

An introductory lecture delivered in the hall of the medical department of the St. Louis University, November 4th, 1845 / by M.L. Linton.

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AN

INTRODUCTORY LECTURE

DELIVERED IN THE HALL OF THE

MEDICAL DEPARTMENT

OF THE

ST. LOUIS UNIVERSITY,

NOVEMBER 4TH, 1845.

By M. L. LINTON, M. D.,

PROFESSOR OF THE PRINCIPLES AND PRACTICE OF MEDICINE.

ST. LOUIS:

PRINTED AT THE REPORTER OFFICE.

1845.

INTRODUCTORY LECTURE
CORRESPONDENCE.

PROFESSOR M. L. LINTON:

Sir,—The undersigned having been appointed a committee, at a meeting of the students of the Medical Department of the St. Louis University, for the purpose of procuring from you a copy of your Introductory Lecture for publication, request that you will favor them with the manuscript; at the same time they take pleasure in expressing their high opinion of its merits.

Respectfully, &c.,

JNO. O. F. FARRAR, }
D. A. LINTHICUM, } Committee.
TIM. L. PAPIN, }

St. Louis, Nov. 14th, 1845.

GENTLEMEN,—Your request, as a Committee of the Medical class, for a copy of the Introductory for publication is granted, though the style of the lecture is somewhat different from that which would have been adopted had it been written with a view to publication. Accept for yourselves, and tender to the class, the best wishes of the author.

M. L. LINTON.

JNO. O. F. FARRAR, }
D. A. LINTHICUM, } Committee.
TIM. L. PAPIN, }

LECTURE.

It has hitherto been customary with this and other similar institutions to have as many introductory lectures as professorships. The faculty of the Medical Department of the St. Louis University have concluded to have henceforward but one introductory. The propriety of this regulation need not be discussed, as it is a matter of no great importance. The task of delivering this prefatory lecture having fallen, for the present session, to my lot, I proceed to its execution without any fixed and determined plan.

A wide field is open before me; and I shall wander whithersoever the train of thought may tend, or inclination may lead, regardless of the boundary lines which separate my particular department from those of my colleagues. This freedom from restraint, however, rather increases than diminishes the difficulties of the task before me—amongst so great a variety and profusion of subjects it is difficult to choose. In a general introductory, such as the present, it does not seem proper to confine oneself to any one or two particular topics; but as I know no well-established laws by which such cases are governed, I shall for the present be a law unto myself, and adopt, without seeking for authority or precedent, that course which in my judgment, will be most instructive to the student, and at the same time not entirely destitute of interest to a popular audience. I shall endeavor to discuss in a general manner the nature, character and importance of the subjects which are to engage our attention during the coming four months—to point out their relations to each other, and present some incentives to exertion on the part of those here assembled for the purpose of acquiring professional knowledge.

Medicine, in the broad acceptation of the term, is the most extensive, the most difficult and so far as this world is concerned, the most useful study that ever engaged the mind of man; and as such holds out to talents and ambition rewards as high, and fame as wide-spread and enduring, as any other pursuit in which they could be embarked. It is a science or rather a circle of sciences in the study and practice of which the purest taste—the intensest thirst for knowledge, in regard to

the deep mysteries of nature, and the most ardent philanthropy can be gratified.

Common sense would dictate the proposition, that in order to understand the physical constitution of man it is necessary to analyze him and ascertain his composition. Revelation represents him as having been formed of the dust of the earth; and it is reasonable to conclude that in order to understand his material portion at least, we should analyze him as we would any other portion of earth and its contents. Subjected to analysis, we find him indeed composed of the same elements which enter into the composition of other material bodies. We find in him the hydrogen of the water which quenches our thirst; and the oxygen of the air that vivifies our blood. We find the carbon that mainly composes the dense forests that shadow the earth and the extensive coal mines that lie hid in its bosom; the lime and other materials of those ponderous rocks of which nature has built up the mountains. We find him verily a child of the earth, and a near kinsman of its humblest worms.

If, then, man be made up of the same elements which compose the universe at large; if he consist of combinations of the same elemental atoms, it is as necessary in order to comprehend his being and nature, to become acquainted with these atoms and their properties, as it is in regard to any other portion of matter. These elements are the A. B. C. of the science of man, as they are of all matter; the different forms and properties of matter being caused by variations in the number and proportions of these elements. In man, the A. B. C., the elements, are more exquisitely arranged and combined than in other terrestrial beings and objects. He is the most sublime and elegantly turned sentence in the book of nature, and constituted the finest and most euphonious stanza in the poetry that burst into music on its completion, "when the morning stars sang together, and the sons of God shouted for joy" in response to the high eulogy of creation that all was good.

We speak of man at present only as a material being, and repeat that to understand his nature, *as such*, we should commence with the elements of which he is composed. The parts of a machine must be studied before the machine itself can be comprehended—but the proposition is so nearly a self-evident one—so near a *first truth* if not actually such, that proofs and illustrations cannot add to its support or its lucidness. The study of man then must commence with the elements of his composition. He is a compound of carbon, hydrogen, oxygen, nitrogen, phosphorus, iron and other elements—the *alphabet of the universe*—chemistry teaches us all that is known of these in their simple and their compound states. It is the usher that instructs us in the first rudiments of nature and also the high teacher that expounds the sublime and general laws which preside over and regulate her ever-varying yet harmonious movements—her wonderful and mysterious metamorphoses—her adaptation of all things to the well being "of God's most perfect creature, man."

