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The Actual Value of Medicines: an Introductory Lecture

Israel Thorndike Dana

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THE ACTUAL VALUE OF MEDICINES.

AN

INTRODUCTORY LECTURE,

DELIVERED BEFORE THE

Medical Department

OF

BOWDOIN COLLEGE,

FEBRUARY 14, 1861.

BY ISRAEL T. DANA, M. D.

Professor of Materia Medica and Therapeutics.

PORTLAND:

PRINTED BY DAVID TUCKER.

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BRUNSWICK, MARCH 8th, 1861.

PROF. DANA,—*Dear Sir*:—We the undersigned, in behalf of the Students of the MAINE MEDICAL SCHOOL, respectfully solicit a copy of your introductory address, for publication.

Very truly your obedient servants,

BENJ. BUSSEY, JR., THOMAS C. McLELLAN, S. A. EVANS, J. P. ELKINS, W. R. BENSON.	}	COMMITTEE.
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BRUNSWICK, March 9, 1861.

GENTLEMEN:—I thank you for your note just received, and cheerfully comply with your request,

Very truly yours,

ISRAEL T. DANA.

To Messrs. B. Bussey, Jr., Thos. C. McLellan, S. A. Evans, J. P. Elkins,
and W. R. Benson, Committee of the Medical Class.

ADDRESS.

Mr. President and Gentlemen of the Medical Class :

Upon me has devolved a pleasant duty, that of speaking the first words at the opening of a new session ; and the duty is the more pleasant from the auspicious circumstances under which we meet. By the cordial efforts of the friends of the school, and especially of members of the profession all over the State, the incubus of obnoxious provisions attached to the legislative grant has just been completely removed. We meet also with the expectation that before the period of another introductory lecture comes round, a new building, more spacious, more commodious and more attractive than this will be ready to open its doors to us. There are many interesting and cherished associations connected with these ancient walls ; but I verily believe that when, with the new building in view, we take our last long lingering look at this,—there'll not be many tears spilled at the parting.

Gentlemen of the medical class, in the name of the medical faculty of this college, I bid you a hearty welcome, and pledge you our best endeavors to make your sojourn here pleasant, as well as profitable to you.

I propose as the topic of our present discourse, the *actual value of medicines*.

An imperfect and erroneous idea of the medical art is gen-

erally entertained. "According to the vulgar notion, the function of the physician consists in little else than the prescription or administration of drugs, and the function of the patient in little else than swallowing them." Nothing could be more false.

In the treatment of disease the physician avails himself of numerous and most important remedies besides drugs. Thus diet, exercise, pure air, sunlight, water, heat, cold, electricity, mental and moral influences, &c., are remedial agents of unspeakable value. Remedies such as these, though generally used in connection with medicines, will sometimes produce the happiest results in cases to which medicines are utterly inapplicable.

Nor is it with the treatment alone of disease that the physician is concerned. It is his higher function sometimes to anticipate and even to prevent it. What a boon did Dr. Jenner ~~have~~ confer upon the race in the discovery of vaccination! How much has been done and may yet be done by promulgating and promoting the observance of the laws of health!

Were the whole *materia medica* yet unknown, or were all the drugs that compose it suddenly swept out of existence, the *medical art*, with its remaining power for the mitigation and prevention of disease, would still be "worthy of the study and pursuit of the noblest intellects and the tenderest hearts."

But the topic for our present discussion is *medicines*. I shall not stop to ask whether nature really furnishes such a thing as true medicines. The facts of daily observation, and the voice of all the centuries gone by would answer such a question unequivocally. And were no single article of medicine as yet discovered, mankind would still be confidently looking for the discovery. It is a natural and intuitive act of the human mind, alike in the savage and the cultivated state, to expect to find some provision in nature for the alleviation

of suffering, and for the mitigation or cure of disease. The victim, himself helpless, instinctively appeals to others for the relief which his soul craves ; while, by an impulse equally natural, those who witness his sufferings look about them for the means of relieving it.

