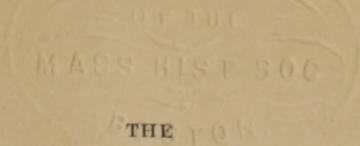


Gould (Aug. A.)

"Search out the secrets of nature"



Search out the Secrets of Nature:



ANNUAL DISCOURSE

BEFORE THE

MASSACHUSETTS MEDICAL SOCIETY,

AT

SPRINGFIELD,

JUNE 27, 1855.

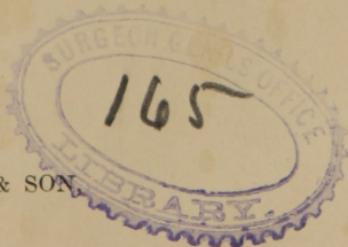
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DISCOURSE.

WHEN Harvey instituted the Oration which bears his name, and which is annually pronounced before the Royal College of Physicians, he indicated the spirit in which he would have it conducted, and the direction to which he would have it tend, in nearly the following words:—

“To maintain friendship, there shall be at every meeting, once a month, a small collation, as the President shall see fit, for the entertainment of such as come, and, once a year, a general feast for all the Fellows; and on the day of such feast shall be an oration, by some member, in commemoration of the benefactors by name, and what in particular they have done for the benefit of the College, with an exhortation to men to imitate; and an exhortation to the members to STUDY AND SEARCH OUT THE SECRETS OF NATURE, by way of

experiment; and, for the honor of the profession, to continue mutually in love.”

Were there no other evidence that the illustrious man who dictated these words, like every other man who makes his way to eminence in any calling, had a thorough and philosophical insight into human nature, as well as a just conception of the only true method of making real advances in science, the above brief platform would afford an ample testimonial. Conviviality, for the maintenance of friendship and harmony; a rehearsal of the virtues, labors, and attainments of our predecessors, for our imitation and encouragement; and an appeal in behalf of nature as our sure guide, and the source from whence all the yet unacquired secrets of our art are to be derived.

Happily, this association is modelled upon the same general plan, and has for its object the same general purposes, to be attained by similar means. The District Societies have their occasional meetings, and their collations, which, we have ample assurance, have tended essentially to the promotion of friendship and neighborly courtesies; have brought into contact good men and true, who would otherwise have kept aloof from each other; and have rendered almost impossible, after a participation in each other's hospitality, those jealousies and interferences which have too often disgraced the profession. And now we have our annual general feast for all the Fellows, in which, if in nothing else, we doctors can cordially co-operate; where theories are all reduced to first

principles, and result in uniform practice; where feuds are forgotten, and friendships are cemented, under the genial influences of good cheer; and all conspires to induce us, in the words of our theme, to "continue mutually in love," and thereby insure the honor of the profession. The further elucidation of this point, however, will be deferred to the prescribed hour for the feast; and we shall proceed to the legitimate object of the oration, — namely, to commemorate our departed associates, and to exhort the members "to study and search out the secrets of nature."

First, let us discharge the solemn duty of paying our tribute to the worth of our departed associates. So far as I have been able to ascertain, twenty-six of the immediate and retired Fellows of this Society have deceased since our last meeting. They were taken from all ranks, as regards age, experience, and active usefulness, — some of them in the enjoyment of the confidence and emoluments which are the avails of a successful career; and some just entering upon the long and doubtful course, big with hope, and strong in the consciousness of merit. The number and standing of those who were taken from the ranks of one single year, — the year 1824, — are quite remarkable. They were, Christopher Deane, Zabdiel B. Adams, Rufus Longley, and J. Stearns Hurd; — ADAMS, whose countenance, radiant with benevolence and good humor, and whose ever-ready speech, will long be recalled at these our annual gatherings; LONGLEY, whose aid and counsel were sought by a wide circle of physicians around him; HURD, whose

cheerful spirit and blameless manners endeared him to all who knew him. We mourn also GUTEAU, one of the most devoted and faithful members of the Society, from the western part of the State; GREGERSON and PARKER, whose accomplished manners and cultivated tastes were so remarkable; PARKMAN, whose noble person and manly bearing were but the result and expression of his character; and BURNETT, who, though youngest, if we count his years, must be reckoned oldest, if we enumerate his attainments. These, and many others, have bequeathed to us their virtues, their example, and the sum of their acquirements, and have gone. [See Obituaries, following the Discourse.]

Every one will doubtless assent to the dogma, that nature should be our guide, both in the maintenance of health and in the treatment of disease. "*Natura Duce*," is the chosen motto of this Society. Each one professes to be following her as his leader, and might feel indignant were his loyalty to her to be called in question. And yet, how very few have in reality been at much pains to ascertain her laws, or to observe the facts on which they are based! How very many rely upon books alone for instruction, and are content with what they gather there; who expect to find diseases in the sick-room just as they are laid down in the books; who adopt modes of treatment and remedies for no reason which they can understand, except that they are found recommended! Such was not the course pursued by those who, in all ages, have been the great lights of medicine, and

who have written the standard works of our science. Not that I would depreciate books, or harmonize with those who vaunt themselves on an experience so extensive as to render books superfluous. Books are indispensable. They bring us into the presence of the wise men of all time; they are the storehouses of the knowledge of the past; and, to those who are capable of interpreting them, they give, at short hand, the invaluable results of the painful and protracted labors of the scientific observer. But, in order to be able rightly to understand such results, and to discriminate between what is reliable and what is baseless, one must have been somewhat trained in the school of observation; otherwise he will be in much the same case as a person who reads a language which he has not learned to interpret. He may, indeed, read the words, but will gather no instruction from them. Just in proportion as we become familiar, by observation, with the great laws of nature, shall we be better able to profit by the teachings of the great masters, and to rightly apply them in practice.

As Nature is to be our theme, it seems necessary to define what we mean by the term. We are accustomed to speak of nature as an intelligent agent, exercising a sort of universal sway over the works of God; but it is a complex term, including all those laws imposed by the Creator, according to which two or more substances, or attributes, or minds, under given circumstances, act upon each other in a definite manner. In general, we ascribe to nature all results in which the agency of man is not involved; and then

we employ the term "art." Art, indeed, is but an imitation of nature, or such a combination of her laws as to produce a proposed result with certainty and constancy. Nature furnishes the marble, and art makes the statue after nature's model. Nature has certain laws of gravitation, expansion by heat, and contraction by cold. Art combines them in such proportions as to set in motion the steam-engine. Nature has arranged it so that certain dead elements shall be converted into living tissue; but, while no art is capable of constructing a living organism, it can supply the elements indicated by nature, which that organism, if left to itself, might often fail to obtain, and would consequently perish; or can regulate the supply, so as to secure the most desirable results. Many of nature's laws are already well understood; and nothing remains but to extend the knowledge of their application. These are, for the most part, laws which relate to mere matter; but the laws of life, those relating to living organisms, are far less understood; and these it is the special province of medical science to scrutinize and develop. These are the secrets of nature which you are to be exhorted to study and search out. We are to investigate the laws of living bodies in particular, and of all matter in general; and all our researches are to be made subservient to our calling as medical men; namely, to prolong the life, maintain the health, and remove or mitigate the maladies of man. The whole circle of science is more or less involved in a full comprehension of the microcosm, man. No man, indeed, can be expected

to make himself master of all science ; but he can render himself proficient in some one or more of its branches. Some of them, as chemistry, botany, electricity, and magnetism, are indispensable ; and the more of them he is able to pursue, the more clear will be his comprehension of the work before him, and the more numerous his resources in the healing art ; since all our interference must be imitations of nature's own operations. All advances in medicine, as in other sciences, have been gained by a close study of facts as observed in nature. No one has ever added any thing valuable to the stock of medical knowledge who has not been a diligent student of nature ; and whoever expects to make any positive advances in future, must pursue the same track. Theories, to be enduring, must be found to coincide with her laws ; and no man can be capable of framing a substantial theory who has not become deeply versed in them from actual observation. No conclusion has ever stood the test of time, and gained general consent, that is not in conformity to them.

In pursuing our inquiries, we may arrange our ideas as they relate to the study of medicine, the diagnosis, and the treatment of disease.

And, first, we may allude to medical education.

To be properly qualified for an appreciation of the laws of nature as pertaining to our art, a thorough study of physiology is requisite. Though, strictly speaking, physiology is termed the science of life, yet, as ordinarily understood, it includes all the processes, whether vital, chemical, or mechanical, which go to

originate and build up a living structure, and maintain its integrity; so that our studies in this department must lie, for the most part, in the investigation of nature's laws. All the phenomena of life, from the earliest development of the embryo to the culminating vigor of manhood, embracing each and every organ and tissue of the body, and the manner in which they are singly and collectively affected by the external agents on which they depend or with which they may come in contact, pertain to the study of physiology coupled with anatomy. Then come the laws of disease and decay. To become masters of these, is the great and ultimate end to which we aspire; and their baneful effects it is the purpose of our art to remove or counteract. But disease and decay are simply deviations from health and progressive development, induced by the influence of external causes, or by the gradual failure of the organism from use; these call for a modified action of the reparative processes, in aid of which our skill is demanded. After the anatomical structure of the body, then, which is only to be fully and understandingly attained by comparison of the structure of one animal with that of another, our next step should be to become thoroughly acquainted with the laws of life and health. Let every manifestation of them, as they are exhibited in external form and aspect, and in those internal processes whose effects and results only can be seen, be minutely and thoroughly understood. To the structure and functions of the healthy body, and the agencies by which they are built up and sustained, we believe that

at least the first half of medical pupilage should be devoted.