It teaches us that the innumerable forms of matter, living and dead, of which our senses take cognizance, consist of a few elements, variously combined. The metals aside, the world's elements are few indeed, altogether there are not more than about fifty-five. Chemistry gives us the ultimate analysis of matter. It shows the composition of the dew-drop and the rose from which it falls; of the grain of sand on the sea shore, and the granite mountain; of the ponderous ore and the evanescent and fleeting vapor; of the meanest clod and the gem that twinkles in the imperial diadem; of the humblest shrub and "the tallest pine hewn on Norwegian hills;" the solid bone; the delicate and sensitive nerve; the elastic muscle; the gushing blood.

But Chemistry teaches us not only the composition of bodies but their properties. It fathoms the abyss of their being, and traces the process of their formation. It teaches by synthesis as well as by analysis. It combines oxygen and hydrogen and gives the most widely diffused, and most necessary of all fluids—*water*; it mixes oxygen and nitrogen and forms atmospheric air; it combines the soda and hydrochloric acid and forms common salt; it explains the unalterable laws which preside over and govern the endless mutations of matter; it leads the student behind the curtain, into the secret chambers of nature, and shows her workings—explains the forces which bind atom to atom and world to world.

It is difficult to separate physical from chemical science, indeed there is no well defined boundary line between them. Whatever concerns the composition and properties of matter, belongs to chemistry. In a degree the chemist's laboratory is the world of nature and art in *miniature*. It has its thunder, its lightning, its clouds, rains and dews, its contending play of affinities and repulsions.

The air in a delicate tube, is heated, it rarifies and ascends—the colder and heavier air from without supplies its place. Thus the "Alchymic sun" heats and rarifies the atmosphere of the tropics—it ascends and the trade winds rush from the poles to the line—a thousand ships like huge migratory condors spread their wings to the tempest and fly to distant climes on errands of utility, ambition and glory. The same force, heat, is applied to a drop of water—it expands and struggles to get free—thus is generated the amazing power which drags the ponderous train from city to city, and drives from port to port the iron-lunged and oak-ribbed Leviathans of commerce, to minister to the wealth and facilitate the intercourse of States and Nations.

The friction of two simple substances, the action of an acid on plates of copper and zinc, developes opposite electrical states, which produce the shock and the spark. On the same principle "leaps the live thunder" from mountain top to mountain top. Thus it is "that two dark clouds, with heavens artillery fraught, come rattling over the Caspian to join their dread encounter in mid air." By the separation of a simple element from its compound, the light and buoyant hydrogen is ob-

tained, which inflates the balloon and enables earth-born man to ride the whirlwind.

Chemistry is the philosophy of matter, it explains the action and reaction of matter in all its forms :—The blinding lightning and the thunder peal as well as the air pistol and the pulse glass ; the sweep of the tempest as well as the motion of a cubic inch of air in a delicate tube ; as well the giant throes of the volcano that vents its seas of lava, as the pent up atom subjected to the spirit lamp ; as well the stupendous movements of cycling planets as the play of the light pith balls of an electroscope. Having, as it were, exhausted the study of inorganic matter, chemistry is engaged in analyzing the structures of living beings. It has not only revealed the composition of plants but gone far in explaining the process of their nutrition and other functions. It is doing the same for animals ; it has shown how these two orders of beings antagonize each other in maintaining a state of the atmosphere healthful to both—the one eliminating the other absorbing oxygen.

The processes of digestion and calorification can be explained only on chemical principles. In a word, chemistry is throwing a flood of light on animal and vegetable physiology. It is, as it were, invading, conquering and illuminating these regions of "chaos and old night" and converting them into the most interesting departments of its own extended and well governed empire. This it will do,—*then*, will animal and vegetable physiology be called by the new names animal and vegetable chemistry. Then will order take the place of confusion, light of darkness, science of guesswork.

Chemistry is, at this moment, doing more for physiology than all other means ever have done, or ever can do. The dreamy speculations, the cabalistic jargon, the transcendental gibberish of our hoary-headed masters, what have they done for it? They kept it stationary and spell-bound for a thousand years. What do we learn of the nature of the functions by hearing them called *vital actions*, for which there is no farther explanation. Respiration, we were told, is a vital process—calorification a vital process—digestion a vital process which could not be even elucidated by the science of inorganic matter. It was easy to learn physiology on this plan, but then we had the misfortune to be as wise when our studies were finished as when we commenced them!

In the infancy of chemistry these venerable system-mongers and talented hypothesis-framers looked on it with contempt and spurned its offered assistance. They explained every thing with the convenient and unmeaning terms *vitality, sympathy, and the like*. Chemistry, which dealt in ores, and acids, and alkalies, was unworthy their attention! Its Baconian mode of finding out truth by observation and experiment was a drudgery to which they could not submit! They spurned chemistry and hugged their systems! Nothing discouraged however, it toiled on, rising higher and higher in the philosophy of matter. It has entered the theatre of living beings, and is now in spite of their reproaches, teaching these hoary headed sages more wonders than were

ever dreamed of in their philosophy. Old systems, the frost work of fancy, are melting away before the advancing lights of an exact science. Such is the ultimate destiny of error. It seems well enough established, until it is called in question and submitted to the test of facts. It is a house built on the sand, which cannot withstand the pelting storm of opposition, though it stands firmly enough in sunshine and calm when the aspen is hardly stirred. It is a castle of the air, which, whenever sense and reason are brought to bear upon it, vanishes like any other unsubstantial pageant, and "leaves not a wreck behind." Its tendency is to death and destruction. Not so eternal truth. It needs no puffing, no great names, no false and gleaming garniture, to keep it in vogue; it goes forth in its naked and unadorned majesty; it may be for a time laughed at, hooted at, derided. It may be for a time kept down, but its tendency is upward and onward. Obscured at one point, it breaks forth at another with tenfold brilliancy, crushed to earth it will rise again,

"The immortal years of God are hers."

