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MEDICINE:
AN ART-SCIENCE AND ITS STUDY.

BEING AN
INTRODUCTORY ADDRESS

DELIVERED AT UNIVERSITY COLLEGE, LONDON,
AT THE OPENING OF SESSION 1868—1869.

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MEDICINE:

AN ART-SCIENCE AND ITS STUDY.

PART I.

THE SCIENCE.

GENTLEMEN :

I cannot but feel that my selection for the third time to open a New Session is a Privilege rather than a Duty, and a Pleasure rather than a Task. But although I feel it to be a Privilege and a Pleasure to be the first to address you on coming here to-day, it is not altogether a Privilege unattended by anxieties, or a Pleasure unmixed with some degree of pain. It is indeed a pleasure, and a great one, to feel myself once more amongst you as your Teacher ; to be here as the Companion of my Colleagues, actively engaged with them in one of the most interesting occupations of professional life, within the walls of an Institution which is endeared to me by many recollections and by many associations, dating from the very commencement of my professional career, an Institution to which I owe a deep debt of gratitude—gratitude for the mental training that I have received within its walls, for the foundation of what professional knowledge I possess, for vast opportunities of acquiring practical experience,—to which

I owe much of what success has attended me in the exercise of my profession, and, beyond all this, for the social happiness that I have enjoyed in connection with it—an Institution to which, if my debt has been great, I have endeavoured to discharge it to the best of my power by the devotion of my time, my thoughts, and my energies to its welfare.

But if I feel it to be a pleasure again to be amongst you, again to renew those ties which bind us together as Professor and Pupil, and which have been interrupted by the past vacation, to form fresh acquaintances with those who come here to-day for the first time—acquaintances which, from my past experience as a Teacher, I know will ripen into feelings of mutual esteem and regard—feelings which in many instances have culminated in sincere and lasting friendships, destined to outlive our connection here, and to be carried from within the narrow confines of these walls into the active life beyond. And if the experience of the Past causes me in many ways and for various reasons, to anticipate with pleasure sincere and cordial the prospect of a renewal of those sources of happiness with which the discharge of my duties in this College has ever been attended, I cannot but feel that the pleasure which I have thus often experienced, and which I again anticipate, is not altogether untinged by a certain amount of regret that almost amounts to pain.

For each New Session constitutes one of those marked and distinctly defined Epochs in life that serve as milestones by the way to mark the passage of the fleeting years; and when I look back and recall to my recollection the many Generations of Students who have, year after year, crowded the same benches that you now occupy, who have come here as you now come, full of hope, and in the freshness of life, with the full determination and with the just expectation of being able to carve out for themselves a happy and a useful

Future—when I recollect how some of them have been prematurely removed from the scene of their activity by a painful and untimely death; how others, again, with health broken and with hopes shattered, have been destined to the disappointments and vexations of long and unsuccessful struggles, and that a comparatively few, perhaps, have reached the Goal for which all have so honourably striven—I cannot but feel that the associations which every New Session brings back to me, who have been for so long a time, for years not to be counted by Units but by Decades, a Teacher here, are not altogether those of unalloyed pleasure.

But to the Pupil the New Session is ever an Epoch of unmixed interest, of unclouded hopes, of bright anticipation. The First Session, above all, constituting as it does, the Portal which leads to that Future which he paints to himself in brilliant colours, and which is gilded by all the hopefulness of youth, is one of more than usual interest. To most Students, indeed, thrown as they are into an unknown world, amongst new associations and amongst novel scenes, the First Session is an epoch of peculiar importance; and to many, exposed, perhaps for the first time, at an impressionable age, with a mixed past and an uncertain future, to the temptations of the Metropolis, the First Session is one of no little peril. But to all it is a period of absorbing interest, for it opens up to them the first prospect of that boundless field of exertion and of utility in the cultivation of which their riper years are destined to be spent. It is their first initiation into a Profession which is destined to become the occupation of their future lives; and this is a prospect which the least reflective mind can scarcely regard without curiosity, if not with interest, and perhaps indeed with no little anxiety. It is with the view of increasing the interest, if not of allaying the anxiety and satisfying the curiosity, that I now address myself to you.

My object in this Address will be to point out to you who have now for the first time entered in this College, and to those amongst you who have recently done so, and who are still pursuing your studies here,—first, what the Profession of Medicine really is, and, secondly, how to study so as to obtain a competent knowledge of it. I will endeavour, therefore, gentlemen, to carry out what I conceive to be the legitimate object of an Introductory Address, namely, to give you advice that may be useful to you in the prosecution of your studies during the coming session, rather than to address that more advanced auditory with which I am honoured to-day on topics that are but little relevant to the present occasion, or that larger section of the public that may be reached through the medium of the press, on questions that may occupy your attention most deservedly in after-life, but which can be of little interest to you at the present stage of your professional career.

The Study of Medicine and the Practice of its Art are founded, like the study and practice of all the other liberal professions, on a desire directly to benefit mankind. Just as in its origin the function of the Priest may be supposed to have been simply that of ministering to the spiritual welfare of his flock, his life being devoted solely to his efforts at rescuing their souls from sin, and turning their thoughts heavenward—just as the theory on which the Lawyer is supposed to act, is that of defending the innocent, of punishing the guilty, of supporting the weak and lowly “against the proud oppressor’s wrong;” as the Soldier is believed to seek “the bubble reputation, e’en at the cannon’s mouth,” to peril life and limb in defence of the honour and the dignity of his country. So the Physician may be looked upon as a man ever actively engaged in lessening human suffering, in removing causes of disease from the community at

large, in restoring health to the infirm, and warding off death from the sick ;—one of whom it has been said,—

“Taught by thy art divine, the sage physician
Eludes the urn, and chains or exiles death.”

When looked at from this point of view, the Profession of Medicine may truly be regarded as the most actively benevolent, the most directly beneficent, the most eminently philanthropic, of any of the learned ones. And no doubt in one sense, and from one point of view, this may be the true aspect of Medicine ; but it is not by any means the only one from which to regard it, nor is it the one from which it should be viewed when looked at as the practical business of your lives. You do not enter the Medical Profession simply to be Philanthropists, to minister to the sick and the infirm, the halt, the lame, and the blind ; not merely to instruct the Public in all that concerns its health and the arrangement of its sanitary conditions ; you do not even enter it as a Scientific Pursuit or as a Literary Labour ; you must study its Science, and you must peruse its Literature, if you wish to attain to a competent knowledge of it ; but you enter the Medical Profession with different, and I am not wrong if I say with more directly personal and practical aims than these. You have selected the Profession for yourselves, or have been placed in it by your friends, in order that you may attain to that social independence which it is the first duty as it is the greatest happiness, of every man to acquire. You attain to this, it is true, through the means of a profession which, when legitimately exercised, is as honourable in its character as it is useful in its relations to mankind ; a Profession, the exercise of which elevates the thoughts, intensifies the feelings, and purifies the heart, but yet you attain it by the Practice of Medicine as a Profession. Recollect, gentlemen, that the great mass of you are not intended to become, nor is it at all desirable either for yourselves or for the commu-

nity at large that you should become, Medical Philosophers, but you are destined to spend your lives in an equally honourable and equally useful sphere, that of the MEDICAL PRACTITIONER. Not that the two are by any means incompatible with one another; far from it, for most truly the Practitioner may be, and often is, the Philosopher as he is the Philanthropist in the best sense of the word, the friend, the consoler, the comforter of his fellow men, the minister of the purest, the most unsectarian of all religions, the true "*religio medici*," "to do unto others as we would be done by." His object is not only to relieve the physical ills, but to soothe the troubled soul, to calm the unquiet conscience, and sustain the broken spirit of his patient.

