseased state.
- Phytotomy*, (or *Phytology*.) A discourse or treatise of plants, or the science of plants; vegetable anatomy.
- Plethora*, 1. An excessive fullness of vessels, or a redundance of blood. 2. A fullness of habit or body.
- Pleura*, A membrane which lines the internal surface of the thorax or chest, the inflammation of which is termed pleurisy.
- Præcordia*, The forepart of the region of the thorax.
- Predisposition*, Previous inclination.
- Priapism*, Continual erection of the penis.
- Primæ viæ*, The first passages; the stomach and the intestinal tube.
- Proximate*, Nearest; next. A *proximate cause* is that which immediately precedes and produces any particular effect.

- Ptyalism*, An increased secretion of saliva from the mouth.
- Pulmonary*, Appertaining to the lungs.
- Purgative*, That which increases the intestinal discharges by stool.
- Pus*, Matter; a whitish, cream-like fluid, found in inflamed abscesses, or on the surface of sores.
- Pustule*, A small pimple or eruption on the skin, containing pus.
- Putrefaction*, The spontaneous decomposition of such animal and vegetable matters as exhale a fetid smell.
- Refrigerant*, A medicine which allays the heat of the body or of the blood.
- Respiration*, The act of breathing.
- Retching*, Straining to vomit.
- Rubefacient*, A substance which, when applied a certain time to the skin, induces a redness without blistering.
- Saburrhal*, Relating to foulness of the stomach.
- Saliva*, The fluid secreted by the salival glands and poured into the mouth; spittle.
- Salivation*, An unusual secretion and discharge of saliva, usually produced by mercury, for the cure of disease.
- Salient*, Springing; starting; darting.
- Salt*, In *chemistry*, this term is used to denote a compound, in definite proportions, of acid matter with an alkali, earth, or metallic oxide.
- Sanguiferous*, Conveying blood; as, for example, the blood-vessels are termed the sanguiferous system.
- Sciatica*, A rheumatic affection of the hip-joint.
- Scirrhus*, A hard tumor commonly situated in a glandular part, and often terminating in a cancer.
- Sebaceous*, Made of fat.
- Secretion*, The act of producing or separating from the blood substances different from the blood itself, or of any of its constituents, as bile, saliva, &c. &c.
- Sedative*, A medicine that moderates muscular action, or animal energy, particularly checking the circulation of the blood.
- Sensorium*, The brain is so called because it is the organ of all the senses.
- Serum*, 1. Whey. 2. The fluid which separates from the blood when cold and at rest.
- Sesamoid*, This term is applied to the small bones sometimes found at the joints of the great toes and thumbs.
- Sialogogues*, Medicines which excite an uncommon flow of saliva.
- Spasm*, Cramp or convulsion.
- Spinal*, Pertaining to the back-bone.
- Stertor*, Loud and difficult breathing.
- Sthenic*, A term used by Dr. Brown, to denote an inflammatory state of the body, arising from an excess of vigor.
- Stimulant*, } Medicines which excite the action or energy of the system.
- Stimuli*, }
- Strangury*, A difficulty in voiding urine, attended with pain.
- Subclavian*, Situated under the clavicle or collar bone.
- Subcutaneous*, Under the skin; a name given to some nerves, vessels, glands, &c. which are very near the surface of the body.
- Suppuration*, The process by which pus, or matter, is deposited in inflammatory tumors.
- Syncope*, Fainting or swooning.
- Synocha*, Inflammatory fever.
- Syphilitic*, Pertaining to the venereal disease.
- Tendon*, The white and glistening extremity of a muscle, by which it is attached to the bones.
- Tepid*, Lukewarm.

- Tetanus*, The cramp; fits.
- Thorax*, The chest.
- Tinnitus aurium*, A noise, or ringing in the ears.
- Tissues*, The textures which compose the different organs.
- Tonics*, Medicines that increase the strength or tone of the animal system.
- Topical*, Local; confined to some particular part.
- Torpid*, Numb; stupid; inactive.
- Trachea*, The wind-pipe.
- Transpiration*, The exhalation of fluids from the pores of the skin, or lungs; perspiration.
- Trunk*, The main body of any thing.
- Tube*, A pipe; a cylindrical vessel which conveys a fluid, or other substance.
- Typhoid*, Resembling typhus; weak, low.
- Umbelliferous*, Bearing umbels; that is, flowers resembling in their form an umbrella, such as the parsnip, fennel, &c.
- Umbilical*, Pertaining to the navel.
- Vapor*, Steam; an elastic, moist fluid which is thrown off from wet substances, by the application of heat, and which may be brought back to a liquid or solid state by cold.
- Vapor bath*, A place for applying vapor to the body.
- Vegetable*, A plant.
- Veins*, Vessels which return the blood to the heart.
- Vena cava*, This term is applied to the two large veins through which the blood is poured into the heart—the one from the head and the other from the lower extremities.
- Venous*, Pertaining to the veins.
- Ventricles*, The two cavities of the heart, which propel the blood into the arteries.
- Vertigo*, Dizziness; giddiness of the head.
- Vessels*, In anatomy, are the tubes or canals which contain or convey the fluids, from one part to another.
- Viscera*, The plural of viscus, a name commonly applied to the organs contained in the thorax or abdomen, as the lungs, liver &c.
- Viscid*, Glutinous; sticky.
- Vis medicatrix naturæ*, The healing power of nature in animal bodies.
- Virus*, Poison; the foul and contagious matter of an ulcer, &c. &c.
- Zootomy*, That branch of Natural History which treats of the forms, classification, habits, &c. of animals, particularly brutes.

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