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METHOD OF STUDY IN MEDICINE,

BY

GEO. T. STEVENS, M. D.

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METHOD OF STUDY IN MEDICINE.

THE

INTRODUCTORY LECTURE

TO THE

COURSE OF 1872,

AT THE

ALBANY MEDICAL COLLEGE,

DELIVERED SEPTEMBER 3, 1872,

BY

GEO. T. STEVENS, M. D.,

PROFESSOR OF OPHTHALMIC AND ORTHOPEDIC SURGERY.

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PUBLISHED BY THE CLASS.

ALBANY:
VAN BENTHUYSEN PRINTING HOUSE.
1872.

CORRESPONDENCE.

ALBANY, *Sept. 5th*, 1872.

Prof. G. T. STEVENS:

Dear Sir—The students composing the present class of the "Albany Medical College" unanimously desire your introductory lecture for publication.

Hoping you will comply with their request, we remain

Very truly yours,

G. H. BENJAMIN,
AUSTIN A. SNELL,
FRANK M. BOYCE,
Committee.

ALBANY, *Sept. 10th*, 1872.

To Messrs. G. H. BENJAMIN, AUSTIN A. SNELL, FRANK M. BOYCE, *Committee.*

Gentlemen—Thanking you and the members of the medical class for the kind appreciation with which my Introductory Address was received, I herewith enclose the manuscript.

Very respectfully yours,

GEORGE T. STEVENS.

ADDRESS.

My colleagues have assigned to me the duty of welcoming you to the course of study and instruction in the science of medicine and surgery, to be inaugurated here to-day, and I assure you that nothing could give me greater pleasure than to welcome you to a thorough and systematic course of study in your chosen profession.

And now, as you are about to commence what we hope may prove a systematic and a successful course of study, we can perhaps engage our first hour to no better advantage than in the inquiry, how we may best attain to the end in view—a practical and useful knowledge of medicine and surgery.

I therefore ask your attention to a few suggestions regarding

THE METHOD OF STUDY IN MEDICINE.

It is to no light and joyous task that you are welcomed or invited, when you are introduced to the study of a profession which must rank as a learned profession. There is no royal road to learning but the old path of unremitting labor; and while of late many wonderful discoveries have thrown great light upon hitherto obscure questions in medicine, thus seeming to clear up the science and relieve some of the labor required to attain it, these very discoveries have so enlarged the field of scientific inquiry as to increase rather than diminish the toil of acquiring the knowledge necessary to the intelligent practice of the profession.

New branches of study are introduced. New standards of preparation and culture are demanded.

A few years ago, all the branches deemed necessary to be taught in a medical college, or essential to be learned, in order to qualify the student for the duties of the practitioner, were em-

bodied in the instructions of a very few teachers, who were supposed to be thoroughly versed in all the lore of the profession. The United States Dispensatory, Cooper's Surgery, and Eberle's Practice, constituted a respectable scientific library for the young practitioner, and it too often happened that the only additions to that of many, longer in practice, were only the bound volumes of some single medical journal.

Thirty, forty years ago, there were men of vast learning, and of great research in the medical profession; men whose names will at all times be justly enrolled with the greatest of thinkers and of scholars; but less was expected of the ordinary practitioner than is to-day demanded, and the training which would then have been regarded as adequate, would not now be thought respectable.

The great advances in medicine and in general science within the last few years, have so extended the boundaries of the medical knowledge, absolutely required by even the beginner in practice, that greater division of labor has been rendered necessary in the instruction of the science. Men whose researches have been great, and whose experience has been almost without limit in the general field of medicine and surgery, have found it impossible for them to follow the special branches of the profession to the extent explored by individuals who have pushed their investigations in special directions. Thus, one by one, innovations have been forced into the curriculum of medical instructions.

The professor of practice first called to his aid the teacher of obstetrics, and he in turn calls another to instruct in the diseases of women. A broad field of investigation is open in the study of diseases of the mind, which the general practitioner can hardly hope completely to explore, and the special student of psychology is called upon to tell us of the new and important advances made in his province.