I know not how far chemistry can go in clearing up and explaining the philosophy of man. There will always remain some things which it cannot account for, some of the higher phenomena of mind of which I shall speak presently; but so far as man's physical nature is concerned, chemistry is the grand key with which its mysteries are to be unlocked. Its revelations in this department are but commenced, only its first seals are opened; its first trumpets of triumph sounded and woe to time honored systems on account of the seals which are yet to be opened, the trumpets which are yet to sound!

If what we have advanced be true it would be as reasonable to expect to read without a knowledge of the Alphabet, as to understand the science of matter and man, without a knowledge of chemistry. It is plain that the study of chemistry is as important in other departments of human research as in medicine, as it teaches the composition and properties of all matter. It enables the Mineralogist to analyze his ores—the Geologist to comprehend the nature of the rocks, earths, and fossils of which the crust of the earth is composed; the dyer, the principles of his art; the soap-maker, the brewer, the distiller, the farmer, the artisan—all save labor and facilitate their operations in proportion as they are enlightened by, and act in accordance with chemical laws;—in a word, every science and art which concerns matter and its laws, is aided more or less by this all-pervading study. It is the mother-science from which all the rest spring;—even the philosophy of mind cannot be so well understood without it—for mind is intimately blended with, and powerfully influenced by matter. Both are necessary in the study of anthropology.

We have already remarked that chemistry is invading branches of science and art which were once thought to have no connection with it, thus converting them into departments of chemical science. This is as

true of our ordinary useful arts as of the higher philosophy of life and organization. All these useful arts may be carried on empirically without a knowledge of chemistry, that is, by a certain inexplicable routine discovered by chance; but as soon as the principles are known and these arts conducted in accordance with them, they become branches of practical chemistry; and the greatest amount of product is elicited by the least possible amount of labor and capital. These remarks apply to almost all the arts; from the manufactory of soap to the polishing of diamonds; from the distilling of alcohol to the dilatation of balloons; from the process of cooking a homely meal to the management of the steam engine; from the construction of the thermometer to that of the Mariner's compass which guides the agitated bark mid darkness and storm, to the wished-for haven; or the Rocky Mountain traveller back to his home.

That a science so all-pervading, useful and wonderful should be cultivated by every one, is a proposition from which there can be no dissenting. In every large city it should be taught at the public expense. It confers benefits not on one class of society to the exclusion of the rest, but on the public generally.

I would not ask for endowments to teach any particular branch of letters or science—as law, history, language, mathematics, belles lettres, music, mental philosophy or any other partial science or branch of human acquirement: but the claims of the foundation science, *the mother-science*, I would insist on. Every large city should sustain a free chemical school, where the science could be taught to perfection. By so doing all the sciences and avocations of life would be benefitted. Let it be free to all, as it would be useful to all—the gentleman of leisure and a philosophic turn might not care to study the process of dyeing or making stearine candles, but he could find food for his thoughts in the doctrines of electricity, magnetism and specific gravity, and project improvements in deflagration, the mariner's compass, and the barometer. The farmer might confine himself to the more utilitarian study of the composition of earths and the growth of vegetables. The meditative mind might deduce from known facts startling and wondrous theories in regard to the planetary movements, and calculate the period at which Jupiter and Saturn and their train would rush into the burning bosom of the sun; or measure the distance from the surface of the earth to the molten ores which boil in its centre, and occasionally burst forth from its awful chimneys, Vesuvius, Ætna, Stromboli, and Hecla.

Every one should study chemistry, *and every one must study it*, who wishes to know any thing of the material world. Now a school of this kind could be sustained in St. Louis at a trifling expense. It would pay in dollars and cents, to say nothing of the mental polish and the scientific enjoyment it would afford—to say nothing of the renown it would confer on the city. It would pay in dollars and cents—by the knowledge it would afford of the useful and money-making arts—nor

would there be wanting a Liebig or a Berzelius to conduct it. These would soon be of native growth and not have to be imported.

Such a school, sustained at a trifling expense, would add to the wealth and glory of St. Louis. There are private gentlemen who could found and sustain it by their individual munificence. In so doing they would confer lasting benefits on mankind and erect for themselves an enduring monument of fame.

Students would flock to such a school from all parts of the country. Our artisans and farmers, to say nothing of our lawyers and physicians, would derive from it lessons of wisdom and utility. The ladies would learn the principles of the science, and teach them to their children with the first rudiments of education. It would be said in distant lands—St. Louis patronizes the science which is at present the hope of the philosophic world.