This, we fear, however, is seldom done. The pupil conceives the idea that the vocation of his life is to ferret out and contend with disease; and that, the sooner and more exclusively he grapples with the foe, the sooner will he be able to defy it and achieve easy victories. He imagines diseases to be distinct entities, which may be recognized and studied each by itself, as he would study a mineral or a plant in its isolated simplicity. He does not know, or he does not consider, obvious as may be the idea, that disease is a deviation from health; that he must be familiar with health before he can recognize the deviation; and that the laws which govern the healthy system are the weapons by which he is to exterminate disease. Would the botanist commence the study of his science by an examination of flowers hypertrophied and rendered fruitless by cultivation, or atrophied and disfigured by blight and mildew? He might, indeed, find such specimens very curious; he might become familiar with their aspect, and accurately describe them; possibly, by empirical experiment, he might arrive at some process by which the natural condition could be restored; but he could have no proper understanding of the nature and cause of the deviation, nor could he apply any rational remedy. What anatomist would think of commencing his studies by the dissection of hare-lips, club-feet, and acephalous monsters? Just so is it in the study of disease and the application of reme-

dies. To begin with the study of aberrant, rather than of normal phenomena, is simply absurd. The light we derive from the observation of disease is indirect. We study it as contrasted with health, from which it is a departure; and the healthy condition we must well know before we can clearly comprehend the deviation, however graphically it may have been described. The disturbing causes and the deranged mechanism must be understood before we can rationally interfere, and, by well-chosen remedies skilfully directed, restore the natural processes. Is it not plain, that the shortest way to arrive at the knowledge of disease and its rational treatment is by restraining the pupil in his eagerness to investigate disease, until, by a prolonged attention to anatomy and physiology, — much longer than is ordinarily given, — he first becomes fully acquainted with all the phenomena of life and health?

The DIAGNOSIS of diseases calls into requisition all the knowledge which can be derived from an accurate and extensive observation of the body in health, — as to its external appearances and internal operations, and, of course, all the departures from them; all the phenomena revealed by physical signs, including chemical tests and the microscope; and finally, after facts are gathered from every source, they are to be combined, reasoned upon, and a conclusion drawn. To arrive at a full and accurate diagnosis of a disease, and determine satisfactorily the seat, extent, and nature of it, may be regarded as the highest achievement of our art, and requires faculties of the highest order. Very

few ever arrive at such exalted skill in diagnosis as to be able, promptly and fully, to pronounce with confidence and certainty upon the great majority of diseases as they present themselves; and, among those few, there are still fewer who combine with it skill in treatment. A Velpeau is almost a miracle.

Diagnosis has less to do with the laws of nature, and more with the reasoning powers, than has physiology. Yet, to show how much an application of physical laws has done for medicine, we need only refer to the rapid and positive advance which has been made in the diagnosis and treatment of diseases of the thorax by means of physical signs. May we not hope that, by somewhat similar applications, we may arrive at a far better detection and discrimination of intra-cranial and abdominal affections than we have yet attained?

A disease or an injury exists. Is our patient to die or recover, is the important question. Are we to leave him to himself, or are we to cure him? I need not say that we are to *cure* him, in the primitive sense of the word; we are to *take care* of him, and restore him, if we can. This, of course, is not always possible, however much the world may demand of us. Death is to be expected from the analogy of nature; it must finally arrive to each one of us. We are not on that account to sit down spell-bound, and passively await the fatal stroke. Nature herself has provided remedial agents, and has indicated their application in many instances. By her unaided efforts, she resists and repairs injuries which would otherwise certainly end in death; but in other instances she fails. How

far, then, and in what sense, may we trust to Nature in the cure of diseases? and under what circumstances are we called upon to resist or promote her processes?

The occasions demanding the intervention of the healing art may be either for mechanical injuries, vices of nutrition, derangement or special action of the functions of individual organs, or a general affection of the system from the introduction of morbidic poison.

In the case of mechanical injuries, there may be either rupture of continuity, or loss of substance. Is there any way by which we can, by mechanical means, produce a union of cut or ruptured surfaces? It is plain that we cannot. No rivets or sutures will answer the purpose. We can place the parts in nicest apposition, and apply splints, bandages, and plasters; but Nature herself must throw out the plastic lymph and the earthy matters, and produce the union. Can we supply lost substance, and cover it with skin? No; but we can amputate limbs and excise tumors, and can reduce the exposed surface to the smallest practicable dimensions; we can cleanse ulcers, promote healthy and speedy granulation, and induce Nature to add new substance; and she alone can add it. All we can do is to secure for Nature, in a way most comfortable to the patient, the most favorable circumstances for her operations; and, by careful adjustment, pruning here and promoting there, to render seemly and useful what might otherwise have been hideous and inconvenient. The same is the case

in all other instances of surgery proper. We may couch the cataract, and substitute an artificial lens, cut out the head of a bone, or slice off a severely contused surface, instead of waiting until it separates by natural process: but we cannot cause a new lens to grow; we cannot maintain the original length of the limb by any substitution of bone or other substance; nor can we, by replacing the flesh and skin from other sources, supply the lost substance. We may aid Nature; but we cannot do without her.

Another series of maladies may be ascribed to vices of nutrition, which may have been derived from parents, or induced by abuses, or by privations in the way of the comforts of life, — air, exercise, diet, and protection. There is a tone and adjustment of the system which insures vigor, and involves only the common decay incident to every living thing. Any considerable disturbance of this adjustment must entail permanent disorder. So long as the removal and replacement of matter go on within the limits allowed by nature, the proper structure of an organ is preserved; but, if either of them be greatly exaggerated, there will be disease and destruction, if the change be rapid; or, if slow, there will be chronic and obstinate, if not incurable alteration. External causes are constantly operating to produce such a disturbance. Hence the great variety of morbid conditions, as manifested in hypertrophies, atrophies, softening and induration, malignant growths, &c.

Here, then, is required a most searching scrutiny of nature. We are to ascertain the exact office of each

organ, and the due proportion of duty belonging to each ; what organ is supplementary to another, and may be made available for its relief ; what agents are the special stimulants or sedatives for each organ ; and, finally, we are to determine in what respect and in what degree there is a departure from normal action. Alas ! how little of all this is, thus far, known ! And yet all must be known before we can remove in the greatest possible number of instances, or palliate in the greatest possible degree, these most discouraging and discomfoting of all maladies. The field is here all open for scientific investigation. Nor need we despair ; for the microscope is disclosing the structural changes of the tissues, and chemistry is declaring the constituents and precise proportions of the fluids, and of the ingesta ; so that we may select what is least injurious or best calculated to compensate for deficient or imperfect secretions. We need not despair, I repeat, that even diabetes, scrofula, tubercle, and cancer may yet yield to the resources of rational medicine. Unlike the series before mentioned, these diseases are not local, but constitutional, affecting internal glandular structures ; no one of which, nor any considerable portion of any one, can be dispensed with, without destruction of life. Every thing, therefore, must here be done in the direction of Nature's own operations.

Passing by those affections which result from a derangement or special action of individual organs, as they relate to the preceding group much as parts relate to a whole, we proceed to those general, and,

to a remarkable degree, definite and self-limited diseases induced by pestilential miasmata, and which are now usually grouped under the general term of zymotic diseases; such as the various forms of fever, dysentery, cholera, smallpox, &c. These are, indeed, the purest forms of disease. They arise from no vice of the constitution, no derangement of single organs, no mechanical injury; but are induced by some subtile agent, which the patient and vigilant application of all the means thus far at our command have failed to detect; often pervading, at the same time, extensive regions, and sometimes, if not always, communicable from one person to another. It is by far the most important group of all others; and the prevalence or absence of the diseases included under it is the gauge of the sanitary condition of any locality or region. No class of diseases has been so thoroughly studied; and the resultant phenomena are well known. Many of the exciting causes are also well understood; and, by the removal of them, multitudes may be saved who would otherwise contract disease. But no theory has yet led us to the primary cause, the morbidic poison, — nor ever will. If it is ever detected, it must be by a further scrutiny into the secrets of nature. The emanations from the soil and waters, and the meteorological state of the atmosphere, will yet be so analyzed as to yield up the secret; and, if we shall not be able to annihilate the poison, we may learn to avert or avoid it.

Let us now advert to the treatment of disease. Whether disease be regarded as a destructive process,

which must be directly encountered and subdued, or whether it be a healthy process, instituted for the expulsion of destructive agents, which we are to promote and keep within due limits, we are alike under the necessity of taking Nature for our guide, and of following her indications in the management of them. For many centuries, and in various ways, it has been discussed, whether we should take the entire management of disease into our own hands, and expel it by specific remedies and heroic treatment, or leave it entirely or mainly to the course of nature. The *vis medicatrix naturæ* and the *expectante treatment* are terms familiar to every one. A class of diseases has been appropriately denominated "self-limited;" and recently we have had presented to us two medical publications under the title of "Nature in Disease." The opinion is by no means a rare one among the people at large, that medical treatment is of little value. Indeed, when we ourselves consider the large proportion of patients, both in savage and civilized life, who recover, not only without treatment, but under all systems of treatment, and in spite of the grossest abuse of treatment, we may well be inclined to undervalue the resources of Art, and exalt the powers of Nature. Were the powers of Nature unlimited, and were her original processes undisturbed, death would not occur; and, even when accidents or limited departures might happen, health would again be restored by her efforts alone, did she not sometimes defeat her own object, by bringing on fatal difficulties in the attempt to remedy those of perhaps minor impor-

tance ; or sometimes, by deficiency of energy, fall short of the mark ; or, by excessive action, sometimes produce destruction. Nature, therefore, cannot be left entirely to herself: it is for Art to stimulate, restrain, and guide her efforts, and to interfere whenever they are deficient, excessive, or wrongly directed.