In the domain of surgery the range of inquiry has been equally extended, and he who now learns but the outlines of surgical theory and practice, is but poorly prepared for the duties of the practitioner.

There have rarely, if ever, been so many brilliant advances made in any science, in the same length of time, as have been made within the last twenty years in the knowledge of diseases of the eye. From being an obscure subject, but comparatively little understood by even the most learned, it has, by the labors and researches of such men as Helmholtz and Donders, Von Graefe and

Leibreich, been advanced to the rank of a new science, and I might almost say, that a new profession, based upon more accurate knowledge than any other branch of medical science, has been founded by the labors and discoveries of these great men and their co-workers.

I have alluded to a few of the recent advances in science, only to remind you that your field of labor is greater than that of your predecessors, and that greater acquirements are demanded of you in proportion to the increase of knowledge in matters pertaining to your profession.

But how is the student to meet this increased demand for knowledge of his profession?

In the first place, the student should not enter upon his medical studies until he has attained to a good knowledge of the elements of science, and of subjects of general learning, nor until his mind has received such a training as to enable him to compare and to analyze the facts and theories presented in a course of medical instruction.

It is too often the case that medical students commence their professional studies with a shamefully inadequate preparatory education; and yet such students expect to enter a learned profession, and they cannot but know that when once a course of professional studies is commenced, it is next to impossible to go back to preparatory studies. That a student of medicine should be possessed of at least a fair classical education, every intelligent person must admit, but there is, at the present day, a demand for another kind of preparatory education on the part of medical students—I refer particularly to a knowledge of natural science.

The methods of study in a profession whose doctrines are, and must be, based upon the unchanging laws of nature, should be purely scientific. At the very outset, in his course, the student comes in contact with questions of correlation of forces, of the highest principles of mechanics, of the most delicate chemical reactions, and of the most intricate and beautiful physical phenomena. The very first branch to which the student applies himself, should be the study of the structure of the body and the functions of the elements constituting that structure. But how is *he* to understand the philosophy of cell life, or of any of those physical phenomena which actually constitute life, who has not already mastered the science of physics? or who can, in any adequate degree, appreciate the teachings of physiology, who begins with the highest and most

complex of all created bodies? As well might the novice attempt to cast the time of a coming eclipse, who is ignorant of the motions of the bodies involved in the phenomenon, as for a student thoroughly to comprehend the doctrines of physiology, who does not begin by attaining a knowledge of the structure and functions of the lowest organisms. I cannot too strongly impress it upon the mind of every one, who would enter upon a successful course of medical studies, that a knowledge of natural history is of the highest importance; for not only are the facts of comparative anatomy, and physiology of plants and animals of simplest structure, essential, but the habit of mind, the peculiar training of the intellect, which is obtained only by this kind of study, is also essential.

The habit of mind acquired by the study of natural history is precisely that which is required for the successful study of medicine. To use the words of a learned writer: "The habit of seeing; the habit of knowing what we see; the habit of discerning differences and likenesses; the habit of classifying accordingly; the habit of searching for hypotheses, which shall connect and explain facts; the habit of verifying these hypotheses by applying them to fresh facts; the habit of throwing them away bravely if they will not fit; the habit of general patience, diligence, accuracy, reverence for facts for their own sake, and for truth for its own sake; in one word, the habit of implicit obedience to the laws of nature, whatever they may be,—these are not merely intellectual, but also moral habits, which will stand men in practical good stead in every affair of life, and in every question, even the most awful that may come before us as rational and social beings."

And if these words are true for others, especially valuable are such truths to a medical student, the very essence of whose study lies in the careful comparison and analysis of the facts and phenomena of nature.

I would be glad if every student was required to pass a strict examination in natural science before he should be admitted to a medical course; and I earnestly advise you, that if you possess only the meagre semblance of a scientific education; if you have little or no knowledge of natural history and of the great workings of nature about you, then you had better defer your medical studies until you have a more complete preparation; for in this age, when "dust and disease," atoms and molecules, matter and force, light and electricity, magnetism and heat, are subjects entering prominently into medical discussions, and when sewage and water sup-

ply, ventilation and illumination, fermentation and putrefaction, epidemics and contagions are among the most practical medical questions, he who has little or no knowledge of the natural sciences has but an indifferent preparation for assuming the character of a medical student.