But medicines have been *known* and *used*, to some extent, from the very origin of society. That they were not only known, but *highly esteemed* in very early times is proved by the incidental testimony, not only of profane, but also of the sacred writers. When the patriarch Jacob, in time of famine and sore distress, was about to send his sons a second time into Egypt to procure the corn, without which they must all perish, being desirous to propitiate the chief ruler under Pharaoh, these were the directions he gave to his sons, "Take of the best fruits of the land in your vessels, and carry down the man a present, a little *balm* and a little honey, *spices* and *myrrh*." A prophet predicting a glorious future, speaks of trees growing on the banks of a river, whose leaves should not fade, nor their fruit be consumed, and adds, "the fruit thereof shall be for meat, and the *leaves thereof for medicine*." "Is there no *balm* in Gilead ? and is there no *physician* there ? Why then is not the health of the daughter of my people recovered ?" cries another prophet. The Saviour of mankind, in adapting his teachings to the comprehension of his hearers, has forever dignified the name *physician* by applying it to himself.

In an inquiry into the value of medicines, there are one or two *preliminary* considerations which demand a passing notice. It is evident that observations in order to be of any worth in determining this question, must relate to the effects of the *use*, not the *abuse* of medicines.

It would seem as if so simple a proposition as this must be unnecessary, but in fact a strange confusion exists in many minds on this point. It is common for people to dose them-

selves on the occasion of every slight ailment. One drug after another is frequently swallowed, in kind and dose and method most inappropriate. "A friend recommended it as very excellent in such cases," is the explanation often given to the physician afterwards called to treat at once the original disease, and the new disorder resulting from the abuse of medicine. It seems to be quite forgotten that in order that the advice of friends thus freely bestowed should be valuable, or even safe, they must be possessed of an acquaintance with the mechanism and laws of the human body, the numerous and diverse diseases to which it is liable, and the effects of drugs, varying as they do, with the ever changing conditions of the disordered system, which very few persons can be supposed to have. "It was very highly recommended in the papers" is another explanation often offered. The fact is quite overlooked that such notices find a place in the papers because they are paid for; that their sole object, even when purporting to come from "retired clergymen whose sands of life have almost run out," is to secure a large sale and corresponding profits; that it is as easy to write a high sounding certificate as a modest one; that any name may be appended, provided it belongs to no one in particular; and, finally, that there are everywhere "*weak brethren*," ready to testify to what they conscientiously believe in cases of which they are utterly incompetent to judge.

It is said that a Boston physician, being called to see a man with a very sore mouth, found on inquiry that he had picked up a box of unknown pills in one of the streets of that city, and had swallowed them—*acting on the general principle that pills are good for people*. There is no one of God's good creatures which may not be perverted to a bad use. The knife, which in the hands of the skillful and humane surgeon rescues the perishing from the very jaws of death, may serve

anon for the murderous dagger of the assassin. It is the *use*, not the *abuse* of medicines we are now to consider.

Again, it is no objection to the value of a medicine really useful in *certain cases* that it is not equally applicable to others. No one objects to the skill of the surgeon in removing a benignant tumor, that it avails but little for the cure of malignant growths. No more is it reasonable to depreciate the value of medicine in some diseases because others are incurable by it. Incurable diseases are in no true sense "*opprobria medicinæ*." They are the instrument by which, for the most part, the sentence of universal death pronounced upon our race is executed. The medical art does not pretend to be applicable to them, except so far forth as it may mitigate the sufferings which attend them. These are not the cases to which medicine as a curative agent *professes* to apply. It is consequently no objection to the value of medicine that they are, in this respect, beyond its reach.

Our question relates to the *true* value of medicines. And here we must not lose sight of the general tendency of the human mind, in its estimate of the value of things, to *oscillate*. From an erroneous opinion on one side of the truth, it is prone to swing over to a position just as far on the other side of it. History shows that such has been the fact in regard to medicine. On the one hand we find a prevalent belief in the *universality of specifics*. By specifics I here mean medicines which, by their direct and peculiar action infallibly cure the diseases to which they are applicable. And it is not strange that such a belief should have prevailed in primitive times, since the medical art had its legendary origin from the gods. Medicines might therefore naturally be supposed to exert an influence over disease as mysterious, as mystic as that by which witches and magicians wrought, or prophets did their deeds of wonder. Nor is it singular that those who then practiced the art should have shared the crude notions of those

upon whom they operated. But little was then known of the "vis medicatrix naturæ." After the exhibition of medicine, the sequence was always esteemed the consequence. The cures were thus accounted for, while the failures were attributed to some fault in the selection or administration of the remedy. And here it may be remembered that this *post hoc ergo propter hoc error* was by no means peculiar to early times. It has been the great stumbling block of medical science to the present day.