That there always has been, and still is, a tendency to over-treatment, is quite certain. It has arisen in some measure, among ourselves and in England, from the practice of having the person who furnished the prescription furnish the medicine also, sometimes taking pay for both, and sometimes for the medicine only. And thus there was a mercenary motive for excessive medication. It has arisen from an inherent love of medicine in some persons ; or an impatience under suffering that demands a constant interference, which the physician finds it impossible to resist. Sometimes we are led into it by the importunities of friends, who feel that they have no human hope but in our aid, and expect us to be constantly doing something. Very often it arises from undervaluing or not understanding the resources of nature, and overrating the appliances of art. But most of all does it arise from the imperfection of our knowledge. In consequence of an uncertain diagnosis, a ^mcompetent understanding of the causes in action, the laws violated or the agents capable of restoring the normal state, we are incapable of adopting at once the appropriate treatment. We try one drug, and it fails ; soon another, and it fails ; and then a third, and so on ; and still no satisfactory impression

is made on the disease; or it may be one of the so-styled self-limited diseases, the normal progress of which no treatment could curtail. With our present imperfect knowledge of many diseases, this is the only course we can take; and it is in this direction that we are to expect to be enlightened by the further interrogation of nature.

Our first object, in the treatment of disease, is to ascertain the thing to be accomplished; then the process by which it may be accomplished. Nature should be our chief reliance; and when the processes she institutes are going on regularly, the less we interfere the better. The province of the physician is to become satisfied of this fact; and, if there is any deviation from the track, or any acceleration or retardation necessary or possible, to determine and apply the appropriate means for the desired end. He is to decide when to act and when not to act. He is to remove obstacles from her path; to incite her when she flags; to sustain her when she seems on the point of discouragement; to check her impetuosity; to interrogate her, and supply those cravings which are generally the indications of her necessities; and, whenever possible, to concur with her in her efforts. He is to be ever on the watch, equally cautious not to act when his action would be either unnecessary or prejudicial, and prompt to aid or interfere when it may be done with effect. He may be compared to the pilot. If the vessel is on its proper course, with a steady wind, as it often is for hours and days in succession, what necessity or propriety is there in constantly agitating

the helm this way and that? Yet the pilot must none the less remain constantly at his post, his hand on the wheel and his eye on his course, ready to act in any emergency. So the physician must be on hand, and vigilantly watch the aspect of his patient and the course of the disease, — quiet, if he is satisfied that all goes right; ready and prompt to interfere if any thing goes wrong.

There are very few cases of disease, however, where the office of the intelligent physician is not of the highest importance. How often does he at once dissipate anxiety and apprehension, more insufferable than disease itself, when he assures the husband or the parent that there is no danger, — that all will go well without his interference even! How seldom is it the case that there is not some doubt to be removed, some pleasant and refreshing arrangement to be suggested, some occasional pain to be removed, something likely to insure refreshing sleep to be administered! I have often been led to compare the progress and comfort of disease when kindly and skilfully treated, and when harshly and inexpertly treated, to the traveler on the railroad or on the corduroy road. By either way he may be equally sure to arrive at his destination; but how different the speed and the comfort! It is truly painful to see the tortures which some will submit to, because they or their friends have recovered under the infliction of them, from some perilous sickness, — made perilous indeed by the remedies administered, rather than by the necessities of the case.

Studying out, therefore, in every case, the indications

and capabilities of Nature, and relying upon her, as we would, so far as may be done with discretion, there will still be demands for medical treatment and remedial means. Setting aside those cases where Nature defeats her own object, — such as the effusions into closed cavities, the destruction of important organs in the attempt to remove foreign bodies by ulceration, the exudation of lymph in croup, &c., where death must generally ensue, unless Art gives timely relief, — we can certainly do much by simply aiding Nature in accomplishing her own designs.

The most important methods of co-operation are indicated by Nature herself. Headache comes on, or a surfeit has been indulged in, and the stomach rejects its contents; a violent disease of any kind affecting the whole system arises, and in like manner nausea and vomiting supervene; the heart labors, the head reels, and blood bursts spontaneously from the nostrils; excessive hemorrhage occurs, and fainting both checks the bleeding and lays the sufferer prostrate, where he is sure to revive; hernia becomes strangulated, and no ingesta are allowed to pass the stomach; a burn or scald, or any superficial inflammation occurs, and vesication relieves the part; an eruption is suddenly repelled, and constitutional irritation immediately follows; the thorax or abdomen becomes distended with fluid, until respiration becomes nearly impossible, and, fortunately, we perceive Nature indicating a point where she purposes to make an outlet, and which she does make if life continues long enough; and so we might go on *ad infinitum*. By observing her pro-

cesses, we have come to imitate and anticipate her operations in many ways which, not long since, would have been considered suicidal. How emphatically may we point to one which has been recently, I will not say originated, but introduced, and most triumphantly established, by two of our own members! I refer to the modified operation of Paracentesis Thoracis. How, then, can any system of treatment be considered in accordance with Nature which interdicts bleeding, and blistering, and vomiting, and purging, and all those modes of relief which she so uniformly adopts and unequivocally points out?

It does not follow, however, because a physician refrains from bleeding or purging, or from administering drugs, that he is either neglectful or inefficient. Active measures are seldom necessary except at the onset of disease. After the alimentary canal has been cleared, local congestions removed, perspiration induced or attempted, and those preliminary efforts aided by which Nature attempts to repel disease before it shall have become established in the system, we may then be content to adopt the expectant plan of treatment.

Drugs, in themselves considered, may always be regarded as evils; for, though they may benefit some organ or function, they must almost necessarily affect some others injuriously. They are to be avoided, except when they are the least of two evils, — when they induce a tractable instead of a troublesome affection, or accomplish some object without which great harm would ensue. Medicines are to be reserved for

emergencies. They are not the animal, but the whip and spur which may stimulate the animal to a momentary outlay of strength, so as to surmount some unusual obstacle. They are not the winds; but we may so trim the sails and direct the helm as to catch the breeze or ride out the storm. They are not the locomotive; but they may remove obstacles from the track, or apply the brakes, and save the train from destruction. They cannot supply the place of beef, bread, and ale; but they may stimulate the enfeebled digestive organs to an extra effort long enough to assimilate the nutriment.

In selecting and administering remedies, it is essential that there should be an evident relation between the remedy and the malady. If we have not yet arrived at the knowledge of any such relation, there is still something to be learned. It is not enough to know, certainly even, that such a drug will produce a required effect upon a given disease: we must know the reason why. We have by no means a right to decide, because a certain result follows the use of a certain drug, that they are related as cause and effect. There is, indeed, a sequence; but it may be explained in another way. It is the common belief, that the drops on the outside of the pitcher of ice-water have permeated its walls. It is plain that the drops outside stand at the same level as the fluid within; one can believe his own eyes; and yet there is no such transpiration; and there is a perfectly conclusive way of explaining the phenomenon in accordance with Nature's laws. So, too, another sees the water boil under the

exhausted receiver of the air-pump until it freezes. He is amazed at the paradox ; but the evidence of his senses is enough for him. There is, indeed, ebullition ; but there is no heat, as he supposes.

So too, there must not only be a rational relation as of cause and effect, but the cause must be rationally adequate to the effect. We have no right to believe that the boiler we use for our eggs would propel an ocean steamer, or that a thimbleful of gunpowder would batter down the walls of Sebastopol ; much less, that the more we reduce the cause, the more we augment the effect. No effort of reasoning can conduct to such a conclusion. And though there is apparently the relation of cause and effect in such cases, it is impossible to avoid the conclusion, that other causes have been in operation which we have failed to take into the account.

It has been maintained that Nature has furnished an antidote for every malady, — some mineral, or plant, or animal product. From the reports of travellers in the almost unexplored regions of the globe, especially in the East and in the interior of South America, it is evident that a vast multitude of potent medicinal agents still remain to be brought out and applied ; and the idea, that there is a specific remedy for every disease, may not be far from the truth. But it is also said, that, though this may be so, the impossibility of assigning the designed remedy virtually renders the administration of drugs nugatory, or even dangerous. In the present state of our knowledge, there is much truth in this inference. It

is this very incertitude that is to be removed by the determination of natural properties and natural laws. It should only furnish us an additional incentive to improve our methods of observation and application. Many positive determinations have already been made by the laws already known. Multitudes of simples which have encumbered the *Materia Medica* have been proved inert, or have been replaced by others more efficacious. The active medicinal principles have been extracted from the crude masses, reduced to their smallest possible volume, and their precise nature ascertained. Let us go on to investigate.