If the student has already learned the habit of careful observation and sound thought regarding the things which surround him in nature, he is ready to assume his medical studies with intelligence, and he has the best preparation for the second essential element of a successful course of study, viz., the *formation of the habit of original and analytical research*, and of the careful correlation and comparison of the facts which he learns.

A mind may be perfectly receptive of facts, but not receptive of the ideas which should correlate those facts. It is not uncommon to meet with gentlemen who are well informed, who can tell you the facts which are current in intelligent circles, or facts regarding their profession, who are utterly incapable of understanding those facts, or of arranging them in any logical sequences. Their minds are vigorous in one direction, and almost utterly lethargic in another. And what is the cause of this weakness? Is it that the mind of such persons is incapable of reasoning? that it is so constituted as to receive facts, but incapacitated for digesting or assimilating those facts? This is perhaps the true explanation in some instances, but in many, if not in most, I think that it is due to the habit of accepting facts without attempting to assimilate them, until the will grows weak, and it at length becomes impossible for such an individual to arouse himself from this species of mental inertia. Such men accept and adopt theories in science or religion which have no possible foundation in either science or theology; and they are usually enthusiatic for the theory which they have accepted, and wonder that any one could, by any possibility, arrive at conclusions different from theirs. Men who thus enthusiastically adopt wild theories in medicine, are often called quacks, but they may be neither ignorant nor dishonest. They are often well informed, and among the most conscientious in the profession, but from the habitual custom of accepting facts without forming ideas, their minds become at length distorted in certain directions, and utterly closed to the true meaning of the facts received. Every such man, conscious that he knows many things, and believing that every phenomenon is the effect of its

antecedent, is wiser in his own conceit, than seven men who can render a reason.

Men who are accustomed to digest and assimilate knowledge as one digests and assimilates food, and who form, with the ideas thus assimilated, new combinations which are as identical with their mental as their features are with their physical personality, are said to be original; while those who acquire knowledge, but do not create ideas, are said to lack originality. Now, what I desire most earnestly to impress upon the mind of every student of medicine is, that he should by all means become an original and independent thinker; and by originality I do not wish to be understood that he is to despise the conclusions of the fathers, nor by independence, that he is to disregard the views of others, for assumption is not originality, nor is independence obstinacy.

The condition of mind called originality, may be cultivated even in those who by nature possess little of it. It is not probable that the majority of persons who have been successful in original investigations in physical science, have been men of exceptional mental powers naturally, but in these cases mental growth has been the result and reward of mental exertion. As the physical exercise of the cricket field, or the boating club, proves to us that the powers of the body may be wonderfully developed under discipline, so we may be assured that the intellectual powers are to be improved by a like course of training.

And as, by badly chosen or illy conducted physical exercise, one set of organs may be developed at the expense of all the others, so in intellectual training, one set of faculties may be neglected while another is cultivated. The result is, that the mind so trained fails in that masterly discernment which should enable it to attack, successfully, difficult and obscure questions. As medical students, you may conduct your education upon the plan of developing the powers of sensation, or of developing those higher attributes of human intelligence—reflection, comparison and volition. The student who carefully records in his note-book every prescription which he sees written on the blackboard, is conducting his education on the first plan. The impressions which he gains and preserves in his mind by the help of his note-book are of precisely the same kind as are acquired by a learned pig, when under the instruction of his master. The educated animal learns to connect certain actions and sensations of his own with certain signals given by the master, and in like manner when such a student hears the name of

a certain disease, he as instinctively calls to mind certain combinations of articles of the materia medica. He has learned that certain signs in the sick man indicate certain diseases, and that for each disease there are certain drugs or combinations of drugs to be administered. He goes into the world with his brain-load of imperfect knowledge and faulty associations. ready to comprehend everything that is easy of comprehension, but unable to cope with knotty questions; ready, if circumstances favor, to accept and adopt fancy theories in pathology and therapeutics, and with views narrow, contracted, and often bigoted.