Neither was a belief in the universality of specifics confined to that period. It has a wide prevalence among the people to-day, and in full proof of this proposition, I need only cite two facts, viz.: 1. The large patronage bestowed on pretentious quacks of every description, whose only virtue is that they *promise* largely, and boast of *specific cures* in their possession for all the ills that flesh is heir to. 2. The immense sales of patent medicines advertised and sold on the same principle. Strange indeed would it be under these circumstances were there no medical practitioners to be found, ready through ignorance or covetousness to pander to the public taste. "Like people, like priest," is a maxim, which, in spirit, applies equally perhaps to the medical and the clerical professions.

Thus we have the one extreme of an unenlightened, misguided and excessive faith in the power of medicines.

On the other hand there are those who profess to have *no faith at all* in medicine—to believe that all drugs are worthless, or worse than worthless. Such a statement seems strange when we consider that no fact perhaps of observation or experience admits of plainer demonstration than the fact of the value of certain medicines, properly used in appropriate cases. But we must remember that blind and unreasonable expectations have been entertained and disappointed, and that the *abuse* is often confounded with *use* of medicine. Some minds,

too, are so constituted that it is easier for them to disbelieve than to believe *anything*. Again, the spirit of restless mental activity which characterizes the age, and shows itself in doubtings and disputings in every department of learning, must be taken into account. We are not surprised, therefore, to find in some minds of the profession as well as among the people, a skepticism as to the value of medicines.

It may be proper here to remark that whenever a sentiment of this kind is emitted by any physician of note, it is at once greedily seized upon by parties selfishly interested in defaming the regular profession, reiterated again and again, and made to resound through the length and breadth of the land, as if hundreds had spoken instead of one. While opposite statements expressive of the sober sentiments of the great body of the earnest, practical, working men of the profession, are allowed to fall quietly upon the ears of those to whom they are primarily addressed, and finding a lodgment in their sympathizing minds, to rest there.

Nor is this all. With the same end in view, addresses and lectures are cunningly *garbled*, and sentences thus isolated are wilfully misinterpreted, misrepresented and distorted. A lecture recently delivered before the Massachusetts Medical Society, by a distinguished literary gentleman belonging to it, (Dr. O. W. Holmes) furnishes an illustration of this remark. It is boldly asserted in certain quarters, with great satisfaction and delight, that the orator there declared his opinion that medicines, as a whole, are worse than useless. Now what are the facts? The address was published according to custom, with the transactions of the Society, the portion in question, as the author states in a note, *standing exactly as delivered*. We here find the opinion expressed that throwing out opium, wine, the anæsthetics, and the specifics, (among which the author includes cinchona, mercury, arsenic, colchicum, iodine, sulphur, &c.) were the rest of the *materia medica* "*as now*

used," sunk in the sea, "it would be all the better for mankind,—and all the worse for the fishes." Here we have thrown out of account entirely a dozen picked medicines, and the opinion is then expressed of the remainder "*as now used*." These are the only italicized words in the sentence, and it is evident that the meaning of the whole is intended to *hinge* upon them. In simple strictness of construction, then, we are bound to understand that all the abuses of medicine are included—domestic dosings often excessive and misdirected, the large consumption of quack medicines, the use of drugs for suicidal and other essentially pernicious purposes, the prescriptions of unqualified and injudicious practitioners, and mistakes of every sort. But we are not left to *infer* the author's meaning. In a note appended to the printed address, he explicitly states the question in relation to drugs to be "whether the evils from their *abuse* are on the whole greater or less than the *undoubted benefits* obtained from their proper *use*."

It is probably true that the distinguished author of this address, whose time is devoted rather to literary pursuits than the practice of medicine, puts a lower estimate upon the value of medicines than do the great majority of the practical men of the profession. For one, I can by no means subscribe to all the sentiments the address contains, and inferences it leads to. I believe, too, that the author may justly be held responsible for evils which have grown out of honest misapprehension of his language, inasmuch as a writer is bound to consider, not simply what impression his words in logical strictness *ought* to convey, but also what they are *likely to* under the circumstances which may probably attend them. Still it cannot be denied that portions of this address have been *wilfully* misinterpreted, misrepresented and distorted in some quarters from selfish and dishonest motives.

Enough, perhaps, has been said upon this second extreme view of medicines, which makes them of little or no value.