Well, then, from the point of view from which you have to consider the Profession of Medicine, let us enquire what that is, on the study of which you are to-day about to enter. First let us enquire whether you come here to-day to study a Science or simply to learn an Art.

Whether Medicine—and when I use the term "*medicine*," I include in it all its branches—soars to the elevation of a Science, or must be content with the more humble position of an Art, is a question which has often been asked, but which it is by no means easy to answer. Nor is it by any means a vain and futile enquiry, a mere discussion of words; for we must direct our studies in one way or another according to the light in which we regard Medicine, in its scientific or in its artistic relations. If we look at Medicine in its practical application, in the light in which the community at large most commonly and daily observe it, as a mere means of curing disease, or of remedying the effects of injury, we must look upon it as an art. But if we go a step further, and observe that the true physician founds his means of cure upon certain defined principles, then we recognise the scientific element.

Medicine is a science undoubtedly in the sense in which that word is understood by Samuel Johnson. The great Lexicographer defines a Science to be "a Certainty grounded on Demonstration, or "an Art attained by Precepts and built on Principles." If we adopt these definitions (and there are no better in the language), and apply them to Medicine, we shall undoubtedly find that it is truly a Science, and that it requires to be studied as one. If you look at the great principles on which it is built, on the precepts by which a knowledge of it is attained, we shall find that these are "certainties grounded on demonstrations," as certainly as any truths in Astronomy.

Consider for a moment the Certainty, the absolute and demonstrable Certainty, of Human Anatomy, which lies at the base of most surgical operations and procedures. These, which consist simply in a manipulation of art, are founded on a demonstrable certainty, and are directed by the most defined and distinct precepts and principles. Take, for instance, the rules that guide the Surgeon's knife in any of the greater operations of Surgery—in Lithotomy, for instance, and the Operation for Strangulated Hernia. These rules are not empirical; they are founded on the most certain, the most demonstrable of all branches of human knowledge—that of Anatomy. Now, the Surgeon knows that if he will follow implicitly certain distinct and defined rules in these operations, he will be able to steer his way with safety through dangers that encompass his knife on every side with inevitable death—that he will be able by attention to these rules to complete the operation in safety—but that to depart from them would be followed by the certain destruction of his patient. He knows, for instance, that if he makes the external incision in Lithotomy freely within certain limits, if he enters the point of the knife just beneath the bulb, if he turns the edge in the mid-plane between the lateral

and the perpendicular, if he makes his internal incision of moderate extent, that he will conduct the patient in safety through the operation itself, and he will have the inward consciousness of having done all that human skill can accomplish. These rules, empirical as they may sound, are really founded upon a deep and intimate acquaintance with the anatomy of the parts concerned, with the situation of the larger arteries, with the arrangement of the fasciæ and other structures of the perinæum. So, again, in the operation for Strangulated Hernia, nothing can be more defined than the rules which guide the Surgeon in his operation in completing it in safety by avoiding neighbouring blood-vessels and other structures of importance, and dividing the stricture in the proper direction. Surely these certainties are founded on demonstration, and as such constitute the true Science of Medicine. But it may be said, that as Anatomy is a purely demonstrable science, deals only with facts which admit of no dispute, and has, perhaps, more especial reference to the operative procedures of the Surgeon than to the less certain acts of the Physician, the illustration is scarcely a fair one. Let us, therefore, look at the influence exercised by Physiology on the elucidation of the true nature of morbid phenomena, and which it has done with as much demonstrable certainty as that with which Anatomy has guided the Surgeon. In fact, what Anatomy is to the Surgeon, Physiology is to the Physician; and to both it constitutes the basis of that science, of those principles, and of those precepts which are common to both branches of the profession. The Law, for instance, discovered by modern researches in Physiology, of the intimate action of organs, their relations to one another, and to the system at large, has tended, perhaps, more than any one cause to endow Pathology with the certainty of a science, and it has enabled the Physician to become as accurate in his dia-

gnosis in the recognition of disease during life as if the body were translucent, and he could witness the action of its organs as distinctly as if they were upon its surface, or in a piece of mechanism, so that he can examine at his leisure every departure of action from the normal state.

So many illustrations of this fact crowd upon me that I have some little difficulty in selecting such as may be considered appropriate, but perhaps the study of Auscultation and of some of the phenomena presented by diseases of the Nervous System will be the most apt.

The Heart in its normal state emits, as you are all aware, certain sounds, depending on the passage of the blood through it, the contraction of its muscular substance, and the flapping of its valves. In certain forms of disease either affecting the blood-stream, influencing the soundness of its muscular structure, or interfering with the accurate working of its valves, these sounds undergo various modifications in their character, of such a kind that by the attentive examination of them, the Physician skilled in his art is enabled to determine in the most positive and incontestable character if the blood has lost its plasticity, if the muscular substance be deteriorated in its quality, has, for instance, undergone fatty degeneration, or if the valves, having become narrowed, offer an undue obstacle to the passage of the blood-stream between them, or, having become too patent, allow it after its passage to regurgitate into the cardiac cavities. All this, I say, can be as clearly and as distinctly ascertained by the skilled Physician as if the mechanism were a philosophic toy working on the table before him. And he arrives at this important knowledge by a careful study of the modifications that have taken place in the natural or physiological sounds emitted by the heart in its actions, modifications which are perfectly intelligible by attention to ordinary hydraulic and acoustic laws.

The Nervous System will present us with other illustrations of the same fact. There are no structures in the body in which the exact pathological condition may be so accurately mapped out and defined by attention to physiological actions as in the nervous structures. Take, for instance, the Paralysis of Motion in the side of the face—"Bell's paralysis," as it is termed—dependent on an affection of one portion, of the hard part, of the seventh nerve. Look again at the various forms of Paralysis which affect the muscles that move the upper eyelid and the eyeball, and give rise to drooping of the one or to an external or internal squint of the other. We can determine with absolute and mathematical precision what nerve is affected.