While we have full faith in the value of medicines when judiciously administered, we hold, also, that the careful regulation of those conditions and practices which belong to every-day life — the diet and regimen — is not sufficiently appreciated. To regulate for the patient the kind, quantity, and frequency of his food and drink; to withdraw him from labor and care, and give him rest and sleep; to enforce the mode and amount of exercise; to regulate his temperature, — will accomplish almost any thing that can be effected by powerful drugs; and, in the long run, these details are much more important than drugs. Hence it is, that those empirical systems of treatment which have come nearest to dispensing altogether with medicine, at the same time requiring strict attention to diet and regimen, have met with a wider and more lasting favor, and have really been far more successful, than those which have been based on heroic medication. Medicines themselves are but certain properties contained

in our ordinary articles of diet in a more concentrated form, — enabling us to accomplish, by a more direct and speedy process indeed, what might ultimately be effected by diet and regimen alone. By a competent knowledge of the properties of the articles of food and drink, and their effects on the living organism, we may at least co-operate with nature, if we cannot wholly dispense with drugs. The great difficulty in the way is, to satisfy the patient that we are not trifling with his disease, unless we give him medicine.

Ordinarily, the physician is a recognized and the best judge of what is most appropriate for the patient; and every thing should be left to his discretion. Every practitioner of moderate experience knows, however, that there are idiosyncrasies which defy all rules. Some patients cannot bear nature's universal beverage, — cold water; and must have a substitute for this simple article, so universally craved by the sick in general. The rose and the new-made hay produce disease in others. The adage, that "one man's meat is another man's poison," is literally true. In his familiarity with these idiosyncrasies lies the advantage of adhering to a physician who has for years observed us, and therefore is not likely to subject us to inconvenience or failure, in consequence of any exceptional peculiarities we may exhibit. But since, in most instances, many drugs and many articles of food are equally competent to attain the same end, it is proper, in such cases, to allow the patient his choice from them. What may be a matter

of indifference to us, may be of heartfelt interest to him. Sickness is grievous enough in itself, without the addition of any avoidable discomfort; and we are bound, as far as possible, to alleviate rather than to imbitter the visitation of disease. In this respect, we fear that the profession is far less considerate than is meet. It was a precept of Celsus, that, "since very many things which are beneficial may be unpalatable, we should select from them those which the patient prefers; and, if all of the most useful ones are repulsive, something less useful, but more agreeable, should be substituted." *

The same consideration for the comfort and tastes of the patient is also enjoined by Hippocrates: "The sick are to be gratified in all reasonable respects; such as that their food and drink should be served up to them in a cleanly way, and that whatever they see or touch should be soothing; and, still further, in those things which are not positively injurious, or which may be readily counteracted. The patient is also to be indulged in all such things as company, conversation, attitude, clothing, the cut of his hair and nails, odors," &c.†

It is quite possible, in these modern days, when chemistry has reduced the active principles of drugs

* Cum pleraque utilia insuavia sint, ea potissimum ex his dentur quæ maximè æger volet; deinde, si omnia ista fastidit, interponatur aliquid minus utile, sed magis gratum. — CELSUS, lib. iv. cap. 16.

† Ægrotis gratificandum est in ritis rebus, ut nimirum potus et cibi mundè præparentur, et quæcumque videt vel tangit mollia sint; in aliis etiam quæ non valdè lædent aut facilè emendari queant. . . . In his etiam ægroto gratificandum, qualia sunt introitus, sermones, habitus corporis, vestitus, tonsura, ungues, et odores. — HIPPOCR.: *Epid.*, lib. vi. § 4.

to their smallest compass and least offensive qualities, so to select and serve up our medicines as seldom to be repulsive, even to children. Let us but reverse the position of doctor and patient for a moment when we prescribe, and our ministrations will be less likely to be dreaded than they now are; let but, —

“by Fate’s transferred decree,
The visitor become the visitee:
Oh! then, indeed, it pulls another string;
Your ox is gored; and that’s a different thing;”

But still further: we may not only, in most cases, consult the preferences of our patients without compromising our own judgment and authority, but we may, in many instances, yield to their anomalous cravings when they are directly opposed to any course we might have fixed upon by scientific reasoning. Nothing can be more injudicious than to urge food upon a person when he has no desire for it, and much less when it is absolutely offensive. We may very properly be guided, in allowing or withholding food, by the state of the appetite; for the appetite is the demand of nature for a supply to the necessities of the system. We may readily understand, then, that a particular demand may set up a particular craving. The very fact that such longings occur, and most urgently too, absurd as they may seem, is no trifling reason why they should be gratified. We do not refer to that capricious conjuring up of things strange and preposterous, one after another, where there is really no appetite, or because it has been palled by delicacies and excesses, — articles which are

no sooner obtained than rejected; but that real hankering after some particular thing, which hour after hour fills the mind, and allows of no substitute, and which, when furnished, proves to be no airy fancy, unsubstantial and evanescent as the dreams of limpid streams to the thirsty wanderer in the desert. How often do we hear persons ascribe the turn of their disease, when almost despaired of, to some broiled salt-pork, or cold potato, or old cheese, or lobster salad, or something else equally extravagant, obtained by stealth, and in spite of the injunctions of the physician to the contrary! Doubtless this insubordination does not always turn out so favorably, and the patient has ample cause to rue his imprudence; but, in general, we believe that these desires are the promptings of nature to furnish the kind of stimulus which is needed at the time, and that they may be safely gratified. If harm results, it will probably be due to excess in quantity rather than to the article selected. When such an article is named with wide-open, glistening eyes, let it be tried, cautiously and sparingly at first; and, if it prove innocent, then with all prudent freedom. Let the physician himself allow it, and regulate it as he would a medicine; and not run the risk of having the friends provide it stealthily, at the solicitation and discretion of the patient, as in a majority of instances they will be likely to do.

There is another case in which we think we too often violate the teachings of nature. Where a strict and carefully regulated diet is requisite, we are apt to continue the same articles for too long a

time. It is now fully determined, that an individual in vigorous health cannot subsist upon any one article, for any considerable period, without destroying his health. Not only will some of the elements demanded by the system be unsupplied or deficient, but a disgust will be created by the want of variety, which will annihilate the desire for any food whatever. If, then, such are the effects of sameness on a healthy person, how imperative is it, that, by a judicious and timely variation in diet, we should take care to encourage, rather than diminish, the already flagging appetite of the invalid!

Not a little diversity of opinion has been expressed as to the kind of food, whether animal or vegetable, most appropriate to man. Most persons, it is true, theoretically and practically, adopt a mixed diet; but others contend for an exclusively vegetable diet, — some because they disregard structural organization, or because they think the food of the primitive pair was vegetable, and was intended to be continued such; and some because they conscientiously believe a strictly vegetable diet to be the most healthful and amply sufficient.

Perhaps there is no question respecting the animal economy which may be more satisfactorily illustrated and settled by an appeal to nature, than this. Certain peculiarities of the dental system, in connection with the structure and capacity of the alimentary canal, are so uniformly found to coincide with the kind of food which animals, when following their own instincts, are sure to choose, that no sequence of cause and

effect can be more reliable; and these coincidences run through all classes of animals. Well-developed canine teeth, with compressed, sharp edges, and pointed cheek-teeth, associated with a transverse articulation of the jaw, admitting of only a vertical cutting motion, are sure indications that the animal to which they belong subsists on animal food. On the other hand, broad-faced, lateral teeth, either traversed and made rough by belts of enamel, or beset with small points, with an articulation of the jaw requiring a forward and backward, or rasping action, or a somewhat rotary and grinding motion, as unequivocally indicate a vegetable diet. Between these extreme cases all manner of modification is found, accompanied by corresponding modifications in the proportions of animal and vegetable food naturally sought. A simple membranous stomach, with a short intestinal tube, is found in the carnivora; while the stomach is complicated and muscular, and the canal comparatively long and capacious, in the herbivora: and here again we have innumerable intermediate modifications, coinciding in general with the natural habits of different animals in respect to food. Those animals which receive it already animalized require but a simple digestive pouch, without any contrivance to delay the food for a prolonged process of digestion. Those who have a more elaborate process of assimilation to perform possess a powerful stomach, or a multiplication of stomachs, calculated to delay and act powerfully upon their vegetable ingesta. The structural adaptation of the digestive apparatus is as significant of the

kind of food to be taken, as the modifications of the locomotive organs are of the mode of progression by walking, swimming, or flying. So constant is this correspondence that no apparent exceptions should shake our reliance on the indications; but they should be set aside, to be brought under the rule when the precise uses and the relative importance of individual parts are better understood.

Turning now to the structure of the digestive organs in man, we find that he has a combination of all the varieties of teeth — the cutting, tearing, and grinding — developed in a moderate degree; that the articulation of the jaw is such as to allow freedom of motion for every mode of comminution; that the stomach is membranous, lined with corrugated mucous membrane, but guarded by a rigid pylorus, to prevent the too rapid exit of the ingesta. The canal is of medium length,* and all the subsidiary organs are fully developed. Following analogy, we cannot doubt that man is so constructed as to demand both animal and vegetable food, and that his digestive apparatus is calculated to perform the digestive process in its most extended sense and in its greatest perfection.