We turn with pleasure from both these extreme views, to ask, what is the *rational view* of the value of medicine?

In matters of religious faith, we are told the mind is not apt to pass *directly* from a belief in the infallibility of the church to a satisfactory confidence in a church, which though sanctified in part, being yet in the flesh, is liable to be sometimes led captive of Satan. The common route from the former to the latter condition of mind lies through the intermediate stage of skepticism. It is somewhat so in matters of medical opinion. The mind passes from a blind, unreasonable faith, through the intermediate stage of skepticism, to a rational and well grounded belief. And if in times past blind and extravagant expectations have been entertained of medicine, while the tendency of late has been to undervalue and reject, are there not already signs of the dawning of a better day, and shall we not soon walk in the established light of a *rational medicine, appreciated and prized as such?*

In approaching the question of the actual value of medicine, let us glance at the *history of the science*, and see what light it may shed upon our path. The science of medicine must have had its origin in that instinct of the mind which leads it to expect and to seek for the satisfaction of every natural want. There does not exist, and never has existed, so far as is known, a nation, savage or civilized, which has not had some notion or other of medicine. The discovery of the first remedies was probably the accidental reward of the search which instinct prompted. Amongst the Egyptians, in very early days, it was the custom to expose the sick in public places, that any of the passers by, who had been attacked in the same way and been cured, might make known the remedies they had used. The plan was next adopted of requiring all who had been cured of any sickness to make an inscrip-

tion in the temples of the symptoms of the disease, and of the remedies which had proved beneficial in it. These registers, we are told, were kept with the same care as were the archives of the nation. Thus were accumulated numerous facts of observation and experience. Thus there began to be a history of disease and a *materia medica*.

So far the art of medicine rested wholly upon experience. The next step was to analyze and compare the observations thus collected, and to deduce from them some *general rules* of practice. The priests, who had been charged with the duty of recording and studying the facts contributed, having usurped the exclusive practice of the art, soon formed for their own use a medical code, based upon the recorded observations, and called the "Sacred Book." So much importance was attached to the rules thus derived from experience, an ancient historian informs us, that the priests were forbidden to depart from them in any case. If they followed these rules, and the case proved fatal, they were not held responsible; but if they departed from them and the patient died, their own lives were forfeited.

Such, doubtless, was essentially the mode in which the art of medicine was developed, up to a certain point, amongst *all* the nations of high antiquity. Thus far its progress, if not rapid, was *real*. Reason had been applied to experience only so far as to interpret its facts, and turn them to practical account. But soon after a *pride of reason* seems to have taken possession of the minds of the medical philosophers. They were no longer content that reason should interpret and guide experience. They sought by the light of reason to anticipate the progress of experience. Instead of devoting themselves to the study of the phenomena of disease, they aspired to know its intimate nature—its very essence, and from this high stand point to prescribe the remedies which should apply to it. They formed abstract conceptions of the nature of dis-

ease, and of the precise *modus operandi* of medicines, and based their systems of practice upon them. They were ambitious to search out and determine the essential principle of the living system, "forgetting," says a distinguished writer, "that life is a finished circle, in which consequently there is neither beginning nor end, and that he alone who traced the circle is able to tell where it began and where it ended."

Out of this arrogance of reason grew the numerous speculative theories which successively appeared from Hippocrates to Galen, and which have since been so often reproduced, with some slight change of dress, to challenge the public confidence.

When the human mind, emerging from the darkness of the middle ages, awoke from its torpor, and entered upon its new career of improvement and discovery, advances were made in medicine, as well as in the other sciences. It began to be seen that while, on the one hand, experience without reason is blind and slow, equally true is it that reason independent of experience, i. e. pure speculation, is unreliable and dangerous.

The great lesson which the history of medicine affords for our present instruction is this: that in the construction of the edifice of medical science, *there are but two sorts of material fit to use*: first, *medical facts*; second, *natural laws pertaining to these facts*. Material of the first kind can be obtained only from *observation* and *experience*, and material of the second kind, only from study of the separate facts, and fair and rigid *induction* from them.

I submit, then, that in the present light of reason and history, it is the duty of every laborer in this field of science, rejecting all speculations however enticing, to devote himself to the careful observation of facts, and the earnest study of the laws which govern them.