Claude Bernard made some years ago the interesting and curious observation, that if a certain part of the nervous centres was irritated in animals by the introduction of a needle into the brain, sugar appeared in the urine; and of late years it has been found that in certain forms of injury of the nervous centres, or of disease affecting the same parts, saccharine diabetes results, not from any disease of the kidneys, but, as Bernard pointed out, from irritation or injury to the nervous substance.

But you must not suppose that because medicine is based upon a knowledge of the healthy structures and organs, and their actions in a normal state—on Anatomy and Physiology, in fact—that the diseased structures and morbid actions of the body are not equally referrible to scientific principles, that there is not, indeed, a Science of Disease, of Pathology, as well as a Science of Physiology. We see this illustrated in many ways. In the case of diseases that run a specific course, the period of incubation, the progress of the symptoms, the pathological conditions when death results, are as certain as any healthy actions that occur in the human body. In

Pyemia, in Scarlatina, in Ague, in Typhoid fever, the progress of the specific malady is absolutely certain. The tendency to multiple abscesses in the one, the disease of the kidneys in the other, and Peyer's glands in the third, of the spleen in the fourth, the connection between Rheumatism and disease of the Endo- and Pericardium, the formation of Embola, their influence in occasioning arterial obstruction, in developing Gangrene and Degradation of Organs; all this is as demonstrable a certainty as any of the natural actions of the body.

The structure of a Tumour, again, simple or malignant, fatty, enchondromatous, myeloid, or cancerous, is as demonstrable as that of the adipose or areolar tissues of cartilage, or of epithelium in a state of health; its origin and its progress to maturity or decay is as definite and determinate. All these are "certainties founded upon demonstration" quite as much as are the phenomena of digestion, the structure of an internal organ, or of the skin itself.

And indeed we may truly say that if Physiology has taught us the true solution of many Pathological problems, Pathology, in its turn, has thrown, and may still throw, a reflected light upon Physiology, and elucidate some of the phenomena in that Science that are still obscure.

Take, for instance, the remarkable disease which has been so fully described of late years by Trousseau and Broca under the name of *Aphasia*. In this affection, owing to disease of the brain, the faculty of uttering articulate language is impaired or lost. The patient loses the power more or less completely of using his words rationally, not from any paralysis of the organs of speech, of the larynx, palate, tongue, or lips, but because he loses the meaning of words, employs wrong words, or has his vocabulary limited to two or three simple monosyllables, words such as "yes" or "no," which he can

pronounce with the most perfect distinctness, and uses with every possible modification of tone and voice, and emphasis of manner, in order to express his meaning, and becomes irritated and distressed to the last degree, when the bystanders are unable to comprehend him.

The researches of the Physicians whose names I have mentioned have shown that this singular affection of the Voice is almost invariably associated with Paralysis of the *right* side of the body and not of the left, and that after death disease is found on the *left* side of the brain; disease that has been localised to the anterior portion of the hemisphere,—that has been localised still more accurately to the frontal convolutions and especially to the third frontal convolution on the left side. These researches have, whether rightly or wrongly I will not now discuss, led these observers to assign this part of the Brain as the seat of articulate language in man. Whether we are warranted in going so far is perhaps doubtful; but so much is certain, that with the Aphasia you will find associated almost invariably hemiplegia of the right side, and disease that can be localised most distinctly to one particular convolution at the left side of the brain. Surely this is a most remarkable and striking evidence of a pathological certainty that must exercise an important influence on the physiology of articulate language and speech.

When we look to some other Departments of Medicine that have been much studied of late years,—I mean more particularly Medicine in its relation to Hygiene and the Laws of Health generally,—we shall find more than ever that we have to do with a Science that is founded upon Demonstration. It is difficult to find any Law in nature or in any of the natural sciences more definite and more certain than that which that eminent Statistician and great Sanitarian, Dr. Farr, whom we are proud to reckon not only as one of the most distinguished

of the alumni of this College, but amongst its most sincere and consistent friends,—there is no law in nature, I say, more certain than the relation which he has shown to exist between the use of water contaminated with the excreta of Cholera and the production of that terrible disease. The Laws that govern the development of Septic Poisons in the human body after injuries or operations, whether taking the form of Erysipelas, Pyemia, or Septiæmia, have also been determined with the most absolute certainty, so that one or other of these diseases might at any time be produced at will by shutting up patients suffering from suppurating wounds in hospital wards with a cubic capacity of air of less than from 1000 to 1200 feet per patient, and if such an arrangement be adopted it will be in vain to have recourse to other sanitary measures with a view of preventing these diseases which will be developed in spite of all.

So far, then, as a recognition of the true Nature of Disease and a knowledge of the laws which regulate its Production are concerned, we deal with certainties, and we have to do with Principles that are founded on Demonstration; but when we go to another department and try to come to some definite conclusion as to the Treatment and the Progress of disease, we tread upon less certain ground. Here we enter the dominion of the Art of Medicine, and here we find that the laws which govern the operation of the human frame in health, become so seriously modified, not only by disease itself, but by the extent, degree, and variety of disease, by age, sex, temperament, occupation of life, by previous habits, by all those conditions which make one individual vary in feature, in character, and in condition from another, and in fact are subjected to such an infinite variety of complex and different disturbing influences, that it becomes extremely difficult to trace the Law

through an endless combination of conditions that surround and modify it. It is here that we find individual skill, practical experience, and powers of observation of such inestimable value, and that we find such very different conclusions will be arrived at, and such very different results obtained by the treatment adopted by different individuals in every branch of the profession, according to the opportunities they have enjoyed, the use they have made of those opportunities, and the skill they exhibit in the use of their remedies, whether they are medical or surgical. Here we have to do with that Art which may be wholly empirical, dependent on individual experience, observation, and skill; or which may be scientific, depending on principles and based on precepts. It is here that the Conflict of Opinion between medical men occurs; and the less a man is acquainted with the principles of the science of medicine, with those great truths of Physiology and Pathology which lie at its base and on which the whole superstructure rests, the more is he to be distrusted. Individual experience, however extensive that may be, is as nothing compared with the accumulated results of professional knowledge. It is thus in the Prognosis, or probable future of disease, in its results as affects limb, organ, health, or life; its probable continuance under certain circumstances, its curability or not, that we find ourselves in the region of uncertainty. So also in its Treatment, in the effect of remedies, in their mode of action, in the very use of any medicine whatever, we find the greatest uncertainty and confusion in the Profession. Thus some men have the greatest faith in certain remedies in a given disease, or look upon particular lines of treatment as specific, or almost so, under certain given conditions. Others again reject all medicine, and trust to the natural cure of disease by diet, rest, and other hygienic measures, and who, if they did

not discard physic in hospitals as well as in the fields, might exclaim with Dryden,—

“ He 'scapes the best who, nature to repair,
Draws physic from the fields in draughts of vital air.”