Such a man can apply the prescriptions copied from the blackboard, or derived from his books or journals, to diseases which he is able to remember by name, but when an obscure case occurs, one which he does not remember to have heard described, or which does not assume the form agreeing with the impressions made upon his memory, he is as much lost in his wilderness of diseases and prescriptions as ever were the children of Israel in the wilderness of Sin. He has no guide but memory, and he has so loaded his faculties with experiences and impressions that he has no power for generalization.

On the other hand, the student who cultivates the higher attributes of reflection and comparison is ready for any and all emergencies. Like the other, he must have facts. His memory must retain the materials from which he would evolve his ideas, but he has learned to arrange these materials with precision, and yet in an infinite variety of forms. The force and penetration of his mind is increased as he extends his sphere of knowledge; and his acquaintance with a multitude of objects, instead of burdening his mind, as in case of the other, only strengthens and stimulates the reasoning powers. Such an one is ready to deal with new issues, and he delights in nothing so much as difficulties. He searches for the keys which unlock the mysteries which nature has so carefully hidden, and it is to such men that we are indebted for the solution of the great problems in physics and philosophy, which have already added so much to the store of human knowledge and human happiness.

It is the duty and the privilege of every student of medicine not only to use well the knowledge which he receives from others, but to add to that already possessed by the world. He should not only live up to his science, but he should advance it.

Severe intellectual exertion, careful analysis of facts, enthusiasm

in study, and never-failing persistence, are the price which must be paid for success in scientific attainments.

It may not be your good fortune to connect your name with any great discovery, as is that of Newton with the law of gravitation, or of Bunsen and Kirchhoff with the spectroscope, or of Helmholtz with the ophthalmoscope; but every young man who properly cultivates both the perceptive and conceptive faculties of the mind, who is acute and active in the observation of the facts, and logical in his deductions from the facts within his own sphere, may and will lift the veil which hides some of the choicest treasures of nature.

There lived not long ago, in London, a newsboy, the son of a poor blacksmith. The newsboy's capital consisted of good "natural powers, combined with zeal and capacity for hard labor." The newsboy became a bookbinder's apprentice, then a teacher. He became an ingenious experimenter and a lecturer. With restless and fertile intellect, stretching out in a thousand different directions, he was filled with enthusiasm, with curiosity and with wonder. The newsboy became a great discoverer, the correspondent of emperors and kings, the friend of Humboldt and Herschel, of Davy and Dumas, the recipient of honors from societies of learning, and from princes and from governments, and the name of Michael Faraday will be for all time enrolled as a prophet and a priest of science. And if Michael Faraday, starting in poverty with his bundle of newspapers, could attain to such a lofty eminence in science, by his faculty for zeal and hard labor, will not such zeal and labor do for any student more than to make him a mere imitator and user of other men's ideas?

If the student has formed the habit of original and independent thought, he will be likely to find that the teachings of modern science throw great doubt, if they do not wholly overturn many of the theories which have for centuries been regarded as the main pillars, upon which rested all lesser theories of Therapeutics and of Pathology. There have been protesters at all times, and some have been wise in there protestations, while others have protested for the sake of the attention drawn upon themselves; but, for whichever of these reasons the protest has been made, there has been, as there always will be, powerful opposition. And if you should be so bold as to suggest that some doctrine, long held in reverence by the profession, is but a myth, you must expect ridicule until the truth you proclaim is heard by the world, and then comes abuse.

Nevertheless, be careful to examine all doctrines, and bold to throw them away if they will not stand the test of logical investigation. You may meet sneers or rebukes from those who have for many years accepted these theories; you may be called fanatical and fanciful, or you may be accused of a want of honesty of purpose, for the time is not long past since

> "The reverend grey-beards raved and stormed,
> That beardless laddies
> Should think they better were informed
> Than their auld daddies."