It is by no means here pretended that a man is to act with-

out *any* theory or formula to guide him. No such thing is possible. The only question is as to the *choice* of formulas; and no question is more important than this. Let us try them all then by the following rule. In order that any particular theory or formula shall be a safe guide in practice, *the mould in which it was cast must have been a direct and unaltered impress from nature's facts.* It is not enough that a theory first conceived by abstract speculation of the closet should be twisted and distorted till it presents some show of conformity to fact. Such conformity must be its primitive and natural shape, the form which belongs to it, and which it is designed to impart to whatever comes in contact with it.

We are bound to reject, then, every exclusive dogma of speculative philosophy, such as "*similia similibus curantur,*" "*alia aliis curantur,*" and others which might be cited, and to be satisfied with nothing for our formula, in any case, but *the simplest possible expression of the teachings of experience as interpreted by reason.*

And we are bound, further, to remember that every fact has its place already assigned it in the edifice we are engaged in building, by the divine architect. It is not for us, therefore, to choose or to refuse facts, but only to receive them, and put them in their proper places. Let not then, prejudice against those who may chance to discover a new truth ever render us slow to embrace and to use the truth itself. In the construction of the edifice of *religious* truth, the early builders, blinded by prejudice and preconceptions, rejected the stone, which was destined to become the head of the corner. Let us profit by their experience.

Having thus seen that the edifice of rational medicine is founded upon experience, and that it consists only of facts observed, and of natural law fairly inferred from them—let us institute a brief comparison between it *in these respects*, and the most popular of the exclusive systems, Homeopathy.

In the notice of the Life, Works and Doctrine of Hahnemann, by Dr. Leon Simon, published as a preface to the Organum in the Paris edition of 1845, the following account is given of the origin of the system. After H. had lost his faith in medicine, severe sickness appeared among his own children. In great distress and perturbation of mind, he asked himself, "Can it be possible that providence has abandoned man, his creature, without sure succor against the multitude of infirmities which continually beset him?" Soon he cries out to himself, "No! There is a God who is goodness, wisdom itself; there must exist means created by him of *healing diseases with certainty.*"

Says Dr. Simon, "This outburst of his soul was to him as a revelation. He began to seek, confident he should find the object of his search; *and such is the origin of Homeopathy.*" To many of us, however, it is not incredible that in man's present estate a wise and good God does sometimes permit disorders *physical as well as moral*, to prove the inevitable cause of suffering and death.

The idea, says Dr. Simon, that there must be some way of curing diseases with certainty was never abandoned by Hahnemann. "You ought," he said to himself, "to observe the manner in which medicines act upon the system in a state of health. *Perhaps* the changes which they thus induce are the only language in which they can express to the observer the purpose of their existence."

Soon he announces the *fundamental laws*; that diseases are all specific and consist only of the symptoms; that they are cured, and cured only, by medicines which when used in a state of health, produce symptoms of the same kind with those of the disease they cure; and again, that since the smaller the dose that will prove effectual the better, "the dilution of medicines to the *decillionth degree* of power," is that to be "oftenest employed."

Prof. Lee, in helping us to form some idea of the degree of attenuation to which medicines are brought under this system, certifies to the mathematical correctness of figures, which show that, decimals rejected, the amount of sugar required to reduce one grain of any medicine to the "*thirtieth dilution*," would make a sphere 264,646,924,646,784 *miles* in diameter. How many million times larger than our globe this would be, you must calculate for yourselves. Hahnemann tells us, "experience has proved that it is *impossible* to attenuate the dose of a perfectly homeopathic remedy to such a degree that it will not produce a decided amelioration in the disease."

These laws are proclaimed by the master *ex cathedra*. If we look to him for the facts upon which they rest, or the method by which they were fairly inferred, we look in vain. *Truly* as well as admiringly does his distinguished disciple characterize him as "*dogmatiste*" in the exposition of his doctrine. And verily must *we* add, "he taught them as one having authority, and not as the scribes." For ourselves, we prefer the *facts* and the *reasoning* in any case, to the "*ipse dixit*" of the theorist however positive.

We are now prepared for the definite consideration of the question of the actual value of medicines.

It is evident that the enumeration of the individual medicines, or even of all the classes of medicines, and a separate estimation of the value of each would be as inappropriate as it would be impossible on the present occasion. I shall therefore content myself with submitting to you a few general propositions, which I shall endeavor briefly to illustrate and explain.