Between blind faith on the one hand, and what appears to me to be equally unscientific incredulity on the other, there are many degrees, and the uncertainty that as yet envelopes this subject, must not be taken as an evidence of the unscientific nature of Medicine, nor of its being an empirical Art, but of the inherent difficulties of the subject, of the complex character of its details and the impossibility in our present state of knowledge of deducing any definite laws out of the chaotic mass of facts which are heaped up around us, apparently without order, but which, when once the clue is given, will doubtless group themselves in their proper relation to one another, and will be found to be as clearly subject to distinct laws as are the facts of any other department of natural science. It simply proves that we have not yet arrived at Finality in Medicine; that there is much yet to be done, and more especially in the field of Therapeutics for future investigation, not only to discover new facts and new remedies, but to determine with something like accuracy the conditions under which those with which we are familiar should be given to produce certain effects.

PART II.

THE ART.

THE Art and Practice of Medicine may be looked upon as a Tripod, founded or based upon Science, Clinical Observation, and Individual Skill.

The first and chief Leg of this Tripod on which the Practice of our Art is supported, is doubtless the Science of Medicine, and the more rational it is the more certain will be the Art, and the further removed from that empiricism and that shallow knowledge which deals with results rather than regards causes, which looks to the Branch and disregards the Root. I cannot give you a better illustration of the value of purely scientific researches in affording a sure base of practice, than in the recent introduction of the "Antiseptic Treatment" in Surgery as recommended by Professor Lister of Glasgow; a gentleman whom it is with just pride that we may claim as one of our most distinguished pupils, who received the rudiments at least of his scientific and practical knowledge within these walls, and whom I am gratified to say I had the pleasure of first training in Surgery, for he was my House Surgeon at our Hospital seventeen years ago.

The application of a scientific observation to a practical end to which I allude is the following: Some years ago, Pasteur showed by a series of beautiful researches that the decomposition of blood and other similar fluids when exposed to the air was not due to the gaseous elements of the atmosphere, but was entirely the result

of living organisms suspended in it, which, by coming in contact with the decomposable substance, determined a change in its chemical composition analogous to that produced by the admixture of a ferment with certain fluids. Applying this purely scientific observation to practice, Mr. Lister thought that if, before there was time for the decomposition of the blood to set in, a dressing was applied to the wound that would act as an antiseptic, destroying those organisms and thus preventing the fermentative changes depending upon them, the decomposition of fluids and consequent suppuration in wounds might be avoided. This idea he has carried into practice with the happiest and most important results, so far as the treatment of compound fractures, wounds, and abscesses is concerned, entirely arresting all suppurative action by the use of carbolic acid, which agent he was led to select from the great influence it was said to possess in deodorizing sewage.

Another observation of a somewhat similar character has lately been made by Niemeyer. This physiologist investigated morbid states of the urine, and found, as indeed had often been observed before, that although generally alkaline when mixed with flocculent clots of vesical mucus, it was not always so. The alkalinity could not therefore be solely due to the vesical mucus; but he found that it was dependent upon low organisms, which, having obtained access to, or having been developed in the bladder, set up fermentative action in the loaded urine. He considered, and no doubt with justice, that these vibrios often gain access to the organ through badly washed catheters, which contained decomposing mucus, and he accordingly advised the use of carbolized oil to lubricate such instruments with. I do not think I could well give you a better illustration of a purely scientific observation applied to the most common and daily practical ends in surgery.

Well, if Science is the first Leg of the Tripod on which our Art is based, Clinical Observation, Experience, or Empiricism, by whatever names you call it, is certainly the second. But there have been no terms so prostituted in our profession as these. "Experience" may be limited to the careless inspection of half a dozen cases, or it may mean a life-time devoted to the diligent observation, the orderly arrangement, and the patient unravelling of the complex phenomena of hundreds. How many men are there not who *see* and cannot *observe*, who *hear* and do not *understand*. Observation is not only the recognition of a phenomenon by its signs through the medium of the senses, but its investigation aided by the judgment. It is a quality possessed by few, that may be cultivated by all; that is, indeed, cultivated silently and instinctively in the daily exercise of our Profession. It is impossible to overestimate the value of correct and intelligent observation. We are perhaps a little too much disposed to look upon the value of observation in medicine as a discovery of recent times, even of the present Century, one that we more especially owe to the school of French medical philosophers. But many Centuries back it was truly said, that "*res medica est tota in observatione*;" and more than a century and a half ago that great philosopher Locke wrote thus:—"Were it my business to understand physic, would not the safer way be to consult Nature herself, in the history of diseases and their cures, than to espouse the doctrines of the Dogmatists, the Methodists, or the Chemists." Nothing can be clearer than this, and it is this consulting Nature herself, rather than espousing theoretical doctrines, that constitutes the very essence of a rational method of observation.

There is no department of Medicine that has been so directly benefited by direct observation—often of an empirical kind—as that which relates to Therapeutics, or the Treatment of Disease. All "Specifics" have thus

been discovered—none by a process of induction, but all from direct and simple observation: often by uneducated people. Take, for instance, the four greatest discoveries in the Prevention and Cure of Disease. The discovery of Vaccination was made by Jenner simply applying systematically the result of the observations of the Gloucestershire dairymaids, who found that they did not lose their good looks from Small-pox if their hands had once been infected by the Cow-pock. The use of Cinchona as a cure for Ague was learnt by their Spanish conquerors from observing the Indians drink of the pool in which those trees had fallen. The use of Cod-Liver Oil in Scrofula and Phthisis was learnt by observations of its effects by the fishermen of the Baltic shores. The introduction of Anæsthetics—that greatest therapeutic discovery of modern times—was made by an American dentist, who observed that people were not hurt when they struck themselves whilst intoxicated with the nitrous oxide gas, or the vapour of ether. So also with respect to many of the “Compound mixtures” of the Pharmacopœia—those useful compositions of vegetable extracts of daily use, as the *Pil. Rhei Co.*, the *Extract Col. Co.*,—they are simple results of observation of their effects.