But I repeat the proposition that such a school would pay in dollars and cents. This is the main argument which all can appreciate. I know it is fashionable in public addresses to underrate money; to call it sordid dust, and abuse those who seek to acquire it. We constantly hear lecturers prating about the improvement of the mind, the fine arts, &c.;—decrying the pursuit of wealth, and holding up to ridicule and contempt the utilitarian spirit of the age. These persons are generally, however, in great need of money, and it would seem that they underestimate its value in order to acquire it the more easily.—“The almighty dollar,” they exclaim, is all that is cared for in these degenerate times!! Now the older I become the more nonsensical do such tirades appear to me. The world has always loved money; but in general it is not the dollars but what the dollars can command, that is coveted. The pursuit of wealth is a laudable pursuit. Were it more general there would be less misery “under the sun.” It is the freehearted liberal soul who cares not for the dollars, but foolishly spends them, who suffers in age and sickness for the common necessities of life, and who entails want and perhaps crime on his children; and it is the man who is called by fashionable lecturers a worshipper of the “almighty dollar,” to whom the eyes of these unfortunate beings are turned for relief.—No, we should strive to make money; money will enable us to provide for our household and render comfortable and respectable those whom Providence has committed to our charge. It will enable us to advance the cause of religion, science and humanity. We can make it the light Ariel of our wishes, to execute our bidding on errands of love and mercy—to feed the hungry, clothe the naked—minister to the sick; and we know what is written.—“As you have done unto these, you have done unto me.” Alas, a few dollars will do more for them than all our sighs and sympathy. If I had the money I could establish the chemical school myself. Away with the balderdash about the “almighty dollar” and the utilitarian spirit of the age. Let us follow the good advice of the Poet

of Nature—"Go to, put money in thy purse!" Of course, it is understood that it is to be done honestly!

It is on the ground of its utility *then*, that I would insist on the establishment of a school of chemistry in St. Louis; though I know that her citizens are not insensible or unmindful of her reputation as a seat of learning. They would like to see her ranking with Edinburgh, Paris, and Giessen, in art and science. A little pecuniary encouragement would do a great deal to effect so desirable an object.

We have spoken hitherto of matter in general. But our business is with that particular portion of matter and spirit called *man*. Chemistry teaches his composition and has gone very far in unravelling the mysteries of his functions. It has explained the digestive process almost to perfection. It teaches how that highly compound fluid, the blood, is vivified in respiration, and carbonized in nourishing the tissues. It analyses the secretions, and points to the source of many diseases, and no physician will say that its study has not contributed to a better understanding of the functions of the nervous system. I will not attempt to say how much of the philosophy of man it has explained, much less to say how much it has yet to explain. Until it advances further, physiology will constitute a branch of our profession separate from chemical science, but for that very reason, imperfectly understood.

What is physiology? It is the science of organized or living beings. It teaches what are the functions of these beings, and so far as it can the "*modus in quo*" of their performance. It tells the offices of the parts and organs. It teaches that the bones are the frame work and support of the system; that the muscles are destined to move the bones; the nerves for putting the muscles in motion; the brain for sensation, volition and thought, &c., &c. It tells what the organs do, without being able to tell how they do it. When will physiology be able to do this? When chemistry shall have opened a few more of its yet unopened seals, and poured its blazing lights into these darkest and most inaccessible recesses of nature's labyrinth. Chemistry is the oracle that is to respond to the spirit of philosophy, in its demand for a rationale of these occult and wonderful processes. Those who are about to devote their attention to the study of physiology will see how much chemistry has done for it; that most of its explanations are founded on principles which will be taught in the laboratory.

If physiology is a sublime and interesting study when limited to the announcement of mere general facts it is tenfold more so with the explanations. Even in its imperfect state physiology is so important as to be indispensably necessary to the practitioner of medicine. In disease the functions are perverted. How could we estimate the perversion unless we previously knew well their healthy and natural action. How could we know that a clock was acting wrong unless we first knew how it acted, when all was right.

It is plain enough that it is necessary to be acquainted with the heal-

thy *states* and *actions* of the system, in order to be enabled to estimate its diseased states and actions. That important branch of our studies, Anatomy, is less dependent on and connected with chemistry, than are the other branches. It has nothing to do with the ultimate elements of the tissues or their uses. It merely describes the shape and points out the situation of the parts; *it teaches the geography of the system*; it does not tell what this or that does, but where it is, and how situated, in regard to other parts in its vicinity. A few considerations will demonstrate the necessity of this study.

In the first place it is necessary for the mere practitioner of medicine. How can he know that a particular organ or part is diseased unless he knows its situation, unless he knows where it is? How can he distinguish the point of derangement in the animal machine unless its mechanism be familiar to him? But for the surgeon, anatomical knowledge is indispensable. When the broken or dislocated bone has to be re-adjusted; when the deep seated tumor has to be cut out; when the artery has to be tied; the strictured hernia reduced; the trephine to be applied; the limb to be amputated; the cataract to be extracted, who would dare to act without a knowledge of the parts? It is here that the heartless and unprincipled quack refuses to act, because guesswork will not do! Positive science is necessary. Armed with this, the surgeon goes forward with a confidence which nothing else can inspire in the discharge of the highest and most perilous duties that can devolve on man. There on one side throbs the artery whose gush would be death. He is within a hair's breadth of it. Here on the other hand courses the nerve whose injury would entail palsy. Just beneath, are some of the canals which carry the delicate fluids of nutrition to the crimson fountain of life. Dangers stand thick in every direction; but the learned surgeon knows his whereabouts, and with unshaken fortitude and steady nerve steers his sharp prowed vessel, the scalpel, with safety—though harder beset than the *Argo* that passed the justling rocks of the Bosphorus, or “when Ulysses on the larboard shunned Charybdis and by the other whirlpool steered.” It is here that knowledge gives courage as well as power, it is here that some of the most glorious triumphs of art are achieved; triumphs over death himself, which relaxes his hold of his victim at the fiat of mortal man. Well does such an art merit the title *divine*.