First. In the present state of the science, the value of medicines does not consist wholly or chiefly in their known virtues as *specifics*. I use the term specifics in the sense already defined, of medicines which by their peculiar and direct action infallibly cure the diseases to which they apply.

This we have seen to be the doctrine of Hahnemann. "There must be some way of curing diseases with certainty," was his early cry; "I have found it," his later. Would that his words were justified in experience. But in point of fact, the number of medicines, as at present known, which have any claim to the title of specifics is very small. It is not denied that medicines may be possessed of specific virtues to an indefinite extent. If so the future will reveal them. New remedies may be brought to light, and new virtues in those already known. We must not venture to prophesy, but there is room enough here for the most sanguine to hope. My proposition relates only to the value of medicines as *at present known*, and I repeat that this does not chiefly consist in their virtues as specifics.

Second. There are certain medicines of great value, which *approach more or less nearly* to the standard of specifics. These are cinchona for intermittent diseases, iron for anæmia, colchicum for gout, iodine for some scrofulous affections, sulphur for scabies, arsenic for certain cutaneous eruptions, mercury in special cases, and perhaps a few others. It would not be easy to estimate the value of this group as *curative* agents. But this is not all. Some of them are also useful in the prevention of disease. Thus the great prophylactic power of cinchona under exposure to the influence of marsh miasmata cannot be doubted.

Third. There are several medicines possessed of peculiar properties so remarkable and so important as to demand a separate consideration. I refer to *opium* and the *anæsthetics*. They possess the power in a wonderful degree of producing, in methods quite diverse, the same grand results. They relieve pain, relax spasm, and promote sleep. So potent are they in these respects, that they may almost be termed specifics for pain, spasm and wakefulness. And who shall count their value for these purposes alone? Let him answer, who,

in the agonies of an intense colic, has experienced the effects of a full dose of opium. Let the physician answer, who has given it to patients, who, under the influence of some powerful but temporary cause, have passed night after night without sleep till the nervous energy is about exhausted, and distraction and death are staring them in the face. Let them tell, who have witnessed the mitigation of suffering resulting from its judicious use in cases of painful and lingering, but inevitably fatal disease.

To form some idea of the value of ether and chloroform, we need only open the records of surgery. Instead of scenes so lately common of patients madly struggling to escape from cords which too securely bound them, and shrieking in agonies too great to bear; and surgeons paling before scenes of horror till the blood almost ran cold in their veins and their hands were well nigh palsied—we read of surgeons calmly pursuing the successive steps of some capital operation, intent only upon the good result expected, and patients sleeping sweetly and smiling in happy dreams.

Fourth. There are numerous classes of medicines, grouped according to their effects upon the system in a state of health, which are most advantageously applied in disease according to the *rational indications* of each separate case.

I do not propose here to enumerate all these classes, but simply to present a few facts in justification of the proposition just made. On surveying the field of the *Materia Medica*, we find medicines separating at the very onset into two grand divisions, viz: those whose effects are *general*, and those whose effects are *local*. The former appear to produce an impression first upon one of the two great systems, which pervade the whole body, and sustain all its operations—the nervous and sanguineous systems—and through them to affect the dependent functions generally. The latter appear to be merely conveyed

in the blood to some organ or organs upon which they produce an effect wholly or mainly local.

Of general remedies, some increase and some diminish vital action, and both sedatives and stimulants are divided again into classes according to certain differences in the stimulation or sedation which they induce.

Of local remedies, I will mention a few classes out of the many, by way of illustration. Thus, we have emetics, which act upon the stomach; cathartics, which act upon the bowels; diuretics, which act upon the kidneys; diaphoretics, which act upon the skin; and uterine-motor stimulants, which act specially upon the womb. Of many of the most important remedies in each of these classes, it has been proved by actual demonstration, that they produce the same peculiar effect in whatever way they are introduced into the system. Thus tartar emetic will act upon the stomach whether swallowed, introduced into the rectum by enema, injected into the veins, or, upon certain conditions, applied to the skin. So we have reason to believe that the great mass of medicines, of all the different classes, produce the same essential systemic effects, by whatever route they find their way into circulation.

We have the fact established that certain medicines, introduced into the blood, and carried with it all over the system, uniformly produce their visible effects upon certain particular organs or functions, while upon all the rest they exert, so far as we can see, no direct effect. You may attempt to account for the fact, if you please, by saying there is an affinity between certain medicines and certain organs; but whether you account for it or not, the *fact* cannot be denied.