Closely allied to, and indeed the direct consequence of, a sufficiently extended and accurate Observation, is the arrangement of the Results of Observations in distinct Tabular Forms, thus adding again to the Science of Medicine, by determining our facts with absolute and mathematical certainty, and establishing them on the surest foundations. Thus the Art and Science act and react upon one another. An infinite amount of the most valuable information has thus been obtained on the Causes of Disease, the influence of age, sex, climate, and occupation, on their Progress, Duration, and Results; the comparative value of various remedies, the rate of mortality after

accidents and operations, the conditions that determine this rate of mortality; all these, and numberless allied questions, have been determined with mathematical accuracy, by reducing the results of well and carefully conducted Observation to a Statistical Form. And much yet remains to be done. It is in this way, if in any, that we should learn the real value of Remedies in disease by comparing the Progress and Results of morbid action, when unchecked, when left to natural processes, with the results of the application of certain remedies to the same classes of disease. In Surgery this has already been determined to a great extent. We know, for instance, the remarkable fact that the mortality after Amputations for Injury on a healthy man is vastly greater than after the same operation when practised for chronic disease in a person of broken constitution; that it is much greater after some diseases—the malignant, for example—than after others, as the scrofulous; that the percentage of mortality after amputations increases in the direct ratio, inch by inch, according to the proximity of the operation to the Trunk; that the mortality of the operation of Lithotomy increases *cæteris paribus* directly with the age of the patient and the size of the stone; that the percentage of the mortality after certain operations, as, for instance, Ligature of the Subclavian Artery in the first part of its course, has been so great and uniform as to warrant the Surgeon in discarding it from practice. So also in regard to Medicine. The direct bearing and influence that Statistics have exercised are of the greatest value, and they fully establish the fact that diseased actions are subject to certain absolute Vital Laws with as demonstrable a certainty as any natural and healthy process. Take, for instance, the fact, which is unequivocally proved, that all Zymotic Diseases when Epidemic are much more fatal at the commencement than at the close of the outbreak, that in any given epidemic of cholera, for instance,

the mortality under any and every form of Treatment in the early period of the malady amounts to about two-thirds of the cases, while towards the close of the Epidemic, it falls, also irrespective of the kind of treatment adopted, to less than one-third of the persons affected; and we see a clear reason why so many remedies have enjoyed a factitious reputation when they have been employed in the later rather than in the earlier stages of the affection.

The Third Leg of the Tripod that supports Practical Medicine, is Individual Skill. On this subject it is somewhat difficult, and perhaps delicate, to enter; but there can be no question that there is the greatest difference in Individual Skill in the Diagnosis and in the Treatment of Disease, and in the use of Appliances, whether of Medicine or of Surgery—differences of Individual Skill dependent on differences in the opportunities, the natural abilities, and the physical temperament and mental constitution of the practitioners. Individual skill in the Diagnosis of disease and the Use of Remedies has always been justly prized by the Public as well as by the Profession; and not without reason, for undoubtedly if the great and ultimate object of Medicine in all its branches is the cure of disease safely, quickly, and pleasantly, the Science would avail but little for the benefit of the patient if the practitioner were not able skilfully to make that application of it in which the Art consists. But, much as Skill in any Department is to be valued, too much credit should not be attached to the simple possession of it; and, above all, the error should not be committed which the Public—and indeed the Profession generally—is too apt to fall into, of confounding the Manipulator with the Inventor; the man who does a thing skilfully with the man who has devised a method which the other simply adopts or applies, who has pointed out and buoyed and lighted the Channel which the other takes in safety,

The Originator of a new method of treatment, the Inventor of a novel operation, has based his practice and established his rules on the Science of his Art, and has elaborated them, often after years of patient study or of experimental research and of practical investigation. The mere Manipulator accepts at second-hand the rules laid down for his guidance, and simply adapts them to the exigencies of the particular case, with perhaps slight and unimportant modifications, for which he claims an undue credit. We see this in many departments of Medicine, in none more than in Surgery, and there is the same difference between a Cheselden, a Stromeyer, a Graefe, a Liston, or a Fergusson, and their successors and imitators, as there is between a Maury, the inventor of Circular Sailing, and the captain of the Tea-Clipper who makes the shortest run home, and wins the Ocean Race, by attention to the rules laid down for his guidance by that scientific and distinguished hydrographer—or that exists between an Armstrong or a Whitworth, the Inventors of the most destructive engines of modern warfare, and the Artillery Officer who points the gun, and throws the shell skilfully and truly, but yet in accordance with the rules which he follows, but never could have created.

After all this, then, you will see that Medicine is neither a Pure Science nor a Simple Art ; that it partakes of both ; that, like Engineering, like Navigation, like Music, it is based on a Science, but is practised as an Art ; but that the Art can only be safely practised when its foundations are laid deep in the Science of Biology in all its branches, that Science which underlies the whole structure of the Æsculapian Edifice. It may be studied and investigated as a pure Science, it may be practised as a pure Art, but to study it purely as a Science would be a barren pursuit ; to practise it solely as an Art without reference to its scientific basis would be an unprofitable procedure. They do best who combine the two in study and in

practice; and, indeed, it is this double aspect of medicine—I might almost say its manysidedness—which renders it so peculiarly attractive. It combines within itself what suits the requirements of every mind. The Physician may be a man of pure Science, devoting himself to the study of life in all its forms,—to Biology, to the Structure of the Human Frame in its normal state as an Anatomist, or its morbid state, in its widest sense, as a Pathologist; or if his tastes lead him rather to the Practice of his Art than to the Study of its Science, he will find in its practical application in the many manual and mechanical pursuits connected with it, full scope for the exercise of his skill, and full occupation for his ingenuity.

PART III.

THE STUDY.

AND now, having told you what Medicine is, I may endeavour to point out to you in a few words how it is to be studied. Bacon, the great master and the great teacher of Inductive Philosophy, said nearly 300 years ago, "They be the best Physicians who, being learned, incline to the traditions of Experience, or being Empirics, incline to the methods of Learning." These are golden words, and in these are contained the substance of the whole matter. In other words, the Perfect Physician should neither be wholly scientific nor wholly practical, but should combine the two somewhat opposite elements of Science and of Art, of Learning and of Experience, of Thought and of Action. You must ever, in studying your Profession, bear this in mind,—if you trust alone to Science you are like a Sailor who has studied Navigation on dry land till he has mastered the whole theory of the subject, but who scarcely knows one rope from another when on board ship. If you trust too exclusively to the Art, you are like a Seaman who has to navigate his ship through an unknown sea, filled with shoals and rocks, without chart, compass, or quadrant, or knowledge to use if he had these instruments. You must, as I said, never lose sight of this great truth, that the Perfect Practitioner is the man of Science and of Art, of Thought and of Action, and this combination of opposite qualities you must do all in your power to obtain, and to improve, if

you wish to attain to excellence in your Profession. Like the Metal in the "Song of the Bell," it is not one quality that renders it perfect, but the combination of several and of opposite ones :—

"When the stubborn weds the supple,
When energy and softness couple,
Then rings the perfect tone."

You have, in order to possess "perfect tone," to unite in perfect harmony scientific attainments and practical acquirements, to attain to excellence by perfecting yourself in the three departments which constitute the Legs of the Tripod on which the Practice of Medicine stands, namely, Science, Observation, and Individual Skill.

You Study the Science, Learn the Practice, Acquire the Art. Now the Study of the Science must be derived from the labours of others, and from the stores of knowledge laid up by them. Every Science is so extensive, so full of facts, so complicated in its deductions from these facts, each is so little added to, by the labours of any one man. No single individual can do more by his own unaided efforts than to penetrate through its merest outer surface. It would be a perfectly hopeless thing for any of you to endeavour to investigate or to master the Science of Medicine for yourself; but the Student must learn and the Professor can perfectly well teach these from Lectures and from Books, and it is only in this way that you will be enabled to master these great and general doctrines, those principles of Physiology and Pathology, and those Laws that lie at the basis of, and on which the whole foundations of practical medicine rest.