I need not plead in behalf of the study of anatomy as an auxilliary in the relief of human suffering: but for it, the throbbing aneurism, the excruciating hernia the grinding calculus would be without a remedy. Some persons seem to have an idea that anatomists are unfeeling men—indeed that Doctors generally are—that they have no more regard for the bodies of dead men than butchers have for a slaughtered beef. Not so. These sad remains, are for them constant *mementi mori*, teaching the salutary lesson that they too must die and go hence; and if the meditative mind can find “books in the running brooks,

tongues in trees and sermons in stones," the student of anatomy reads the most heart touching homilies in the organization of his species. The task is as necessary as melancholy; and philanthropy as pure, and feelings as devout, have been breathed in the dissecting room as ever warmed the soul of a Howard or St. Vincent de Paul. No! Doctors have feelings as well as other people, not the less deep, ardent and pure because noiseless and unostentatious.

A few more words in regard to physiology, or the functions of the system. We have already remarked that a great deal is known as to what the organs do, but very little as to their mode of action. We know that in order that an organ may perform its functions, a certain *state* of its structure is necessary; this we call the natural or healthy *state*. We shall not go into a detailed analysis of this *state*. Suffice it for illustration to say that a certain amount of blood is necessary in each organ in order that it perform its office regularly. The blood is the life thereof, as the scriptures said four thousand years ago, and they announced a physiological truth. Now, a change in the amount of blood in an organ changes the functions of that organ. There is a change of organization and action constituting disease. This is but the application to man of a general law which governs all matter. The properties and functions of all matter living and dead, depend on, and are the result of its particular organization. Hence the axiom "that as is the organization so will be the action." A watch keeps time because it is organized as it is. The engine propels the locomotive because it is organized as it is. The human system acts as it does because it is organized as it is; change the organization and the action is changed; disease has taken the place of health. The science of these changes is pathology, which bears the same relation to disease, that physiology does to health. Pathology is the main study of the practical physician. It is interesting, intricate, all important; it estimates the various kinds and degrees of change in the organs; the various kinds and degrees of altered action which result; the thousand causes that produce these changes; their mode of action; the remedies which relieve them; *and their mode of action*. Here are the outlines of pathology. Here are problems for the strong, the reflective, the well trained mind, vieing, in the difficulty of their solution and the depth of their importance, with any that can engage the power of thought.

The physician has been defined the animal that does not laugh. With twenty or thirty problems such as these on his mind—with life and death, and the hopes of parents and children, husbands and wives, and sometimes the fate of states and nations hanging on the result of their solution, he has not much time or disposition to make merry. Nevertheless, in these "latter days," Doctors are not generally oppressed with business beyond the power of laughing, and they are as a class at present as merry as other folks with this exception, that they, for the want of problems to solve, are often disposed "to laugh on 'tother side."

I have thus in a general and summary way, without noticing the particular portion and province of each professorship, indicated the nature, the difficulties and the importance of the subjects which are to engage our attention during the winter. They may be expressed in a few words—the composition of man, *the arrangement of his structures*, the properties of his tissues, the functions of his organs, their derangements and their cure. We expect to teach what is known, and to point out the mode of exploring the yet unknown regions of medical philosophy. If at the same time that we communicate to the student our actual knowledge, we can inspire him with zeal for its advancement, we shall have rendered him a double service. More has yet to be done for medicine than past ages and sages have achieved. It is not as the law, a study of twenty years, but a study which a long life time cannot compass.

I feel disposed to repeat in substance here, the remarks which I made on a former occasion, for the benefit of those who can see in man nothing but matter and its proprieties. I regard the proposition that there is in man a principle in addition to matter, and superior to it, as philosophically demonstrable. Matter consists of ultimate elements. These compose our bodies and brains, as well as the inferior animals, the vegetable and the mineral kingdoms. The action of these elements of matter on each other, their attractions, their repulsions, their combinations, are the results of fixed and invariable laws. *It is necessary action*; under the circumstances it could not act otherwise. Such also is the action of masses, large and small of compound matter. Water flows toward the earth's centre, a point to which all matter is drawn by the fixed law of gravitation which binds alike, and with equal facility, the falling tear and the rushing cataract. The giant play of ocean and tempest, the earth-rocking throes of volcanos; the subterranean power, "next to Almighty," by which are upheaved the towering mountain and the blazing island, the stupendous sweep of comets, menacing destruction to worlds and systems; the harmonious movements of the planets, that have suggested the idea of the "music of the spheres," as they turned the seasons round—all this is but the action of matter bound up and bound down, in fate whose iron fiat has stamped upon it, the immutable decree, "thus far shalt thou go and no farther," thus act and not otherwise. The same law as we have just remarked pervades matter in its minutest portions and humblest acts; oxygen combines with the metals; the acid and the alkali unite; heat expands; cold contracts bodies; the sparks fly upwards; the acorn falls, in accordance with laws or moving powers, which are irresistible. There is no choice; no freedom to act or not to act, to do or not to do. These laws pervade also the human system; but there is something in man which renders some of his actions free; something which has the power of choosing; something which in a given case can determine to

act or not to act; to do or not to do; that is, there is something, not endowed with the properties, nor subject to the laws of matter, consequently, something more than matter; something immaterial. That the action of matter is fated and necessary, *is a first truth*; that there is a principle in man which renders a portion of his actions free and unnecessary, is also a *first truth*; a truth upon which, all laws, human and divine are founded: neither God nor man, would punish or reward for actions which like those of matter are the result of irresistible force.