And although we of the present day claim to be more tolerant of new views than were the "auld light caddies;" yet, as the volleys of Dutch oaths, let fly by Govert Lockerman, in the days of William the Testy, still linger among the echoes of the Dunderburgh, and are heard above the roar of the thunder in that region, so the echoes of railings and vehement denunciations of the fathers against new doctrines, still echo among the discussions in science, and the champions of the good old views cannot even now forbear to express themselves with a considerable degree of emphasis.

I am not here to teach or to encourage heterodoxy, but the days of superstition, even in medicine, are not clean gone. There stands to-day a flaming idol, to which the doctors of all kindreds and nations and peoples have bowed. The gleaming words. *Rubor*, *Calor*, *Dolor*, *Tumor*, flash from its glowing surface and send terror to stout hearts. And at the sound of the given signal, all the doctors must fall down and worship this inflammatory image. No man can describe this idol, inflammation, but certain bold young thinkers dare to assert that he is nothing but lazy, and therefore perverted nutrition.

And then there is the taint of blood in hereditary disease. To be sure, no one ever saw the taint in the blood. No one can tell what or how it is, but from time immemorial it has been known to be in the blood, though how any one ever knew it, no one can ever tell.

Here comes a child with a cleft in the roof of its mouth. Its mother had cleft palate and its great grandmother. Is the cleft in his blood? You and I may think it is in his mouth!

There are more superstitions than these, but happily they are fast disappearing before the positive light of science.

"Poor gapin', glowerin' superstition,
Wae's me, she's in a bad condition;
* * * * * * * *
* * * * * * * *
Alas, there's ground o' great suspicion
She'll ne'er get better."

Medicine, to-day, is becoming, to a great extent, a positive science founded upon the grand principles of physical laws. The time for men to look upon disease as an entity which is to be driven out of the system by something which will produce a similar or a dissimilar disease, has passed. Pathological conditions are but the shadows of physiological actions. Life, in the words of Faraday, "is but a chemical action long continued," and disease is but a derangement of this physical phenomenon. We are, henceforth, to seek for the deranged action, and apply the same means for its correction as would be used for the same purpose in the physical laboratory.

If science makes greater demands upon its students than formerly, it also furnishes him inestimably greater advantages. The recent discoveries in physiology and pathology have so elucidated these phenomena, that they are no longer to be studied as a multitude of isolated and incongruous facts, but as great principles. This union and scientific arrangement of facts has relieved and promoted the study of these branches as much as the natural system of classification has aided the study of natural history.

New instruments, too, have been devised, by which studies in physiology and pathology are prosecuted to infinitely greater advantage than formerly.

The microscope, though an old instrument, has, of late years, been used so much more extensively in pathological and physiological research as to have become new in the hands of the profession, and its revelations are becoming daily more startling and important.

The ophthalmoscope, unknown a few years ago, has assumed an immense importance as an aid to diagnosis and in the study of pathology in the living subject, not only in diseases of the eye, but in disorders of the nervous system and of the great depurating organs, and the time has come when no record of intercranial or nervous disease can be considered perfect, which does not contain a description of ophthalmoscopic appearances.

There are other new aids to diagnosis, like the largnyoscope, the

endoscope and the sphygmograph, which, to use the words of Mr. Allbutt, "have a kind of alacrity in sinking out of notice," yet they are of much value and will prove of service to him who has patience to use them.

Persistence and untiring zeal are essential elements of success in the study of medicine.

He who supposes that, having spent the time of study specified, and having passed the examination required, in order to obtain a diploma conferring upon him the degree of doctor of medicine, he has, therefore, completed his medical education, is woefully mistaken.

The diploma granted by any medical college is, of necessity, only a certificate that the holder of it has attained to the minimum degree of proficiency in his profession, which will enable him to practice it with any safety to himself or the community. He is sufficiently qualified to begin to study alone, and by assuming the care of the sick is enabled to pursue his studies at the bedside as well as in his library. The instructions already received from his preceptors then begin to assume practical form, and he may, relying upon his powers of observation, apply the facts and theories stored in his memory to the realities of health and disease.