The consideration of the Causes of Disease, the general Doctrine of Inflammation, of the Healing Process in Wounds, and in Fractures and numberless other considerations of this kind, we can teach to you, and you can learn from us in Lectures and in Books. In Lectures and in

Books you will find epitomised a knowledge of the Science of Medicine that has been attained by the continuous and combined labours of generations of workers in our Profession. In them you will find precepts and doctrines laid down which it has required the efforts of many minds to elaborate, and in them you will be brought face to face with the great Philosophers of the past and of the present generation. You will hear in the one, and you will often read in the other, in a systematised manner, the results of an important scientific investigation, whilst you would not be instructed by seeing, for you would not be able to understand if you did witness them, the steps by which it has been elaborated and perfected. It would appear to me to be almost useless to impress upon you the necessity of a close attention to the one, and an attentive perusal of the other, so commonplace does it seem ; and I should not do so, were it not for the obloquy that is often cast upon knowledge derived in this way by calling it "mere book-learning." And doubtless such Learning is but a vain and futile study if you endeavour to acquire from it a practical fact that you can readily observe for yourselves. But if you hear Lectures and read Books in order to learn the Principles on which the Art is founded, and the Precepts by which it has been attained, you will use them to a good and wise purpose, and you will obtain a knowledge which you can acquire in no other way from no powers of observation of your own, for the time, if not the ability and opportunity of Observation would be wanting to you. If you are about to visit a Country previously unknown to you, you naturally gather from intelligent, well-informed, and observant Travellers, who have already visited it, from the Lectures, Conversations, or Publications of such men, a vast deal that you could only learn for yourself, if at all, by an expenditure of time and of labour that would be at least superfluous. You learn,

by reading the books that have been published upon it, the Politics, the Religion, the Mental Characteristics, and Social Institutions of its Inhabitants, and you may thus in a few days obtain an insight into the whole Economy of the People, their religion, politics, and social habits,—such an insight as you could have only obtained for yourselves if you had spent a lifetime amongst them.

But you may go much further, and by the aid of good maps, drawings, or plans, you may obtain a general idea of the Physical Characteristics of the Country, so that you are not only prepared for what you find when you really meet with it, but you are actually enabled at once to recognise the details of what you see when you observe it for the first time. Thus for instance, if a traveller in a mountainous country like Switzerland had never seen nor heard of a Glacier, he might, when first one of these stupendous fields of fissured ice burst upon his view, streaming down the sides of mountains far below the snow-line, intruding itself into the midst of forest trees and ploughing up the pasture lands, be quite unable to understand or to account for so singular and novel a phenomenon.

But if he had previously heard the accounts or read the descriptions of intelligent and observant travellers into those regions, he would be prepared for what he saw, and when he had cast his eyes on the frozen and glistening mass he would see at a glance everything in its true nature. And if he had gone further in his researches and had examined into the Literature of this interesting subject, from the early observations of De Saussure to the later and more philosophic investigations of Agassiz and Tyndall, he would not only be prepared for what would otherwise be a novel and inexplicable phenomenon, but he would have become acquainted with the Laws that govern the formation of Glaciers, their motion, their deliquescence, their structure, the influence

they exercise on the rocks upon which they lie and which they grind down, and lastly the effect they produce upon the climate of the country they adorn,—all this knowledge, the result of laborious, protracted, and often perilous investigations, would at once be at his disposal, a knowledge that few men would have the capacity, even if they had the time and opportunity, to obtain for themselves.

Well, so it is with the Study of the Science of Medicine: you cannot learn everything by your own observations, your own experiments, your own deductions.

The Commonest Principles on which our Art is built you must accept just as we do the First Principles of Astronomy,—the rotation of the earth round the sun, the theory of the tides,—from Lectures and from Books, and not from individual observation. Just as you could never hope to extricate for yourselves and to eliminate out of a mass of ill-sorted facts the Laws which it required the genius of a Galileo, a Kepler, and a Newton to establish, so it would be equally difficult for you to establish those doctrines of Physiology and of Pathology which have been given to the world by the experimental research and the inductive talent of a Harvey, a Hunter, a Bell, or a Virchow,—but it is vain and idle to argue such a point as this. You must learn the great Principles of our Science, whether in Physiology or in Pathology, from Lectures and from Books. In no other way can you master or ever hope to attain the most superficial knowledge of the General Doctrine of the Circulation of the Blood, the Theory of Respiration, the difference between the Motor and Sensory portions of the Nervous System, the intimate nature of the Inflammatory Process, the Cellular Theory, and hundreds of other subjects of a similar kind, which come before you at every turn of your daily practice.

But not only do you learn from Lectures and from Books those great General Principles of our Science on

which our Art is founded. From them you may also learn much of the Art itself.

There are many Diseases and Injuries of such rare occurrence that the most experienced Practitioner may never have an opportunity of witnessing a case in the course of his life, and yet at any moment a case may come under his observation. There, clearly, you cannot learn from your own observation, but must have acquired your knowledge from the information conveyed to you by the lectures or the writings of others. To carry out my simile with regard to Switzerland, if in your progress amongst the Glaciers, you caught sight of a Chamois or a Lammergeyer; the animal would at once be recognised by you, although you might never have had an opportunity of seeing one before, if you had read or heard a correct description of it.

So it is with many Diseases and Injuries. How many Practitioners in this country know anything of Hydrophobia from their own actual observation, I know not; but most certainly the number is not large. I believe that I speak quite within the mark when I say that a genuine case of Hydrophobia does not present itself in all the London Hospitals taken together on an average once in a year, very often not for several years together. The opportunity of actually observing this terrible and fatal disease must therefore be very scanty, and must fall to the lot of but very few; and yet there are few medical men who would not at once recognize a case if he were to meet with it from the descriptions that he has read in books. So with many other Affections and Injuries. How many Surgeons are practically acquainted from their own observation with the Cysticercus of the Eye, with Hernia of the Lung, or Dislocation of the Head of the Femur behind the Tuber Ischii? And yet every Surgeon would be expected to recognize such a Disease or Injury when he met with it. And how is this possible, except through

Lectures and by Books? And yet there are men in our Profession who deny this method of learning, and even in their Examinations wish to restrict Students to what they have seen. No, gentlemen, ours is something more than a mere Practical Art, a mere system of Individual Observation; it is a learned Profession, and to master it you must adopt the ordinary methods of learning that are common to other Professions.

I would, therefore, urge you to study the Great Principles of the Science of Medicine, and even to learn much of its Precepts and Practice from Lectures and from Books. And if I put these together it is because the means of instruction furnished by each is so similar in kind; that is to say, they each furnish the knowledge epitomized, systematized, arranged in such a form as to be easily acquired, discarding the useless and superfluous and directing the Pupil's mind to that which is alone of recognized value.