Punishment is decreed for those bad acts which their perpetrators had the power to avoid, rewards for those good acts which might have been left undone. The very existence of virtue and vice depends on the power of choosing, which matter does not possess. To say that man is but matter, is to say that virtue and vice, right and wrong, are unmeaning terms. I can see no sophistry in this argument. It rests on those first truths, which men have instinctively acted on, in all ages, and are recognized alike by saint, savage and sage; truths proclaimed by the voice of the people, of God, of philosophy. To destroy them, would be to sink the moral universe to darkness and chaos. But they are indestructible, grafted as they are *in the constitution of nature*, and the philosopher as well as the poet and christian can address the Great First Cause; and exclaim,

THOU "gavest me in this dark estate
To see the good from ill,
And binding nature fast in fate
Left free the human will."

To return from this digression; I have attempted to point out to the student of medicine, the nature and character of the subjects which are to engage his attention not only during a brief session of four months, but during his life. I have no arbitrary rules to present, the observance of which is to ensure his success in the career before him. To him who would be successful, high and firm resolves are necessary. The student must first of all *resolve* to succeed. This resolution, this fixed and determined *will*, will ensure a course of study and conduct, which cannot fail of success; show me the student that possesses this will—*this interior force*, and I will prophecy his future usefulness and fame. On the other hand, show me the student with all the advantages of wealth and a *forced* education who has it not, and I will predict his downward destiny. *The will, the will*, is the only *sine qua non* to professional renown. It was this which raised Velpeau from ignorance, and poverty, and obscurity, to the highest pinnacle of fame. The unquenchable resolution burned in his bosom; no means for obtaining knowledge were left unemployed. He gradually emerges from his lowly home and wends his way to the capital of the scientific world. Difficulties apparently insurmountable recede before the young and unknown conqueror. He reaches Paris, his untiring industry is observed; his energy appreciated; the *indomitable will* works its way; the smile of encouragement beams on him; the hand

of help is reached forth. "Hercules helps them who help themselves." The avenues of the temple of science are opened,—*he enters*. The angel of good luck, troubles the waters—he steps in. Fame invites—*he goes forward*; and behold the result. Wherever under the sun the healing art is guided by science, his once humble name is known, his authority quoted, his example held up as a brilliant beacon, to the sons of adversity, genius and courage. The spectacle of the poor boy rising like a rocket into the upper regions of human excellency and glory, is far more sublime and heart stirring than that presented by Cæsar and conquerors. Talk of Napoleon on the field of Austerlitz; of Paulus Emilius with 150,000 captives at his heels; of Scipio returning victorious from the ruins of Carthage; these are pictures of human misery, unholy ambition, and bloodstained crime, at which the soul shudders. They do not excite those high and noble emotions which are an honor to the human heart.

The will, I say, is the one thing needful for the student. I need not prescribe for such a one, how many hours he must study per diem; how late he must read at night; how early arise in the morning; how frequently attend the hospital and the lectures. The resolution will adjust every thing. Who can calculate the power of resolution or measure the force of the will? At its fiat the pyramids arose in all their ponderous magnificence. The cultivated champagne, the huge metropolis, with its temples and towers, are but its outward manifestations; "the armaments that thunder-strike the walls of rock built cities," are but the goings-forth of its strength. But to produce vast effects, the will must be continuous, and not fitful and inconstant in action; not like the shifting breeze, but the trade wind that forever urges its course to the line; not like the evanescent flow of the noisy mountain torrent, but like "the Pontic sea, whose course knows no retiring ebb but keeps due on to the Propontic and the Hellespont."

I would say to those who possess the steadiness of purpose, I care not how obscure, how poor or ignorant you may be *now*, the future is rich in rewards for you; envy nobody; you possess a pearl of great price, a wonder-working talisman, without which all other advantages can assist you but little. I have seen the student in his obscurity, and penury start out on his career; in his mien were depicted resolution, humility and hardihood. I have seen the child of fortune langhing in the sunshine of prosperity, sneer at him as he entered the lists; I have watched the progress of the two. The one knowing that all depended on his own unaided efforts, bent his energies to his task. The other, inflated with the idea that he was superior to his fellows, acted the sluggard and the devotee of pleasure. Time passed on. There seemed to be less difference between them. The one had advanced; the other had rested stationary; perhaps declined a little. Another year or two passed; the child of adversity and the child of fortune occupied the same station in society. They were walking arm in arm; it was hard to say which

the ladies liked most ! It was easy to see what a few more years would do. Middle age came, the one arose to distinction like a phoenix from the ashes of his ancestry, the other sunk into quiet obscurity, and forgot his Greek and his Latin ! I can enjoy the spectacle of genius and poverty, triumphing over adverse fortune, but I cannot adequately portray it. It is heart-stirring, it is eloquent, it is poetical. It dilates the pulse, swells the bosom, moistens the eye.

No nice arrangement of books on the shelves, no tasteful adjustment of office furniture, no fastidious adherence to arbitrary rules will ensure the acquisition of science.—Determine to excel ; embrace opportunities as they present themselves ; grasp whatever is nearest and best. When that is exhausted seek out other means of improvement ; when the mind leans to any particular subject, pursue it with your might ; when it becomes fatigued, turn to something else ; relax the mind by a change of studies—whip it to the task, if it be of immediate necessity ; let the ultimate object to which all your efforts tend, be the acquirement of knowledge, and never mind keeping your offices or your persons particularly nice. This may be well enough for those who will never have reputation for any thing besides.