Man may doubtless subsist on either animal or vegetable diet exclusively, if he can have a due variety. Under some circumstances he is obliged to do so. The Buddhist does so from religious scruples. No-

* In the lion, it is only three times the length of the body; in the sheep, it is 28; in man, it is set down at $5\frac{1}{2}$ times the length of the body. But it should be remembered, that, in the length of the man's body, the lower extremities are usually reckoned. If we estimate by the comparative length of the trunk, as we do in quadrupeds, the length of the alimentary canal will be at least as 10 to 1.

where, however, is he practically content with one alone. The denizen of the frozen zone stores up a scanty supply of roots and berries, the products of his brief summer, as condiments to his venison and blubber. On the other hand, the dweller under the tropical sun, profusely supplied with every luxury which the vegetable world affords, turns cannibal, and devours his brother-man, to gratify what the moralist styles an unnatural appetite, but which, in a physical aspect, is quite natural. A combination of the two kinds is demanded by his physical structure. There must be a due admixture of azotized and non-azotized substances, such as the body itself is composed of. It must have not only starch and sugar, but albumen, gelatine, and oil. Neither plant nor animal can attain full development and vigor, without a supply of pabulum affording all their constituent elements.

There are also reasons of another class, which naturally indicate man's adaptation to all kinds of food. Most animals are restricted to certain articles of nutriment by their inability to obtain others. The eagle would find it difficult to pick up seeds with his beak, and the duck to seize and tear in pieces living prey. The dog could not crop the grass, nor the fish climb trees for fruit. But man has dominion over the fish of the sea, the fowls of the air, and over all cattle, and every creeping thing; and every herb and every fruit was given him for meat. Although naturally the most defenceless of all animals, yet none of them can elude his vigilance or withstand his arts. From this also we may naturally conclude, that it was

intended he should partake of whatever of all these things might best please him.

Again: man alone, of all animals, is cosmopolite. There is no nook of this globe which he may not penetrate. The same individual may pass backwards and forwards, from extremest heat to extremest cold; and he is mainly indebted for his ability to do so to his capability of varying his diet. Fatty substances supply the largest amount of animal heat, and are the appropriate food for frigid climates; while vegetables and fruits supply the least, and are most grateful under the heat of the tropics.

Nature seems to have most wisely provided for the exigencies of the case. In the frigid zones, there is nearly an entire destitution of vegetation; while whales, seals, and other animals, enveloped in fat, abound, and are devoured by the inhabitants,—supplying an amount of animal heat which enables them to resist the intense cold of those frozen regions. On the other hand, within the tropics, nutritious vegetables with cooling fruits are found in the greatest variety and profusion,—growing almost spontaneously, and requiring but a few hours' labor to secure a year's supply. But in those parts there is almost an entire destitution of animals for the table. The grazing animals do not thrive there; and monkeys, fowls, tortoises, and fish, for the most part, make up the butcher's assortment. In the temperate regions, the cereal grains and the grazing animals thrive, and we have an abundance of the most nutritious kinds of both animals and vegetables.

With these facts before us, it seems to me possible to deduce a general law by which to determine the proportions of vegetable and animal food best suited for diet in any given isothermal latitude. If we take for granted, that at the equator man may best live on ^{vegetable} ~~animal~~ food exclusively, and that beyond the limit of vegetation, which is within the parallel of 80° , he must of necessity live on animal food, then, at the intermediate distance, 40° , we may infer that a diet equally made up of animal and vegetable food is naturally indicated. But as, both by the structure of his teeth and the proportions of the alimentary canal, man would seem to be more of a vegetarian than an animal feeder, the median line may be placed somewhat farther north, — perhaps at 45° . In the same way we may deduce the relative proportions for other parallels.

There will, of course, be numerous modifications, according as more or less gross varieties of food are employed; the fibrinous and albuminous kinds being best adapted to the temperate regions, and the fatty and oily ones to the frigid latitudes. The formula should also be considered as applying to laboring men, — those who have their muscles habitually in action. The same rule cannot be applied to those who lead an inactive, or even a sedentary life, in temperate climates. But even here, nature indicates the rule. If a man in temperate climates leads the sluggish, listless life which those do who reside under a tropical sun, where the heat forbids muscular activity, and where the spontaneous bounties of vegetation render

labor almost unnecessary, he must diet as such men do, — on rice, pulse, and fruits. He must mainly abstain from meat. In our community, students and literary men, clerks, and others of sedentary habits, undoubtedly do best on a diet of farinaceous substances, milk, and eggs; and, if meat is used, it should be restricted to a moderate amount at dinner only; while the man laboring in the open air will require meat in large proportion three times a day. It is true, that the northernmost people are drowsy and sluggish, as well as the inhabitants of hot climates, and yet are compelled by the nature of their habitat to feed on the grossest of animal food. It must be remembered, however, that their inaction is rather that of lethargy than of languor; that with them the great desideratum of life is rather to maintain animal heat, than to supply exhausted muscular force; and for this end the animal oils — the fat of bears and the blubber of whales — are especially designed. The experiments of Boussingault, on the products of respiration in animals subjected to different degrees of temperature, throw much light on this view of the subject.

Perhaps there is no greater practical error in respect to diet, none more repugnant to the teachings of nature, than the food furnished to children. The term "milk-teeth" is full of meaning; and nature has some other object in view in removing them, besides merely providing for the enlargement of the jaws. Milk, the natural food of all the mammalia, while, by its composition of albumen, sugar, and oil, it indicates

their appropriate food to be a mixture of animal and vegetable products, combines them also in the proper proportions, varying for different families of animals, and elaborated in the most thorough manner. Milk, then, combined in due time with bread and other farinaceous substances, should constitute the food of childhood; and it is not until nature has provided, by a change of the teeth and a correlative modification of the stomach, an extension of its cardiac extremity, for the elaboration of more gross and crude ingesta, that they should be allowed. And yet our children are supplied, almost without stint, with all the varieties and combinations of food which their parents are accustomed to partake of, — preternaturally stimulating their systems and taxing their digestive organs, and prematurely wearing them out by excess of action. It is said to be thus with no other people besides the “Yankee nation.” Princes and nobles elsewhere are restricted during childhood to a simple diet of milk, bread, and gruel, which even our juvenile paupers would think meagre fare. Our practice is a violation of nature’s laws.

Chemistry, which is purely a torturing of nature to extort her secrets, has already done much to determine the component elements of the body, and to indicate the non-naturals proper to be exhibited, both in its healthy and diseased condition. Less than thirty years ago, the idea that chemical laws could have any thing to do with the operations of the living body was heretical. All its processes were then regarded as due to that mysterious something called

“life.” Indeed, one of the principal effects of life was said to be the suspension of chemical action. Vital and chemical action were looked upon as antagonists. So far as it concerns the body in bulk, this is, indeed, true ; and, so far as we yet know, a large proportion of the operations of the animal system, especially those relating to mind, motion, the selection of materials for, and the building up of, the tissues, are dependent on vital influence, manifested and conveyed through the nervous system. But other processes, connected more particularly with digestion and nutrition, have been shown to be truly chemical. The true functions of many of the viscera have been determined by chemistry. The offices of the saliva, gastric juice, bile, pancreatic fluid, &c., have been demonstrated, and may be imitated, by chemistry. The condition of the excretions, and the proper fluids of the body, may be modified by chemical agents ; and an analysis of them shows the departures from the normal state which are going on, and declares the proper remedies. Lead has been eliminated from the system. Diabetes, dropsies, the sequelæ of scarlatina, rheumatism, &c., have been successfully treated by chemical re-agents ; and to chemistry, I think, we must ultimately look for the management of spanæmia, and other altered conditions of the blood ; the elimination of tubercle, scrofula, and many vices of the system which have hitherto defied our art ; and for the prevention, if not the treatment, of miasmatic disorders. By chemistry we ascertain the kind and amount of nutriment and other qualities in the differ-

ent articles used for food, which is of infinite importance in enabling us to select appropriate materials to meet the wants of the system in its various conditions, and laboring under different diseases. Animal chemistry is comparatively an untouched branch of that science; but the labors of Dumas and Boussingault, of Robin and Verdeuil, of Lehmann, of Bidder and Schmidt and Liebig, may give us some idea of the capabilities of chemistry in this direction.

I have already alluded to the microscope in its connection with minute structural anatomy. Its application to the investigation and discrimination of morbid growths is obvious. The modifications of structure are easily recognized; and it has been confidently hoped and maintained by microscopists, that they will be able to distinguish, positively, malignant from non-malignant growths. As would appear from a late discussion in the French Academy of Sciences, this claim is not yet recognized by many of the most eminent pathologists and practical surgeons; but it is plainly to be seen, that the microscope may be applied with the greatest advantage to the elucidation of very many subjects relating both to health and disease. In some instances it has shown a connection of disease with natural causes little anticipated; and, of course, has indicated the proper method of cure. I will only allude to the numerous parasites, both animal and vegetable, some of them external and some internal, which are now known to exist. A few of these, like the louse, flea, and larger intestinal worms, are so large as to be well enough discerned by the

naked eye, and have long been familiar to every one. But the microscope has revealed a very numerous fauna and flora, of infinitesimal structure, within living animals of every grade, as the beautiful work of Robin in France, and the no less elaborate one of our own countryman Leidy, very abundantly show. Leidy has given a catalogue of those already known which infest man, in which he enumerates no less than twenty-six entozoa, thirteen ectozoa, and ten entophytes; and as it is an ascertained fact, that the lower the animal type, and the more imperfect the digestion, the greater is the number of parasites, we may conjecture what a world of wonders remains to be explored by the magnifier in this department alone. Human parasites, though in general so simple, so low in the scale of being, and usually so minute, must excite our interest for at least one reason; namely, that their creation must necessarily have been subsequent to that of man. The origin of entozoa, which has been so long an enigma, is now in a fair way to be solved. In the course of their being, they pass through a series of phases extremely various in aspect, each one usually passed in different organs of the same individual; or, quite as likely, in the bodies of animals in no way kindred. Thus the tape-worm of man has been shown, with great probability, to pass one of its anterior phases in swine, in the form of a *Cysticercus*.