The physician, so long as he continues to bear the name of physician, should be a progressive man. He should keep pace with his times, not only in purely medical questions, but in all subjects of general intelligence, and especially in all subjects pertaining to natural science.

Such studies, so far from interfering with the study of his profession, will give him broader, more liberal and more definite conceptions of the facts of medicine, and if natural science can do much for you, you also can and ought to do much for it.

Of those who are before me to-day, some will go to the country for their practice, where they will be brought face to face with nature. I would be glad if every such physician's office was an advance post of natural science. Every such physician may, without in the least hindering his practice or interfering with his proper studies, make a complete collection of all the plants, minerals, and even animals, of his town or county. He may make meteorological observations which will be of service to himself and to science; and, above all, he may, and should, be the minister of science to the people among whom he practices.

To those who settle in larger cities, these studies will be pre-

sented in a modified form, yet in reality they are the same. To the physician of the city, the great questions of hygiene present themselves as among the most important subjects which can engage the attention of the physician or the philanthropist. The science of protecting the health of larger communities cannot be well understood by one who simply knows the rules of prescribing for the sick, and yet the highest duty and privilege of the physician is as guardian of the public health.

Plagues and pestilences have swept through great cities, slaying scores of thousands of victims, and at such times Death laughs at the art of prescribing. Much has been done, but more must be done, to arrest the dissemination of epidemics, and to avert the dangers of pestilence—and to whom are we to look for these results, but to the physician?

Only a month ago, came flashing under the sea, the intelligence that in Russian cities, hundreds were falling victims to cholera, and but yesterday came again the word, that from the cities of India, tens of thousands of terror-stricken people are now fleeing from their homes to escape the destroyer. And what do we know of this dread visitation?

Invariably, from those great cities on the Ganges, and other rivers of India, to which religious pilgrimages are made at stated periods, where filth and moisture, fetid exhalations and contaminated water combine with famine and exhaustion, fanaticism and debauchery, to breed malignant cholera, the pestilence is carried by the returning pilgrims, until it reaches the bounds of India, then it sweeps over Persia and the region of the Caspian Sea, and appears in Russia. From Russia it makes its way westward, and, crossing the ocean, commences its ravages in this country.

Already the angel of death has commenced his western journey; he has crossed the Caspian, and has reached the Black Sea and the Mediteranean, ready to cross to Western Europe and to make his way to our shores. And is there no way of turning him from our doors? To your profession and to you, gentlemen, it is given to turn him back and to save the people—and if the threatened advent causes less terror than formerly, it is because of the increased confidence in the ability of your profession to arrest the evil. It is yours to sprinkle the door posts and the lintels, that when this angel of destruction shall see it, he shall pass over the doors and shall not enter to smite the people.

I have called your attention to a few suggestions regarding the methods of study in your profession; but possibly some one says to himself, this may all be very well in theory, but there is doctor so and so, who has a most extensive and lucrative practice among the wealthy and fashionable of his town, and yet he knows as little of science as the most illiterate boor; and you may bring to mind physicians who, by persistent self-assertion, by extravagant and boastful pretences of cures, by display of equipage, or by the constant claim of superiority for the peculiar *system* or *pathy* which they practice, have acquired large fortunes without the aid of scientific knowledge or systematic discipline of the mind—and you may possibly say, of what use is all this method of study, when one may get wealth as well, and even better without it?

Gentlemen, if there is one here to-day, who has entered upon the study of medicine only as a means of acquiring wealth, as a trade, which he hopes may bring him in more money than another trade, my words have not been spoken for him. If you would be rich, you may be a knave, a mountebank, or a fool. If you would be honored, be a *man.*

Let us believe, that every one who here to-day enters upon his medical studies, does so with the honest determination to be a true disciple of nature, and to devote his best energies to the happiness and welfare of mankind—assured that he is best fitted to be a physician, who is most worthy to be called a man.