St. Louis possesses in great abundance the means of professional improvement. I do not propose to enumerate them in minute detail ; but I cannot pass over the fact that the student can *here* see and contemplate from day to day, disease in nearly all its forms. That this daily observation of it, this constant critical examination of the patients themselves, is necessary to the formation of correct practical ideas is not disputed by any one at the present day. We know persons and can again recognise and identify them after having frequently seen and conversed with them. From a mere description of them we could not do this. We can solve mathematical problems after having toiled over them and worked them out by the master's aid.—We could not be enabled to do so by the mere enunciation of principles, rules, and exceptions.—Just so with disease ; to understand it, we must see it, examine it for ourselves from day to day, under the eye of the teacher who is to direct the process, make suggestions, correct false ideas. The Hospitals, the Dispensary, and much of the private practice of St. Louis, afford ample means for this ; and the student who is wise will leave none of them unemployed.

A small town does not afford these and other advantages which I need not mention, and hence small towns cannot expect to rival large cities in medical schools. The talents of individuals may sustain the former for a time, but with the progress of correct ideas they will fall into disuse and wither away.

But for hospitals, medicine could not have made the progress which has characterized it within the past and present centuries ;—they are and have been the hot beds and nurseries of the science. But for the divine spirit of charity, we should not have had the hospitals. Who

can estimate the benefits to science which have flowed directly from those ministering angels, the Sisters of Charity! Their devotion to the outcast and the suffering sons and daughters of men, is the mighty force, which has contributed more than all other causes to the building up of the Asylums and Hospitals of the world. They constitute the prætorian band of the Lazar houses of christendom; their eyes beam down night and day on the couches of misery; their hands perform the vast labor of love, by which poverty and pain are mitigated. They are the consecrated and omnipresent executive of the dictates, alike of the priest and the doctor, of religion and science. This is a simple statement of facts, and yet it seems a report from Utopia; a fancy sketch of philanthropy; to comprehend it and cease to wonder at it, we must descend to the deep spring of motive of which this beneficence is but the result—the fountain of heaven-born charity, purer and more potent than the waters of Bethesda, Siloa, or Helicon.

Indeed Medical science is indebted to the ladies generally. The physician prescribes,—he gives directions, but this would avail nothing unless they were carried out. Who carry out the dictates of medical science? Our mothers, wives, sisters, daughters—the women. They are a standing army of philanthropists, ready to obey the bidding of the profession.—They glide into the sick chamber with noiseless step; they gild the bitter pill and sweeten the nauseous drug; they reach the cool water to the parched lip; fan the fevered brow; prepare the delicate food for the returning appetite; and cheer the sinking heart with the soft language of affection or sympathy; and what is remarkable they dont get sleepy as men do! In short, they do as much as the Doctors themselves in the alleviation of human suffering, and then to cap the climax of their beneficence, they attribute wonders to the physician's skill; and think them the greatest men on earth!!

I would gladly if time permitted present to the members of the class some of the reasons and considerations, best calculated to stimulate them to exertion, and to support them in their arduous duties. This I cannot do now; I will not speak of the laurels and the trump of fame; I will not hold up to your view the joy of gratified ambition or successful emulation. I will not attempt to dazzle and enchant you with the prospect of the "barbaric pearl and gold, the gorgeous East showers on her kings;" but I will call your attention to an inward joy that is worth them all; *the consciousness of duty performed*, the consciousness that our time has been well spent; that we have done the best we could. Such a conscience is the soul's impenetrable shield, which no shaft of adverse fortune can pierce. He who possesses it cannot be truly miserable, though he may be unfortunate. This will protect the life core of bliss in the darkest and stormiest hour, and inspire him with feeling, god-like and triumphant. He may be cast down, and as it were buried by the press of circumstances, but his resurrection is certain, and glorious. A good conscience will keep alive and in power, the giant energies of

man, to *suffer and to do*. It is the bliss which as the world cannot give, it cannot take away, as it cannot manufacture, it is unable to destroy. Such a conscience stands opposed to remorse, to moral cowardice, to shrinking meanness. It is associated with, and akin to every thing noble and good, and sublime in nature and art, in the moral and the physical universe. It enjoys the star spangled heavens, the towering Alps, the boundless ocean, the green island, the life-like creations of the painter and the sculptor, the gorgeous palace, the solemn temple. Eloquence, and poetry, and music, these are the breathings of its sister spirits, and it communes with them and responds to them with a tranquil rapture which thought may conceive, but language can never portray. The fact is, that a pure conscience is the only lasting joy; it is the only thing which can cheer you amid the trials of life. *These you will have*, no conduct, the result of the calmest and most sapient forethought can shield you from the ills of mortality. There does not exist for man a balm which can heal, much less prevent sorrow and misfortune. *They must come*, the primal curse must be borne, we must suffer and after a while die. But at all times, and under all circumstances, the consciousness of duty performed will afford the purest pleasure, smooth the rugged path and sweeten the bitter cup of existence, and enable you to bear the ills you cannot avoid. Do not, I beseech you, carry home with you in the spring the remorse of a misspent winter.