A number of cutaneous affections have already been shown to depend upon the presence of epiphytes; among them are *Porrigo decalvans* and *favosa*, *Tinea*

capitis, some forms of *aphthæ* of the mouth, &c. Some have even gone so far as to ascribe the cause of cholera and fever to the development in the system of parasitic germs received from the air, which is supposed to teem with them. But, for the most part, parasites may be regarded as the sequences, rather than the causes, of disease.

It is a matter of common belief, and by no means uncommon among physicians, that the parasites which infest the human body are injurious, and only injurious; that they are the direct causes of many grave affections, — at least, are indicative of an unhealthy condition; and that, wherever they exist, they should be at once exterminated. That in some instances, very rare indeed, the larger ones, like the *tenia* or *ascaris*, may, by their size or numbers, produce serious embarrassments, is not to be denied; that they seem to have been culprits in other cases, where they are accidentally expelled by medicines which at the same time cure the patient of disease, is a familiar observation; that in many instances they abound and accumulate in diseased parts, or in vitiated states of the system, is also a matter of observation; but it does not follow that they are the *causes*, rather than the *consequences*, of the disorders they accompany. Just as the green scum on the stagnant pool is not the cause of putrescence, but is sure to appear there, an indication of miasm, and at the same time its remedy; so we have reason to think it is with human parasites.

If we interrogate Nature on the subject, she will tell us that parasites, some internal and some external,

are universal; that no species of animal or plant, either in the sea or on the land, is exempt from them. So numerous and so various are they, that we may safely declare, that no individual animal in a wild state, however healthy, is destitute of them; so that their absence, rather than their presence, would be the exception.

Can it be believed, then, that an all-wise Being has created so extensive a series of organisms but for general utility? No such wide-spread and all-prevailing system has been brought into operation but for beneficial purposes. Like the lightning and the volcano, they may damage and destroy individuals, and still be indispensable to the general welfare. And further: as already stated, the larger and more dreaded internal parasites undergo a most complicated and extraordinary process of development, — passing through a series of forms quite unlike each other, and, at different stages, residing in animals of different classes or families, or in different organs of the same animal, — performing a circuit of existence which is scarcely credible. It cannot be that all this complicated machinery should be put in operation for evil only; but it must be designed to keep up certain important relations between animals or organs very distantly allied to each other, which could not otherwise be maintained.

I have thus briefly touched upon a few topics connected with this almost exhaustless subject, — enough to show how much it is incumbent on us, for the

successful prosecution of medicine, to "search out the secrets of nature." The tendency of the remarks has been to impress the conviction that a full acquaintance with the laws of health is a necessary preliminary to the study of disease; that Nature, for the most part, furnishes the true indications of treatment; that, as to remedial agents, it is better, when practicable, to rely upon a careful regulation of diet and regimen than on drugs; and that, when these are requisite, they must be given with a view to carry out successfully Nature's own plans.

It is to be feared that attempts to combat disease by specifics, instead of by aiding Nature to expel morbidic poison in her own way, have not unfrequently added to the catalogue of fatal cases. In such desperate diseases as cholera and yellow fever, we have felt justified in a vague employment of powerful remedies, in heroic doses and in rapid succession, under the specious plea, that in all probability the disease would certainly destroy the patient, if we did not either kill or cure him. Such severity of itself is often more than human endurance can sustain, and at any rate leaves us at a loss to determine what are the results of disease, and what of our medicines. If we feel ourselves in doubt, is it not wiser to leave the case for a while to Nature, and watch her movements until we can detect some indication for interfering hopefully? It should always be a fundamental maxim in practice, "if we can do no good, to do no harm."

The daily and hourly use of the rod has been banished from the school; the prisoner's noisome,

subterranean dungeon has been exchanged for the clean and airy cell; the unfortunate lunatic is no longer regarded as a laughing-stock or a brute, but as a most marked subject for our sympathy and kindness. These changes most emphatically mark progress in humanity and moral science. So, likewise, we would regard every approach towards the rational and successful prevention and management of disease without the necessity of drugs, as we do success in surgery without a resort to the knife and cautery, to be an advance in favor of humanity and scientific medicine. Not that drugs are to be abandoned or distrusted, especially during the present state of our knowledge; or that every man is any the more to become his own doctor. Supervision and vigilance over the pupil, the prisoner, and the maniac, have become none the less necessary since material restraints have been mitigated; on the contrary, they have become doubly requisite, and demand a class of minds with moral and mental culture far more elevated than formerly. So, too, if a more restricted use of medicines is attained, it will be the result of more accurate diagnosis, and of a more thorough knowledge of the adaptation of diet and regimen to the conditions of the system. Medicines themselves are constantly being reduced to more concentrated forms, requiring great skill for their safe employment. In fine, a superior class of minds, superior education and skill, and more assiduous attention in the management of the sick, will become necessary.

Gentlemen, we are now about to separate ; but let it be with no misgivings, no fears, as to the dignity, the value, and the onward progress of our profession. In the Records of the Colony of Massachusetts, two hundred years ago, it is written : “ We concieve it very necessary y^t such as studies physick or chirurgery may have liberty to reade anotomy, and to anotomize, once in foure yeares, some malefactor, in case there be such as the courte shall allow of.” Such is not the standard of requirement now. Nor let any one be dismayed at the prevalence of charlatanry and heretical doctrines, or at the numbers led captive thereby. Delusions have been rife in all past time ; and must also be expected in the future, so long as the human mind remains the same. But, while fanciful theories and wicked impositions have one after another vanished, the fabric of true medicine remains firm on its basis, rising steadily higher and higher. Let us rather take new courage ; let us return home animated with the thought that we are in the company of wise, honest, and honorable men ; let us expend our thought and our breath in endeavoring to elevate ourselves, rather than in pulling down pretenders. If they have discovered materials and facilities superior to ours, let us avail ourselves of them, and incorporate them with our own ; and, while we sedulously adhere to all well-tried and established practices and opinions, let us not lay ourselves open to just rebuke by clinging to obsolete, perhaps absurd, notions, plodding on in the old stage-coach track, declining to receive new light, and thereby keep pace with

the progress of science. If they succeed in rearing structures sufficiently elevated to attract attention, let us take care to be no less diligent in raising our edifice proportionally higher, and thus maintain our ascendancy. Let every man build up over against his own house, and our walls will be entire and impregnable. Let this fraternal gathering, like the touch of Antæus of old to his mother Earth, endue us with new strength, which shall sustain us in the hearty discharge of our duties, until another return of our festival shall give us another opportunity to become conscious of our might, and to accumulate new vigor.

LIST OF DECEASED MEMBERS.

Admitted.	Name.	Residence.	Age.	Died.
1803	HECTOR ORR	East Bridgewater .	86	1855
1806	HENRY GARDNER	Charlestown . . .	82	1854
1811	NATHANIEL PEABODY	Boston	81	1855
1813	ERASTUS BEACH	Sandisfield	77	1854
1819	WILLIAMS BRADFORD	Boston	76	
1822	MOSES KIDDER	Townsend		1855
1824	ZABDIEL B. ADAMS	Boston	62	1855
1824	CHRISTOPHER DEANE	Coleraine	72	
1824	J. STEARNS HURD	Charlestown	59	1855
1824	RUFUS LONGLEY	Haverhill	67	1855
1833	JAMES B. GREGERSON	Boston	46	1854
1833	JESSE CHICKERING	West Roxbury . . .	57	1855
1835	CHARLES WALKER	Northampton . . .	52	1855
1837	CORIDON GUTEAU	Lee	50	1854
1837	CHARLES H. PIERCE	Cambridge	41	1855
1839	SAMUEL PARKMAN	Boston	38	1854
1840	THOMAS P. JACKSON	Boston	44	1854
1841	WILLIAM T. PARKER	Boston	36	1855
1841	TIMOTHY H. BROWN	Heath	42	
1841	MARCUS M. SHEARER	Palmer	61	1854
1842	ASA LINCOLN	Brimfield	73	1854
1842	WASHINGTON SHAW	Haydenville		1854
1850	WALDO I. BURNETT	Boston	26	1854
1852	GEORGE H. SAWYER	Boxford	85	1855
1854	EDWARD G. McCORMICK	Taunton		1855
1854	GEORGE H. GALLUP	Boston	42	1854

OBITUARIES.

THE following Biographical Notices have been prepared from notes chiefly furnished by the immediate friends of the deceased. It has been necessary to abridge most of them, so as to bring them within the assigned limits : —

HECTOR ORR.

HECTOR ORR, M.D., was the son of Col. Robert Orr, whose father, Hon. Hugh Orr, came from Scotland, and settled in East Bridgewater in 1740.