But though very similar in many respects, Lectures and Books yet differ much from one another in others as to their value in imparting knowledge to different minds, for instance, and much as Lectures may differ from Books in this respect, they differ yet more from one another according to the subject that they deal with.

In Lectures you have the advantages that are furnished by the earnestness of the Speaker—his tone of voice, his gestures, his recapitulations, and his manner of emphasizing and dwelling forcibly on points of importance,—in Lectures the eye and the ear are always appealed to. In studying by Books you have the advantage of calm reflection, of going over the subject again and again until it is fairly mastered, in analysing and penetrating into the writer's thoughts.

You will, therefore, find from the very different way in which the mind is approached or influenced by Lectures and by Books, that some Students learn best by one,

others by the other. I should say that, as a rule, ordinary Systematic Lectures (I am not now speaking of clinical instruction) are best suited to the less advanced student, whose mind has not as yet been trained to habits of independent study. Whereas the more advanced Pupil, who has already mastered the rudiments of any given subject, and whose mind has undergone a preparatory training, will probably profit more by Books.

But much as Systematic Lectures (and of them alone am I now speaking) differ from books in the facility with which they convey knowledge to particular minds, they differ still more in value as means of instruction from one another. They may be divided into two classes:—First, those that are purely systematic, that treat of subjects that do not admit of actual demonstration; and, second, those that can be demonstrated and exhibited at the time of lecturing and by the Lecturer.

To the first class belong Systematic Lectures on Medicines, Surgery, and Midwifery. These subjects can be taught in their scientific aspect by Didactic Lectures, not in their practical, as they do not admit of demonstration. Lectures can only indicate to the Pupil what he may expect to see, or what he should be prepared to do. These Lectures may often advantageously be supplemented by Books; and when I was Professor of Systematic Surgery in this College, you are aware that I was very lenient with regard to the attendance on a second course, and always thought that the Pupil was better employed if he could assure me that he was reading at home and engaged in the Hospital or Dissecting-room. Indeed, I do not think that second courses of these lectures should be insisted on by the Examining Bodies, but should be left to the option of the Pupil, who will take them up or not, according as he finds it to his advantage, or according as he can learn them most readily from Lectures or from Books.

But with Lectures that admit of copious demonstrations, such as those on Anatomy, or Physiology, or Chemistry, the case is very different. Here the Student sees in the lecture-room what he cannot witness for himself elsewhere, and repeated attendance on these should, I think, be compulsory. We well know that what is *seen* makes a deeper impression on the mind, and is better and more clearly remembered than what is merely heard :—

“ Segnius irritant animum demissa per aurem
Quam quæ sunt oculis subjecta fidelibus
Et quæ ipse sibi tradat spectator.”

But if I thus urge you to study the Science and to lay the foundation even of the Art by Attendance on Lectures and by the Study of Books, I would yet also urge you not to suppose that you can learn your Profession in this way, but that you must do so by an independent and an unchanging devotion to the details of the Art. The two, in fact, should go hand in hand. I would advise you most earnestly to apply yourselves to the practice of your Art from the very commencement of your professional studies.

You cannot lay the foundation in Science, and add on the superstructure of Art.

You must acquire the Art from the very first. As I have just said, they should go hand in hand. They not only do not clash, but actually and mutually assist one another.

It is impossible to over-estimate the importance of clinical observation in the study of disease. By “clinical observation,” I do not mean merely seeing, or even recalling the particulars of a given number of cases, but the methodical education and training of the senses to observe and to understand what is brought before them. It is by this method, and by this method alone, that a correct diagnosis in any disease or injury can be effected.

The importance of a correct diagnosis is so obvious that I need scarcely dwell upon it, for without it all is

unsafe and empirical, and you cannot take a step in practice without danger to your patient or to yourselves. There would, in all probability, not be a more important, or a more interesting or more instructive work written than one that would give a faithful record of the Errors committed by Practitioners in the Diagnosis of Disease. These errors may no doubt in many cases arise from the inherent difficulty of discriminating various forms of disease, but in other instances flow from defective method in investigating the subject owing to imperfect training. It is not of such great importance to see much, as it is to see well what is brought before you. You do not require many cases, but you require that those cases which you do see should be well and thoroughly observed. A man may see a vast number of cases, and yet, from want of method in observing, may derive little real instruction from them. If it is true of any department of medicine that "Knowledge comes but Wisdom lingers," it is so with regard to Clinical Observation. In order to impress upon your minds more thoroughly the details of those cases that are brought before you, there is no better method than that of taking and of entering copious and methodical notes of every important case that is brought under your observation. In this way you impress facts upon your mind in a manner that it is hopeless to attempt to do in any other. These notes that you take whilst pupils may be of the greatest use to you through the whole of your subsequent life. There are no cases so strongly impressed upon your recollection as the first ones that you see of any given disease, and more especially if correctly observed and assiduously noted. They will never escape from your recollection, and will serve as useful references to you in your future lives. In connection with note-taking, I would strongly recommend you to acquire a knowledge of an art which is easily learned, viz., of writing in Short-

Hand, by which you are enabled to make notes of the case as rapidly as you observe it. The art of Drawing also is of essential service in connection with this department of study. A simple sketch, however roughly done, will bring back to your recollection in the most forcible manner what would otherwise have slipped away from it.

The range of Science is so extensive, that every man must be content to remain for life profoundly ignorant of many departments of human knowledge; and not only so with Science in general, but with Medicine in its several departments. It is impossible for any one intellect, however capacious, to grasp, as it will be impossible for any life, however long, to afford time for the mastery of every department of our Science. Do not trouble yourselves, therefore, so much about what you do not know as about what you do know. Try to master one subject correctly and thoroughly, but lay your foundations wide; as a general rule, lay them deep in the knowledge of the natural sciences; but remember in doing so that you are not destined to become Chemists or Botanists, or Natural Historians. Use Chemistry, Botany, and Natural History so far as they may be of service to you in their relations to Medicine, but no further. These Sciences are perhaps more useful as a means of training the mind so as to fit it generally for the study of natural science, and more particularly for that to which it may be specially directed; but remember that these are not the end for which you work. Science without practical application may be interesting as an Amusement, but it is useless as an Occupation to the Medical Practitioner. Do not devote yourselves too exclusively to any one Department or any one Branch of a Department of Medicine, however interesting and however important it may in time appear to be. Too exclusive attention to a confined range of thought, and

dexterity in any one line of art, may make you skilful in that particular department, but it will tend to make you narrow-minded as professional men, to lose that comprehensive and broad view of Medicine, or of Surgery, as the case may be, which is necessary for the thorough Practitioner. You cannot divide the body into regions or organs, and take up the study of one or the other, separate from the rest, without imminent risk of losing sight of the intimate relations that exist between each and every one, and of their mutual dependence one on another.