Before concluding, I have a few things to say of the Medical Department of the St. Louis University. It has been built up by the individual exertions of its professors. It has never asked or received aid from any other source. Several thousand dollars have been expended in the purchase of a lot, the erection of buildings, and procuring of suitable apparatus for teaching. It is now amply prepared for teaching; and we had hoped that all that was necessary to its success was industry on the part of its professors. It offered its services to the medical public as the fair and honorable rival of its sister institutions, resting its claims to patronage on its intrinsic merits. Its ability to afford adequate medical instruction would, we had supposed, be the only required passport to public favor. But it seems that its enemies, afraid to assail it in this quarter, have appealed for aid in its destruction to the blind spirit of religious bigotry. They have made the wonderful discovery that it is a Catholic school; and endeavor to direct against it all the prejudice that exists against the Catholic church. This is unreasonable and unfair. Do not Catholics and Protestants teach the same anatomy, physiology and practice of medicine? Do they not take the same drugs in the same doses? Are they not affected with the same maladies? Medical schools have nothing to do with Catholic or Protestant religion; they teach medicine, not theology. How foolish or dishonest, then, to urge against a medical school that its lecturers are Catholic or Protestant, and that its charter is derived from a Catholic or Protestant college!! But perhaps some will argue that to aid in the building up of a school in

connection with a Catholic college, is to afford some little influence and character to Catholics. But observation has proven that their colleges flourish as well without medical schools as with them. *Admit, however, the premises.* Are not liberal persons willing that one of the numerous medical schools of the country should be connected with a Catholic institution? Those who object to us on such grounds must, in order to be consistent, refuse to buy and read the valuable works of Horner and Cruveilhier, and Trousseau, of Morgagni, Valsalva and Malphigi,—for in so doing they patronise Catholic authors and add to the fame and influence of Catholics. They must not admire the immortal paintings of Michael Angelo and Leonarda di Vinci, these were Catholic artists. They must not appreciate the wonders of far-famed Italy, as they are the offspring of Catholic genius. They cannot consistently go to France to acquire professional knowledge, for they would thereby pay a tribute of respect to a Catholic king and a Catholic country. They cannot consistently love and eulogise their *own* happy country, for in so doing they perpetuate the memory of a Catholic navigator, Christopher Columbus, who sought it out and discovered it, at the hazard of reputation and life, under the auspices of a Catholic king and queen, Ferdinand and Isabella. To such folly would this blind prejudice lead. Who is prepared for it? *No one! no one!* and yet it is the consistent carrying out of the principles of those who object to our school on the ground that it is a department of a Catholic college.

I, for one, have too much confidence in the good sense and honesty of my countrymen to believe that they can be long influenced by a prejudice so unreasonable. They will examine it and see its futility and wickedness. They will fathom and expose to merited contempt the knavery that would evoke it. I would prefer suffering for a time by such a prejudice to profiting by it. I would prefer going down, for a season with injured but immortal truth, to ascending in the train of falsehood's ephemeral triumphs; for in the one case I should expect to arise again; in the other I should anticipate an ignominious and certain fall.

But to tell the whole truth, and not leave to religious prejudice the shadow of a shade of a reason for opposing us, I here assert what every one knows, or might know,—that no one has any power over the Medical Department of the St. Louis University, but its Faculty and Board of Trustees, and that this Faculty and Board are composed almost entirely of Protestants.* There is but one Catholic in the Faculty, and he was not known to be such when he was invited to St. Louis. Where then is the ground on which the unblest feet of bigotry can rest in its war against our institution? *There is none.*

I make these statements because they are facts of which the public

* The fact that the Methodists used the Hall of the College, as a place of worship during the summer, and that the Presbyterians are to use it for the same purpose during the winter, is proof positive of the truth of the above statement.

should be apprised, not because I am particularly glad that they are such. I would be as willing to see the school in the hands of Catholics as those of Protestants. The former have as much right to teach and talents for teaching as the latter, and the latter as the former. The question with me and with every honest man is and should be, not whether a teacher of science is a Jew or a Christian, a Catholic or a Protestant, Methodist or Presbyterian, Episcopalian or Baptist, but whether or not he is a competent teacher. I feel confident that my audience is prepared to say with me, Away with religious prejudice in matters of science, and that this will be echoed ere long by the voice of the community.

I would say to the Board of Trustees and to the friends and patrons of the institution—it must succeed. *It has succeeded*—the living testimonials are before us. It will grow with the city's growth and strengthen with its strength. When you shall have passed from the stage, it will be amongst the monuments that will perpetuate your memory; your names will be garnered up as the treasures of its archives. It will be amongst the city's objects of pride, when her institutions of learning and beneficence shall be as "thick as the autumnal leaves that strew the brooks in Vallombrosa;" when a thousand steamers shall anchor in her harbor; when the wonder struck and passing stranger shall point to her palace-like mansions on Forty-fifth street; when her hundred church spires shall point to heaven; and when the rapid cars of commerce from the shores of the Pacific shall pour into her ample lap the treasures of the East.

I would say to my colleagues, who have toiled these three years in building up this institution, be not afraid of the ugly demon of bigotry; labor to build up your school, without descending to the infernal work of undermining its rivals; stand to your posts; rely on the good sense of your countrymen and the liberal spirit of your city; distrust not the power of truth nor the might of even-handed justice; study hard; discharge faithfully your duties as teachers; show yourselves competent to maintain the high stations which you occupy, and success awaits you in life, and a fruition of posthumous fame, which St. Louis will cherish, in coming centuries, as a portion of her glory.