Dr. Orr was born in 1770; graduated at Harvard University in 1792; pursued his professional studies chiefly under the direction of Dr. Ephraim Wales, at Randolph; and in 1795 settled as a physician in the place of his nativity. In the same year he married Mary, daughter of Oakes Angier, Esq.; and from that time until his death, which occurred April 28, 1855, he continued in the performance of the duties of his profession. As the infirmities of age came upon him, he was relieved of his more onerous labors by his son, Dr. Samuel Orr, who settled in his immediate vicinity.

In early life, Dr. Orr devoted much time to public objects; and his circle of medical practice was never extended so widely as that of many men of inferior attainments. His intellect was of a high order; and he was particularly distinguished for the retentiveness of his memory. He was fond of literary pursuits, and devoted much time to reading. In 1817, he read the annual dissertation before the Medical Society, "On the Properties of Animal and Vegetable Life." In 1818, he received from his *Alma Mater* the honorary degree of Doctor in Medicine.

NATHANIEL PEABODY.

NATHANIEL PEABODY was born at Topsfield, March 30, 1774, on the spot where the first emigrant of the Peabody family settled, before 1750. While he was still an infant, his father removed to New Hampshire. He served his father on the farm until he was of age, when he determined "to get an education." With a very little aid from his father, and by dint of teaching school, he prepared for college at Atkinson Academy, and graduated at Dartmouth. He then became Preceptor of Andover Academy; and in 1802 married the Preceptress, Miss Palmer, a lady of great energy and high cultivation. Soon after, he removed to Billerica, opened a boarding-school, and at the same time commenced the study of medicine; completed his professional education under the direction of Dr. Jeffries; settled in Lynn, whence he removed to Salem in 1808. He preferred surgery to the other branches of the medical art, and his mechanical taste suggested to him improvements, espe-

cially in dentistry; and this was to him eventually so much the more profitable part of his work, that he was led to devote himself exclusively to it, and was largely instrumental in bringing about the general use of artificial teeth in the county of Essex. He pursued this art in Salem, Lancaster, and Boston, until 1840, when his eyesight failed him, and he relinquished his business to his junior partner. He retained his health and his erect figure until within a few months of his death, which took place at Perth Amboy, Jan. 1, 1855, at the age of eighty-one.

ZABDIEL BOYLSTON ADAMS.

ZABDIEL BOYLSTON ADAMS was born in Roxbury, Feb. 19, 1793, and was the eldest of three children. He first went to school to Master Childs; and afterwards to the Roxbury Grammar School, taught by Dr. Prentice. He was fitted for college by Rev. Peter Whitney, of Quincy; entered Harvard in 1809; and in 1813 was graduated in a class quite remarkable for the number and eminence of the medical men derived from it, and with whom he formed friendships lasting and sincere. Dr. Adams studied medicine with Dr. Charles Winship, of Roxbury, until 1816, when he opened an office in Boston.

His young devotion to his profession never abated during the whole period of nearly forty years that he was engaged in practice. He could seldom be induced to quit town for a single day, and boasted that sickness had never caused him to neglect business for a longer space than one day during the whole period. His career was not marked by startling events nor remarkable achievements, but was in itself that most rare and difficult achievement of all,—an uninterrupted discharge of every daily duty. His bearing was always dignified and manly, and his manner cordial and polite. He abhorred every semblance of meanness or deceit; his heart was always sincere and open; and many charities flowed from his hand every year that never have been, and never will be, brought to day. No man was more zealous for the dignity and purity of the profession; and in this respect he was a worthy successor of him whose name he bore. He was one of the earliest advocates for the American Medical Association, and attended all its sessions except the last. He was a Councillor of this Society nearly thirty years, and several years a Censor.

He died, after a short illness, of an effusion upon the cerebral hemispheres, Jan. 25, 1855, in the sixty-third year of his age, and the thirty-ninth of his professional practice. His countenance, radiant with benevolence and good humor, and his ever-ready speech, will long be recalled at these our annual gatherings.

JOSIAH STEARNS HURD.

JOSIAH STEARNS HURD descended from an ancient and honored New England family; was the son of Benjamin Hurd, Esq., of Charlestown; born March 14, 1796; died March 25, 1855. He received his degree at Harvard College in 1818, and studied medicine in his native town with Dr. Josiah Bartlett. He then visited Europe, and continued his studies till the spring of 1820, principally in France, where he was Prosector to the celebrated Lisfranc; and, on his return, commenced practice in Charlestown. Dr. Hurd had a true genius for surgery. He found the ground pre-occupied, however, by Dr. Wm. J. Walker, — a man eminently qualified for, as well as ardently devoted to, surgery, and already winning golden opinions; and the death of Dr. Bartlett, about that time, brought him so immediately and so extensively into practice as a physician that he abandoned surgery altogether. But during this brief period he gave full proof of his superior ability as a surgeon. He performed very skilfully and successfully nearly every important operation; and among them may be mentioned a difficult case of lithotomy, tying of the carotid artery, paracentesis pericardii, and the first taliacotian or rhinoplastic operation ever performed in this country. During the last twenty-five years, probably no one of his contemporaries has had a larger circle of practice; and no one who has died could be more missed or mourned than the genial, kind-hearted, and beloved Dr. Hurd. His illness was of but few days' duration, induced by rupture at the arch of the aorta.

RUFUS LONGLEY.

Dr. RUFUS LONGLEY was born in Shirley, July, 1789; pursued his preparatory studies at Groton Academy; and entered Harvard College in 1804, where he remained about two years; when he entered upon a course of medical study in the office of Dr. Oliver Prescott, of Groton, and took his medical degree at Dartmouth

College in 1811. The honorary degree of M.D. was conferred upon him at Harvard University in 1850. In 1812, he commenced the practice of his profession in Haverhill, Mass., where he remained until his death,— a period of forty-three years. He was endowed with a fine physical development, coupled with a strong and well-balanced mind, accurate discernment, and sound judgment,— qualities which rendered him a skilful, while a cautious, practitioner. His manly bearing, talents, and professional skill, soon won the respect and confidence of his fellow-citizens, while his aid and counsel came to be sought by his professional brethren in all the vicinity; and they will bear testimony to his courtesy and honorable deportment on all occasions. Well informed as to disease in general, and a close observer of it in each individual case, his diagnosis and prognosis were remarkably accurate, and his conclusions were always declared fully and candidly. By his impartial attention to all, whether rich or poor, he showed himself to be influenced by other than mercenary incentives. He was an eminently useful citizen,— taking a lively interest in the well-being of the community. His business talents, urbanity, and integrity, marked him for places of responsibility; though he would seldom accept of public office. He was chosen an elector for President in 1840, and for many years was President of the Savings Institution, and of the Merrimack Bank. He became a Fellow of the Massachusetts Medical Society in 1824, was active in its councils, and retired in 1852. He died, March 12, 1855, of dry gangrene of the left foot and leg, connected undoubtedly with attacks of angina pectoris, from which he had occasionally suffered during the preceding seven years. Spicula of bone were found along the coronary arteries, with ossification of portions of the semilunar valves.

JAMES B. GREGERSON.

JAMES B. GREGERSON was born in Boston, and was prepared for college at Andover. He early entertained the purpose of becoming a physician; but it was the wish of his father that he should engage in mercantile pursuits. He yielded to this wish for a time, though still cherishing his original purpose, and finally commenced medical studies in earnest, under the direction of Drs. Jackson and Channing, and obtained his degree at Harvard in 1833. He had been one year a pupil in the Massachusetts General Hospi-

tal, and now proceeded to Europe, where he spent several months in observing medical institutions and practice; and, on his return, opened his office in Boston. Becoming connected by marriage with a daughter of the Rev. Dr. Sharp, he soon became known to a large circle of acquaintances, which, by his gentlemanly and affable manners and evident zeal in his profession, he soon rendered his firm friends and patrons. Dr. Gregerson was gentle in his intercourse, a man of elegant tastes, and a keen lover of art in all its forms, and, indeed, possessed especially the characteristics suited both to ingratiate him with the sick, and to render him a welcome member of the social circle. He died, after a short illness, with obscure cerebral symptoms, aged forty-six years.

CORIDON GUYTEAU.

CORIDON GUYTEAU, M.D., died at Lee, Mass., of cholera, July 27, 1854, aged fifty. He was of Huguenot extraction; a grandson of Dr. Ephraim Guyteau, of Connecticut, who fled with his parents from France to this country after the revocation of the edict of Nantes.

He received his medical degree at Williams College in 1832, and was highly respected as a physician and as a man. Like his persecuted ancestors, he was a sincere, exemplary Christian. "Religion was his solace in life, as in death."

He was admitted a member of the Massachusetts Medical Society in 1837; and, while few in that distant section have found it convenient to take an active part in its doings, no man was more constant at his post as a councillor than Dr. Guyteau.

SAMUEL PARKMAN.

Of the many prominent men who have been taken from the Society by death during the past year, although one of the youngest, no one has left a wider vacancy than Dr. Samuel Parkman. By his contemporaries, and those younger than himself, his loss will be especially felt; because with them and their interests his sympathies were more particularly linked. Always active and interested in the general welfare of the profession, and in every thing that related to it, he felt a special interest in that spirit of progress which requires the energy and ambition of youth for its advancement. His fine person and manly bearing were but the result and expres-

sion of his eminently manly character. Accomplished in the science of his profession, candid and cautious in his judgment, and most conscientiously faithful to his duty; kind, disinterested, and humane in the practice of his profession; he was a man to be relied upon for his opinions, and to be trusted in action. In his social relations, he was a faithful, warm, and honest friend; at hand in the hour of trial; sympathizing in the hour of joy; and true and frank when a friendly, and it might be unpleasant or painful, truth was to be told. An almost morbid hostility to every thing like pretension, such as sometimes to make him uncharitable, perhaps, in regard to so common and venial a weakness, was a most marked feature in his character. He always appeared for less than he was himself, because he never claimed that which he was not. Without those qualities which enable a man to come forward at once and take a commanding position, his character and mind had been constantly and healthfully developing, and he had been as constantly gaining the esteem and confidence of the profession. At the hour when he was beginning to become more widely known, when he was beginning to exercise the influence which sterling merit and well-tried character must always exercise, the mysterious hand of Providence has struck him down, and the profession is called upon to mourn one of its ablest and best friends.