We have, then, medicines known to produce peculiar and definite effects upon the system in a state of health, and classified according to these effects; we have a knowledge of numerous diseases, not of their symptoms only, but also, in many cases, of structural changes connected with them: we know

that in certain of these morbid states, revealed by known phenomena, the use of certain classes of medicines is commonly attended with good results, and we call these phenomena the *rational indications* of treatment. We are therefore prepared to expect great advantage from the rational and judicious use of these various classes of medicines according to the therapeutic indications. And we are not disappointed. For in the present state of knowledge, it is just here, in my opinion, that we find *the greatest value of medicines*.

Fifth. The value of medicines consists in their adaptedness to three distinct ends, viz:—1st, the *prevention* of disease; 2nd, the *cure* of disease; 3rd, the *relief of suffering* incident to disease.

Of their application to the first of these ends, the prophylactic use of quinine in miasmatic regions, which has been already mentioned, is the great example.

In illustration of the second use, we may select our examples from a much wider range of instances. Thus we have anæmia ^{*cured*} ~~caused~~ by iron, intermittent fever by cinchona, colic by a joint opiate and evacuant, and congestive headache by a cathartic. *How far* medicines are available, directly and indirectly as curative agents, would be, by itself, an interesting question for extended discussion. It is a prevalent notion that this is their *great*, if not their *only true* use. Some people feel that when a disease cannot be *cured*, there is nothing of any account left for medicines to do. Such a view is most erroneous. They have another use, more humble indeed, but scarcely less precious.

The third use of medicines is for the *relief of suffering*—the palliation of diseases, which cannot be cured. What a field is here opened to us! Surely the alleviation of *pain*, the soothing of *anguish*, the mitigation of *distress*, the relief of *agony* are noble aims. Who has not witnessed these results from medicines in cases hopeless of cure? The single aim of

many most respectable callings is to add a little to the sum total of human comfort. Had the medical art no other function but to apply its remedies to the relief of suffering, it would still constitute one of the most useful and beneficent of pursuits.

We have thus seen that it is a natural and *instinctive* act of the mind to look for some provision in nature for the relief of physical suffering; that medicines have been known and highly valued from the primitive ages of the race; that the value of medicines is to be determined from their use, not their abuse; and that it is no objection to their value in some cases that they are not equally applicable to all. We have seen that there is a general tendency of the human mind, in estimating the value of things, to swing over from one extreme view to the opposite one, and have thus been prepared to find a wide diversity in the various estimates that have been made of the value of medicines.

In attempting to form a rational judgment on this question, we have sought light from the history of the art, and have seen that the true science of medicine rests only upon the solid foundation of *facts observed* and *natural laws inferred*.

In estimating the actual value of medicines, we have seen that this does not consist chiefly in specific virtues at present known, but in their natural and judicious use according to known and recognizable *therapeutic indications*; and that thus used, they are, even in the present state of knowledge, agents of *unspeakable value for the prevention and cure of disease, and the relief of human suffering*.

Gentlemen of the Medical Class! The present discussion has been confined to the question of the *actual* value of medicines. How much their value will be enhanced with increasing knowledge, we cannot predict. But it will be your solemn duty, if you enter this profession, not only to avail yourselves of the labors of those who have gone before you, but also to

strive unweariedly yourselves to *add* something to the common stock of knowledge. In order to derive the fullest benefit from the use of medicines, you must not only have an intimate knowledge of their properties, but you must be possessed of a *genuine* and *rational faith* in them, not indeed as the only remedies with which you are to operate, but as remedial agents of great and undoubted power.

The health and lives of multitudes will be placed in your hands, and you will find constant and ample occasion for the use of knowledge and the exercise of judgment in the treatment of physical disease. But this is not all. It is often the higher functions of the physician to minister to the "*mind diseased*." He is often placed, for the moment, on a standpoint of *moral* influence which no other man can occupy. He is liable to be drawn into relations to his patients so peculiar and confidential that even the civil law has been compelled to recognize their sacredness, and exempt him from obligation to betray them even when summoned to testify before the tribunals of justice.

Enter not then lightly into such a calling, but first count well the cost, and then *solemnly consecrate* yourselves, mind and heart, to the work before you.

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