The Acquisition of the Art is effected through the medium of the senses, by the education of the organs of sight, of hearing, of touch. It is often manual, purely mechanical. Its practice is a relief from the more serious mental labours of the Study of the Science. It is learnt in the Chemical Laboratory, in the Dissecting Room, in the Dead House, in the Wards of the Hospital, and in the Out-Patient Department. It is there and there only that you can acquire it for yourselves. It can be indicated to, but it cannot be taught, you. You must learn it for yourselves by constant and early practice.

And I would especially urge you to attain it *early* in life. It is in early life that the senses and physical qualities are most plastic, adapt themselves best to the acquisition of new arts. If it is desired that a man should ride, dance, or shoot well, he should learn the art early in life, no matter how early he be trained to the exercise. It cannot be perfectly attained at a later period.

So it is with the *Art* of Medicine and of Surgery. If it is desired that a man should acquire skill in this he must begin early,—to use his hands, his eyes, his ears, to educate them to the various actions they have to perform, the minute discriminations they have to make.

He must manipulate in the Laboratory, dissect in the Rooms, bandage, and apply splints, and do the minor operations of Surgery in the Out-Patient Department; operate and learn the construction, the handling, and the use of his instruments in the Dead House; educate his eye, his ear, and his touch in the recognition of disease in the wards.

All this is purely Physical—purely sensual, manual, mechanical. It costs no trouble if acquired early. In fact, it becomes a source of pleasure, as an exercise of skill; amounts to a recreation, a relief from the more severe and exhausting studies of the Lecture Room and Library.

Art cannot be acquired by Solitary Study. It must be taught practically. It must be learnt by the Pupil from the Master of the Craft. It is transmitted in this way from one generation of Surgeons to another, not by oral, not by written instructions, but by seeing how things were done. When Medicine, as amongst the Egyptians, was a mere Art, and had degenerated into a bundle of Specialities, each Organ having its own Doctor, the whole Knowledge was traditionary. It was so also in the Middle Ages, before the revival of learning in Europe. Even now much is learnt in this way; each School—every Hospital has its own traditions. The same thing is done very differently in different Institutions. Look, for instance, on the different Practice adopted in the most ordinary surgical cases, not only in London, Paris, and Berlin—but in London, Dublin, or Edinburgh—and even in the different Hospitals in London itself. There is no such thing as “London Surgery,” so far as the *Practice* is concerned; the *Science* is and must be the same everywhere. But the Practice—the Art—is in a great measure traditionary in each separate Hospital, and this traditionary character is preserved, owing to the isolation of the different Schools. On this subject, Gentlemen, I could

say much, if time permitted, because I feel strongly. I merely tell you what exists, not what should be. However, this traditional knowledge, even in the discordant and ill-regulated manner in which it exists, is of the utmost value to the Student. It is this heritage that constitutes one of the great advantages derived by the student from attending a well-organised Hospital; it is the legacy of practical knowledge that has been bequeathed to him out of the accumulated stores of Experience of a Past Generation—a legacy that he must not preserve in the coin of the past age in which it has been transmitted, but that he must utilise by conversion into the accepted currency of the day.

Cultivate, then, by all means the Art; by it you will be judged by those who can form no opinion of the Science you possess.

I dwell much on this, for my experience as an Examiner for many years past has taught me how lamentably deficient many students are in all that relates to manual skill. Setting aside the performance of operations on the dead subject, the mere application of a Fracture Apparatus, or even of a bandage, has been too severe a test for the practical aptitude of many a candidate for Collegiate Honours.

Do what you have to do well. A man who can use his hands skilfully, be he Sculptor or Carpenter, Smith or Sailor, Engineer or Surgeon, is always a useful member of Society, always possesses within himself the conscious sentiment of self-reliance, of independence. He is not a mere talker, one of Carlyle's "Windbags," not one of those "Idealogues" of whom the greatest practical Genius that the world has ever seen, the First Napoleon, had so great and so just an aversion.

It is true that for the *Study of the Science* and the *Practice of the Art* the greatest possible diversity of Individual Aptitude exists. But great as are the differences

between the natural abilities of different men, there is greater difference still in the way in which they are used. Two men with very similar amounts of natural gifts will attain a very different position in the career they adopt, according to the Force and the Activity with which they employ them.

There is probably a far greater difference in Force of Character than in Amount of Natural Talent among men. And the Force of Character is that which gives strength and vigour to the Mental Aptitude.

The Talent is the Weapon, but the Character is the Hand that wields it, and the Blade will be thrust home, less by the keenness of its point or the temper of its metal than by the Force with which it is driven.

Throw your heart into your Work. Make it a matter of Feeling, of Devotion, rather than of Duty. You will then find it to be a Pleasure, and not a Labour. Cultivate, above all things, *Earnestness*. It is the one great quality that outweighs all the rest.

Earnestness in your work is the most essential—the one great element, the very soul of Success. Perseverance, energy, the determination not to be beaten,—by whatever name the quality goes, or whatever form it assumes, is the one great quality that will enable you to master the difficulties that you will certainly find in your onward course, and to break down those obstacles that will stand in your path in Future Life. As one of the characters in one of those forcible delineations of modern social life by Anthony Trollope truly says, “It’s dogged as doose it.” Yes, it is this doggedness, this invincible, this unconquerable energy and perseverance, that has done it for many a man; and that will ever lead him to success, in whose vocabulary, as in that of the Great Napoleon, the word “*Impossible*” is not to be found.

Let every day be marked by some new addition to your knowledge. There are a few lines written by one

of the greatest of modern poets—a poet who combines in his writings the tenderest sentiment, the most graphic description, the purest thought, and the most philosophic insight into the human heart—a poet who has lately honoured this country by his presence—which are so appropriate that I cannot refrain from recalling them to your recollection. In the “Village Blacksmith” Longfellow describes that craftsman as—

“Toiling, rejoicing, sorrowing,
Onward through life he goes ;
Each morning sees some task begun,
Each evening sees its close.
Something attempted, something done,
Has earned the night’s repose.

“Thanks, thanks to thee, my worthy friend,
For the lesson thou hast taught,
Thus, in the Flaming Forge of Life,
Our Fortunes must be wrought ;
Thus on the Sounding Anvil shape
Each burning deed and thought.”

Yes, gentlemen, let something be attempted, something done by each of you every day in mastering the Principles and attaining the Precepts on which the Art of Medicine is built. Study its Science—learn its Practice—acquire its Art. Do so with Earnestness, with Energy, and with Perseverance, and you will attain to success in its highest and noblest forms ; or, should you fail in the full accomplishment of your wishes, you will have the inward satisfaction of having fully deserved, if circumstances have prevented your attaining the full complement of the Success you have merited.

THE END.