Dr. Parkman was born in Boston, Jan. 21, 1816, and was educated in the Boston schools. He graduated at Harvard College in 1834, where he held a good rank as a scholar. His medical education he received in Boston, where he was one of the most active and industrious students. After passing a year in the Massachusetts General Hospital as one of the house-surgeons, he sailed for Europe, and spent a year more in the study of his profession, most of it in Paris. Immediately on his return, he commenced the practice of medicine and surgery in Boston, giving his attention and interests more particularly to surgery. In the winter of 1844, he received an invitation to deliver the course of lectures upon surgery and anatomy in the Castleton Medical College, as successor to Dr. McClintock. This he accepted; and he repeated the course the following year; when, finding that the long absence interfered with his professional prospects at home, he relinquished the post. In 1846, when the Massachusetts General Hospital was enlarged, he was appointed one of the new surgeons; and he continued one of its most reliable and faithful officers to the close of his life.

He was an active member of all the medical associations in the city for the advancement of science, and contributed many valuable papers. His position as a surgeon having frequently called him into court as a witness or an expert, he, during the last few years of his life, gave much attention to the relations of the profession to the law. He wrote two excellent articles upon the subject; one, "A Report of a Committee of the Massachusetts Medical Society upon Suits for Mal-practice," was read at the annual meeting of the Society two years since, — remarkable for its clearness, candor, and practical wisdom. The year before he died, he was elected a Fellow of the American Academy of Arts and Sciences; and, a year since, Recording Secretary of the Massachusetts Medical Society.

WILLIAM THORNTON PARKER.

WILLIAM THORNTON PARKER was the son of Dr. Benjamin Parker, of Andover. He graduated at Dartmouth, 1838; studied medicine with Dr. A. L. Peirson, of Salem; and received his medical degree at Harvard, 1841.

He had improved well his opportunities for study; and, by gentlemanly manners, constant industry, and with the air and resolve of one who knew he should succeed, he very soon acquired an extensive practice in South Boston, where he chose his residence. It was a location where, at that time, a vast deal of labor had to be done for a comparatively small remuneration. But he was none the less ready and faithful for all that; and, when over-work began to undermine his health, he could not in season persuade himself to deny any one, to favor himself. Compelled at last to relinquish a practice already lucrative, and to resign the home-comforts his industry had gathered, he repaired to Cuba, and afterwards to Italy, without any benefit; and then submitted to his fate. He retired to the beautiful village of Jamaica Plains. There, amid much physical suffering, and surrounded by warm friends and delightful influences, with cheerfulness and determination he toiled almost to the last day of his life, to supply, in some measure, the means formerly derived from professional exertions, as well as to gratify his inbred thirst for occupation. He never seemed unhappy when employed. Happily he had uncommon skill, both with the pen and pencil. His accurate and highly finished anatomical drawings are well known to most physicians in the vicinity of Boston. Indeed, he

had a critical appreciation of art, as well as nice, practical skill; and his comments on the works of the great masters which he saw at Florence show him to have been a true connoisseur. By great prudence, by the cheering sympathies of friends, and the sustaining influences of profound religious hope, his life was prolonged much beyond his own expectation; but at last profuse hemorrhage suddenly laid him low; and he died March 12, 1855, aged thirty-six.

WALDO IRVING BURNETT.

Dr. WALDO IRVING BURNETT, the youngest member of the Society who has died since the last meeting, — youngest if we count his years, but oldest if we estimate him by what he accomplished, — the son of Dr. Joel Burnett, of Southborough, was born July 12, 1827; and died July 1, 1854, aged nearly twenty-seven years.

Since the death of the lamented Jackson, more than twenty years ago, it may safely be said, that no one of this Society had made such extensive acquirements, had thought so independently, and pushed out so far into new ground, or promised to do so much for the advancement of physiology and therapeutics, as the lamented Burnett. Left an orphan at an early age, with very limited means, in the face of many obstacles, and in feeble health, and almost self-taught, he, in a very few years, made acquisitions in knowledge which would have done honor to a long lifetime of constant application. He inherited from his father a love of natural history, and in early boyhood became quite proficient in botany and entomology; and, in the latter study especially, he afterwards rendered himself distinguished. As early as the age of sixteen, he became interested in metaphysical and philosophical subjects, which called into exercise the higher powers of the mind. Mesmerism, materialism, and theological questions, he often discussed and wrote upon with marked ability. At the same age, his interest in medicine commenced; and he began visiting with his father, availing himself of every opportunity to witness the effects of disease after death. But at this time his father died, and he was compelled to resort to teaching school for support; while he also gave his attention to the study of medicine, under the direction of Dr. Joseph Sargent, of Worcester. Subsequently he came to Boston, and entered the Tremont Medical School. A distant relative, who appreciated his talents and industry, generously enabled him, not

only to complete his preliminary study, but also aided him in all his subsequent travels and studies while an invalid, and furnished him with a microscope which then surpassed all others, and which was probably in use by him more hours than was his bed, — directing it upon all the products of the body, healthy and diseased, and combining the results with his observations on life, from its earliest development and from its lowest forms upwards.

The last year of his studies was spent in the Massachusetts General Hospital. In the mean time, he had acquired a competent knowledge of Greek, Latin, French, Spanish, and afterwards of German and Swedish. He had also obtained the prizes from the Boylston Medical Society on two successive years: one for an essay on Cancer, microscopically considered; and another for a paper on the Sexual System, or the production of being, considered as to its physiology and philosophy.

In 1849, at the early age of twenty-one, he graduated in medicine at Harvard, and soon proceeded to Europe, full of anticipation. He had scarcely arrived there before the inexorable disease of which he finally died became so suddenly and so gravely developed, that, after an absence of only four months, he returned to America, and sought an arrest of his symptoms in the South. During the four years which he survived, he was a pilgrim north and south, according as he might find a climate best adapted to his complaint. Fully aware that he must ere long die, he seemed resolved to sell his life as dearly as possible; and although, strictly speaking, he had no local habitation, he performed an incredible amount of labor, principally relating to embryology, histology, and general zoölogy. No animal within his reach, whether dead or alive, escaped his scrutiny; and, as an evidence of this, it may be stated that he had collected the external parasites from about five hundred different animals; and these he had labelled and mounted on glass, so as to be at all times in readiness for the microscope. This collection itself, exceeding any other one of the kind, is a monument of industry such as few men devoted to science ever raise for themselves.

He was a member of the Boston Society of Natural History; of the American Association for Science; and was elected a Fellow of the American Academy in 1851, — one of the youngest members ever admitted to that body; and at their meetings he always had some important communication in readiness, besides contributing many elaborate articles for scientific journals. His

printed papers are nearly sixty in number, all of them on topics of importance, and abounding in original matter. Of those more directly relating to medical science, we may enumerate his two prize essays already mentioned; "On certain Microscopic Animals found in a Person who died of Enlarged Spleen;" "On the External Parasites of Warm-blooded Animals;" "On the Embryology of the Articulata;" "On Spermatozoa, giving Observations on those Particles in a great Number of Animals;" "On the Origin, Development, and Structure of the Kidneys throughout the vertebrated Division of Animals;" "On the Microscopic Appearances presented in the Intestinal Discharges and Muscular Fibres of a Patient who died of Epidemic Cholera;" "Tissue, and its retrograde Metamorphosis;" "Considerations on a Change of Climate by Northern Invalids, and on the Climate of Aiken, S. C.;" "Considerations on some of the Relations of Climate to Tubercular Disease."

The principal work of his life, however, was his essay which received the prize from the American Medical Association in 1851, entitled "The Cell: its Physiology, Pathology, and Philosophy, as deduced from original observations; to which is added its History and Criticism." This abstruse and almost untouched subject he treats with great ability, giving ample evidence that he is familiar with the labors of others upon it, and quite at home in this kind of investigation. In the words of Prof. Wyman, "it gives evidence of wonderful zeal and industry in research, of acute powers of observation, and of great readiness in perceiving general relationships." The work on which he was last engaged was a translation from the German, of Siebold and Stannius' "Comparative Anatomy," accompanied by a commentary of his own, in which were embodied additions from scientific journals and his own original observations, almost equalling in amount and importance the original work itself. The first volume was completed and published; but the second remained unfinished.

In his private character he was remarkably simple and unassuming; and though always ready to express his views before any man or body of men, yet he was always deferential, and never intrusive. It was a pleasure to assist or befriend him in any way, because he always gave evidence of heartfelt gratitude. His life was irreproachable; and he died exhausted by the fatigues of his journey home, without being able to take a final leave of any but his immediate relatives,—expressing the solemn conviction, that, if he had much to live for, he had far more to die for.